

Coral Bay Settlement Structure Plan 2014

(an update of Coral Bay Settlement Plan 2004)

Prepared by Shire of Carnarvon

Final version

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ROYALTIES
FOR REGIONS



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List of Abbreviations

AHA	Aboriginal Heritage Act 1972
BAC	Baiyungu Aboriginal Corporation
C&I	Commercial and Industrial Waste
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CBSSP	Coral Bay Settlement Structure Plan 2014
DPaW	Department of Parks and Wildlife
DZS 11	Shire of Carnarvon District Zoning Scheme No.11
MSW	Municipal Solid Waste
NCRS	Ningaloo Coast Regional Strategy Carnarvon to Exmouth 2004
ODPs	Overall Development Plans
PB 83	Planning Bulletin 83 Planning for Tourism
PB 99	Planning Bulletin 99 Holiday Homes Guidelines
SPP 6.3	State Planning Policy 6.3 Ningaloo Coast
UCL	Unallocated Crown Land
WAPC	Western Australian Planning Commission
YMAC	Yamatji Marlpa Aboriginal Corporation



EXECUTIVE SUMMARY

In 2004, the State Government prepared *State Planning Policy No. 6.3 - Ningaloo Coast* (SPP 6.3) and the *Ningaloo Coast Regional Strategy Carnarvon to Exmouth 2004* (NCRS) to provide strategic direction in the future development of the Ningaloo Coast, including Coral Bay. The NCRS also contains the *Coral Bay Settlement Plan 2004*. These policies aim to retain Coral Bay as a tourist destination and provide the framework to establish land use and planning controls to ensure that future development is managed in a sustainable manner. In August 2004, Cabinet endorsed both the NCRS and SPP 6.3.

The Shire of Carnarvon commenced a review of the current *Coral Bay Settlement Plan 2004* in May 2012. The review was led by the local government through a district Structure Plan process (as defined in the Western Australian Planning Commission's (WAPC) Structure Plan Preparation Guidelines) and overseen by a technical working group comprising the following stakeholders:

- Department of Lands,
- Baiyungu Aboriginal Corporation (also representing Gnulli),
- Department of Transport, WA Country Health,
- Department of Environment Regulation,
- Gascoyne Development Commission,
- Tourism WA,
- Coral Bay Progress Association,
- Department of Fisheries; and
- Department of Planning.


The now prepared *Coral Bay Settlement Structure Plan 2014* (CBSSP) is an important strategic planning tool, setting the 25 year vision for the settlement and providing the planning framework for future development and expansion of tourism within Coral Bay.

Retention of Coral Bay as the premier Ningaloo Coast tourist node remains the vision for the settlement, based on the rationale provided by the NCRS, the overriding need to conserve the Ningaloo coastal environs as well as community sentiment to protect the natural appeal and holiday fabric of Coral Bay. This follows the established *Coral Bay Settlement Plan 2004* Principal Planning Objective that:

“Coral Bay shall continue to be an attractive destination for tourists and visitors seeking to experience the natural features of the Ningaloo Reef and the remote holiday atmosphere of Coral Bay through improved sustainable tourism practices.”

To deliver this, the CBSSP provides the following key strategic directions:

Population - population cap to increase from 4500 to 5300 people, based on CSIRO modelling of environmental vulnerabilities and resulting accommodation options recommended.



Workers Accommodation - Lot 308 to remain a 'Workers' Accommodation' precinct providing 400 beds for persons who need to reside in Coral Bay as a result of their business or employment.

Holiday Homes - An additional 'Holiday Homes' precinct also identified on Lot 308 as an option for providing short term accommodation for 520 beds.

Caravan and Camping - A new caravan park accommodating 280 beds identified, with an option for workers' accommodation, if privately owned land is not providing for this use.

Permanent Residential - Coral Bay to remain a tourism settlement, with no permanent residential development allowed, with permanent residential proposals directed to the established townsites of Exmouth and Carnarvon.

Movement Network - Banksia Drive to be constructed and Robinson Street to become a one-way street west of French Street, and French Street to be pedestrianised.

The Structure Plan reiterates the importance of retaining Coral Bay as the premier Ningaloo Coast tourist node and provides the direction at State and local policy level for future land use development.



Part 1 – Statutory Section

1.1 Structure Plan Area

This part applies to the *Coral Bay Settlement Structure Plan 2014* (CBSSP) being all of the land contained within the inner edge of the broken black line shown on the plan (Figure 1).

1.2 Structure Plan Content

This District Structure Plan comprises:

- Part One – Statutory section which comprises the structure plan map and statutory planning provisions and requirements
- Part Two – Explanatory (non-statutory) information which is used as a reference guide to interpret and justify the implementation of Part One
- Appendices

1.3 Interpretations and Scheme Relationship

The words and expressions used in this CBSSP shall have the respective meanings given to them in the *Shire of Carnarvon District Zoning Scheme No.11* (DZS11).

In the absence of any specific provisions contained within DZS11 to guide the preparation and enable the implementation of structure plans, this Structure Plan has been prepared in accordance with the Western Australian Planning Commission's *Structure Plan Preparation Guidelines* (August 2012) and best practice as a predominantly strategic, non-statutory District Structure Plan.

This CBSSP shall have no force or effects until a review of, or amendment to DZS11, have been undertaken and relevant provisions inserted that provide the mechanism for statutory implementation.

1.4 Operation

The CBSSP shall provide the non-statutory strategic guidance to land use and development within the CBSSP area. It may also be used to make changes to State strategic policy and the Shire's Local Planning Scheme.

1.5 Land Use and Subdivision

The CBSSP delineates and depicts precincts applicable to the CBSSP area according to the legend thereon.

The precincts designated under this CBSSP shall apply to the land to guide the Shire of Carnarvon and Western Australian Planning Commission (WAPC) in the amendment or review of DZS11 to apply appropriate zonings, reservations, permissibility and other relevant controls.

Subdivision and development shall generally be in accordance with the CBSSP or any variations as approved by the Shire of Carnarvon or the WAPC once it is reflected in statutory planning instruments.

1.6 Statutory Structure Plans

A statutory structure plan is a type of structure plan that is required to be prepared and approved under a local planning scheme for land within a development (or similar) zone or where there is a general head of power provided in the local planning scheme that requires a structure plan to be prepared. Once endorsed by the WAPC it will have statutory effect.

A structure plan incorporates a report, structure plan map, additional technical supporting documents and plans, to provide a framework for the coordinated provision and arrangement of future land use, subdivision and development in new urban areas (greenfield sites) and in existing developed/ redevelopment areas (brownfield sites). A structure plan is a particularly important planning instrument for land held in fragmented or multiple ownership. It often accompanies a region scheme amendment or local planning scheme amendment proposal in order to illustrate future development and subdivision intentions.

A structure plan must address and incorporate regional strategies, relevant state planning policies, and any other relevant WAPC policies and guidelines. It must align with the objectives, provisions and requirements of the relevant local planning scheme and consider any local planning policies adopted under the local planning scheme. It coordinates the provision of transport networks, public open space (POS), utility and service networks, urban water management, development standards and community and other infrastructure investment and staging programs.

Structure plans follow a hierarchy being sub-regional, district, local and activity centre which are classified based on both the area covered by the structure plan and the detail contained within it. The WAPC has classified the CBSSP as a district structure plan. A district structure plan is defined as a high-level, predominantly strategic, document that provides guidance on future land use, employment, density targets and the coordination and provision of major infrastructure.

1.7 Local Development Plans


After implementation of the CBSSP, in the event of there being any inconsistencies or conflict between the provisions, standards or requirements of this CBSSP and any Local Development Plans (Overall Development Plans) previously adopted by the Shire of Carnarvon Council and WAPC that apply within the CBSSP plan area, the CBSSP shall prevail.

Any future Local Development Plans prepared within the CBSSP area shall be generally in accordance with the provisions, standards and requirements of this CBSSP.

1.8 State Planning Policy

This CBSSP is to have due regard for a number of State Planning Policies, including:

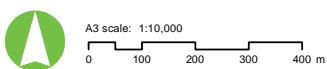
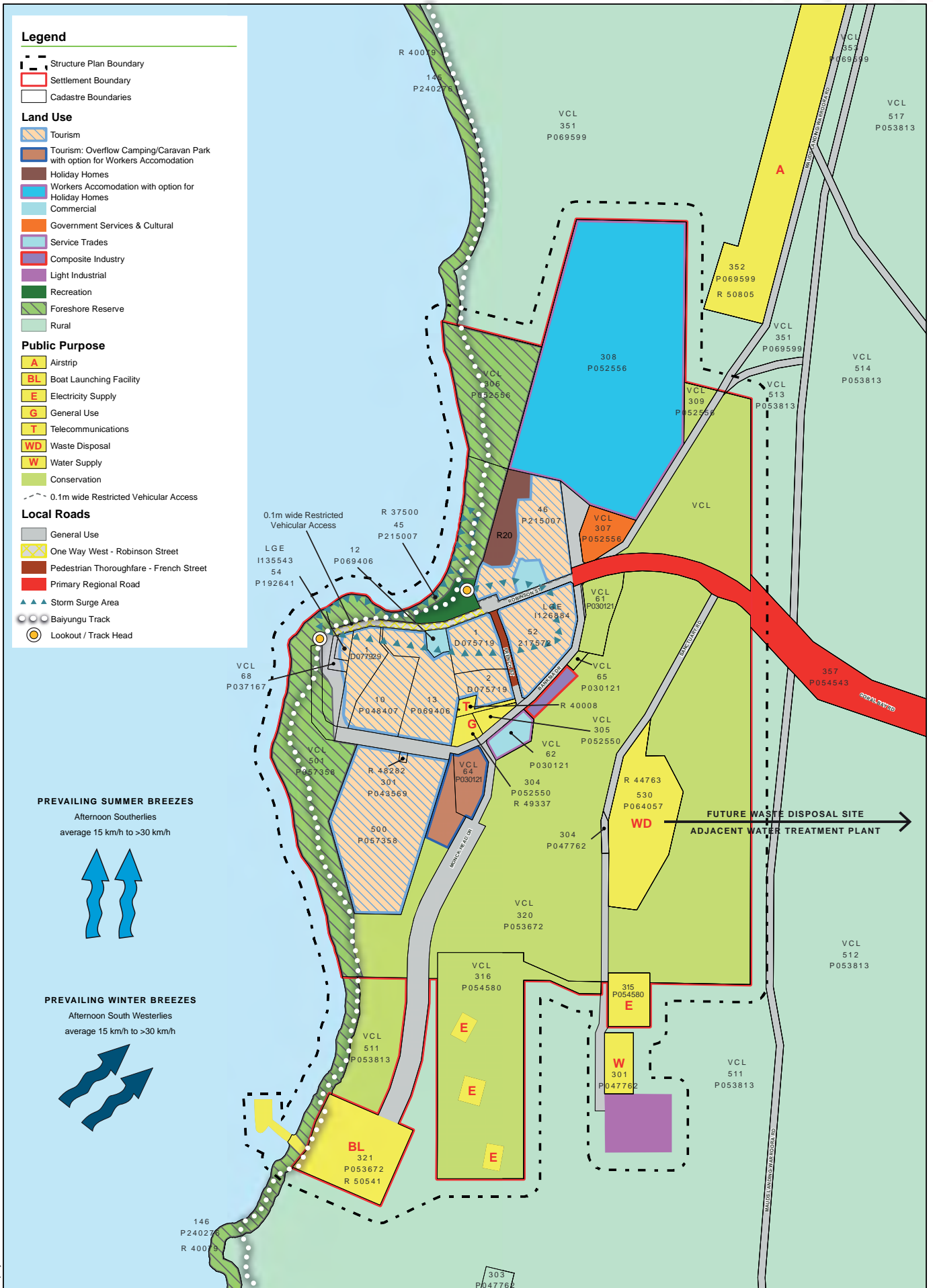
- *State Planning Policy No.1 – State Planning Framework* (SPP 1) that brings together existing State and regional planning policies which apply to land use and development in Western Australia;
- *State Planning Policy No.3 – Urban Growth and Settlement* (SPP 3) that sets out the principles and considerations which apply to planning for urban growth in Western Australia; and
- *State Planning Policy 6.3 – Ningaloo Coast* (SPP 6.3) that sets out to:
 - i. Provide state agencies, local government, community and proponents with clear guidance regarding acceptable and sustainable development on the Ningaloo coast.
 - ii. Maintain the Ningaloo coast as an all-seasons recreation and nature-based tourism destination and limit growth with managed staged development, to ensure that the community continues to enjoy a remote and natural experience.

- 
- iii. Preserve and protect the natural environment and enhance and rehabilitate degraded areas within the environment.

Consolidate future residential, commercial, higher-impact tourism and industrial development in the towns of Carnarvon and Exmouth and provide strategic directions for their future growth.

The CBSSP also references and acknowledges the *Ningaloo Coast Regional Strategy Carnarvon to Exmouth 2004* (NCRS), a 30 year strategic land use plan that establishes a framework for sustainable tourism and land use along the Ningaloo Coast, including Coral Bay. These Policies and the NCRS are further explained in Section 2.5 of this document. As a result of the endorsement of the Structure Plan, SPP 6.3 and the NCRS may need to be reviewed.

It is recognised that SPP 6.3 refers to the title 'Coral Bay Settlement Plan' as per the NCRS. The Cabinet and WAPC endorsed *Coral Bay Settlement Structure Plan 2014* replaces the 'Coral Bay Settlement Plan' and any reference to the 'Coral Bay Settlement Plan' will now mean reference to the *Coral Bay Settlement Structure Plan 2014*.



Part 2 – Explanatory Section

2. Planning and Background

2.1 Introduction and Purpose

In May 2012 Aurecon Australia Pty Ltd (Aurecon) was appointed as lead consultant by the Shire of Carnarvon to prepare a structure plan for the settlement of Coral Bay. The project was also funded by the Department of Planning through the 2011/2012 Royalties for Regions Northern Planning Program.

In preparing the structure plan, Aurecon and its partner consultants, Ecoscape Australia and Colliers International, acknowledged some of the aging provisions of the NCRS, SPP 6.3, the *Coral Bay Settlement Plan 2004* and the Shire's DZS 11, including the Coral Bay Precinct Plan.

The structure planning project presented a timely opportunity to review these planning instruments in light of Coral Bay's continued focus as a premier tourist destination and the desire by many to expand the range of short stay accommodation, retail and commercial development, and further develop seasonal worker and permanent workers accommodation.

The aim of the CBSSP is to establish a clear direction for the future planning, development and infrastructure coordination for the settlement over the next 25 years. Consideration has been given to the projected growth of Coral Bay as one of Western Australia's premier tourist destinations located on the coastline of the Ningaloo Reef World Heritage Area.


An additional objective of the CBSSP is to identify statutory and strategic inconsistencies that exist within the planning framework for Coral Bay, namely NCRS, SPP 6.3, the *Coral Bay Settlement Plan 2004* and Coral Bay Precinct Plan, and to recommend changes to ensure a functional and robust planning framework is established at the State Level, and guides the development of the future Shire of Carnarvon Local Planning Scheme No. 13.

Consideration has been given to the various Overall Development Plans (ODPs) that have been prepared by private owners over numerous land holdings in the settlement as to whether they accurately reflect the desired development type, scale and layout of Coral Bay.

Once endorsed, the CBSSP will provide the reference for the future local planning, subdivision and development within Coral Bay. The CBSSP will be reviewed from time to time.

2.2 Key Considerations of the Structure Plan

- The following points describe the key considerations throughout the preparation of the CBSSP: Determination of the vision and 'sense of place' for Coral Bay looking forward 25 years.
- Consideration given to existing planning strategies, policies and other studies.
- Establishment of co-ordinated land-use, development controls and improved infrastructure to achieve the required vision for Coral Bay.
- Revision of the existing land use, land supply, retail service and floorspace, service infrastructure and capacity, tourist accommodation types/bed allocations, tourist activities/experiential uses, visitor information and numbers.
- Prescription of the appropriate scale, density, and form for future tourist, commercial, residential, mixed use and civic development.
- Revision and confirmation of the appropriate access/movement network including vehicular parking and traffic management.

- 
- Scoping the nature, type, extent and responsibility applied to social/public infrastructure and services.
 - Determination of the status of land tenure and subdivision opportunities for residential and non-residential use with regard to infrastructure/ servicing constraints.

2.3 Structure Plan Methodology

In preparing the CBSSP the activities listed below were undertaken with the aim of establishing a well-balanced and informed strategic planning outcome:

- Site inspections,
- Planning context literature review,
- Site context literature review,
- Urban land economics, population, demographics and accommodation review,
- Public drop-in information session and presentation,
- Project steering group workshops,
- Online public survey (results attached in Appendix E),
- One-on-one key stakeholder and government agency consultation,
- Opportunities and constraints mapping,
- Biophysical and sociocultural mapping,
- Seen-area analysis, and
- Outcomes reporting including analysis and recommendations.

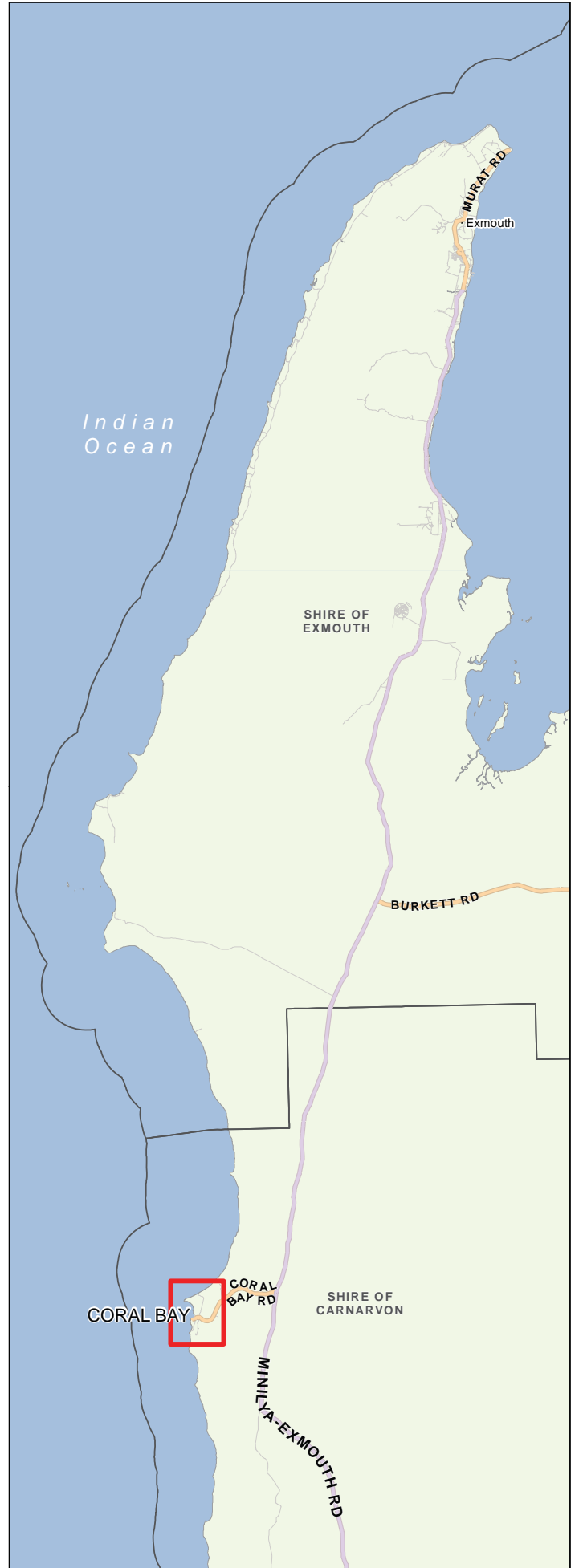
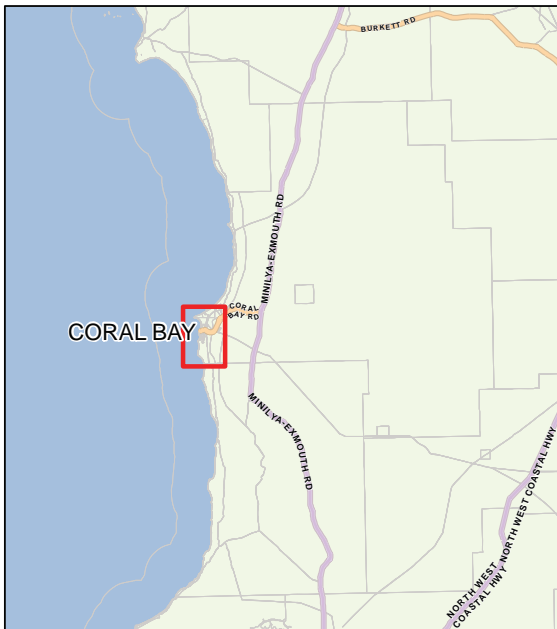
2.4 Land Description

2.4.1 Location

The settlement of Coral Bay is located approximately 1200 km north of Perth within the state of Western Australia. Regionally, Coral Bay lies some 120 km south of Exmouth and 50 km north of the tropic of Capricorn within the Gascoyne Region and Shire of Carnarvon municipality (Figure 2). Coral Bay is a coastal tourist settlement situated at the southern extent of the Ningaloo fringing coral reef. The Ningaloo Reef is a World Heritage listed area.

2.4.2 Study Area

The CBSSP study area is approximately 275 hectares. The structure plan area includes all land parcels, roads and reserves contained within the Coral Bay settlement and also includes land south of the Sanctuary Road terminus including Lot 301 on Plan 47762 (water treatment facility), part Lot 301 on Plan 53813 (Unallocated Crown Land) and land west of Monck Head Drive including Lot 511 on Plan 53813 (Unallocated Crown Land), part Crown Reserve 40079 (Lot 146 on Plan 240276) and the extent infrastructure comprising the boat launching facility at Monck Head.



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Shire of Carnarvon Coral Bay Settlement Structure Plan

Figure 2: Study Area Location and Regional Context

2.4.3 Legal Description and Ownership

Land Ownership and Crown Land Management

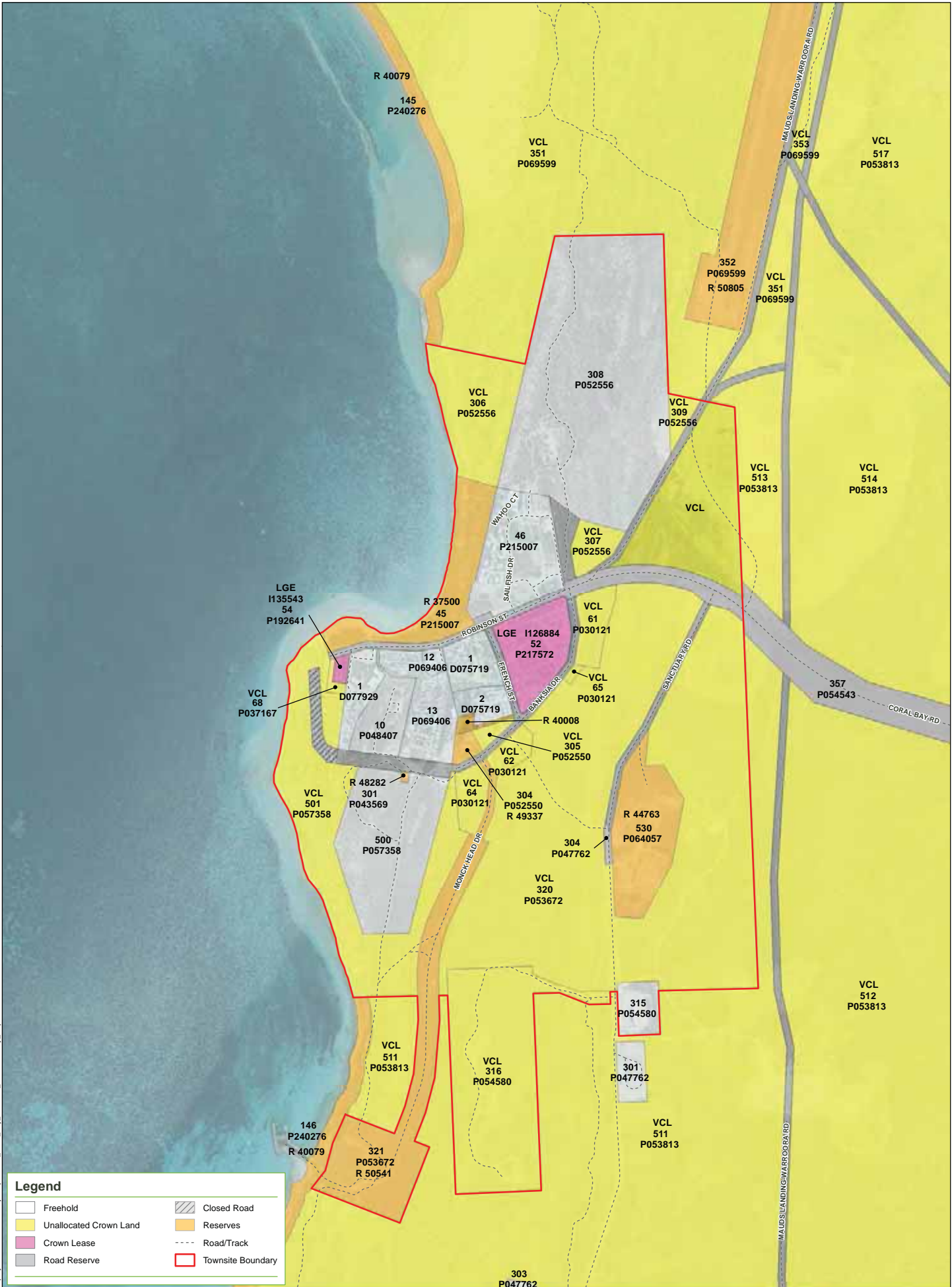
Table 1 below provides the name of the registered proprietor, primary interest holder or management entity of each land parcel within and around the Coral Bay settlement. Land not listed below is designated Unallocated Crown Land (UCL)¹. The location of parcels can be viewed in Figure 3 - Tenure Overview:

	Reserve/ Lease Number	Lot Number	Plan/ Diagram Number	Owner/ Manager	Current Land Use Description
Crown Reserves	R44763			Shire of Carnarvon	Refuse disposal site
	R40008			Telstra	Telephone exchange
	R50541			Department of Transport	Boat Ramp and Monck Head Drive
	R37500			Department of Parks and Wildlife	Foreshore reserve
	R49337			FESA	Emergency services and community purposes (school, research)
	R50805			Department of Transport	Airstrip
	R48282			Shire of Carnarvon	Depot
	R40079			Marine Parks and Reserves Authority	Foreshore reserve
Freehold		301	47762	Water Corporation	Water production plant
		315	54580	Verve Energy	Electricity production station
		308	52556	BAC Village Pty Ltd	Vacant/ NLV Seasonal Workers Village
		500	57358	BAC Eco Resort Pty Ltd	Vacant
		1	77929	Aspen Funds Management Ltd	Ningaloo Reef Resort
		10	48407	Batavia Holdings Pty Ltd	Predominantly vacant
		12	69406	Batavia Holdings Pty Ltd	Peoples Park Caravan Village
		13	69406	Batavia Holdings Pty Ltd	Peoples Park Caravan Village
		46	215007	Coral Bay Amalgamated Holdings Pty Ltd	Leased holiday homes, adventure camp, backpackers, shopping centre, depot
		1	75719	William F Brogan	Bayview Coral Bay Caravan Park
	2	75719	William F Brogan	Bayview Coral Bay Caravan Park	
Crown Leases	I192641	54	192641	Reginald J Robinson	Single house
	I126884	52	217572	William F Brogan	Bayview Coral Bay Caravan Park

Information current at 16 October 2012. Source: Landgate Land Inquiry System

Table 1 – Tenure Overview

¹ Compliance with the *Commonwealth Native Title Act 1993* (NTA) will be required before UCL parcels or other non-exclusive tenure (where native title rights and interests may exist) can be developed. See section 4.1 for further discussion in that regard.



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Coral Bay Townsite Status

Coral Bay was the colloquial name for the southern section of the Maud's Landing Townsite, originally gazetted in 1915. Numerous amendments to both the Maud's Landing Townsite and Coral Bay occurred from 2004 onwards. Coral Bay became a gazetted townsite in 2010, formalising both the name and boundaries of the settlement, as reflected in Figure 3. Further background to this process is provided below.

Maud's Landing Town was originally Gazetted in 1915 under section 7 of the *Land Act 1898*. On 26 September 1969 in the Government Gazette (p.2939) under section 10 of the *Land Act 1933*, Maud's Landing Townsite was amended and re-described to comprise two severances, known as the "Northern Section" and the "Southern Section". From 1969 until 2005, the Northern Section continued to be known by the public as Maud's Landing, whilst the Southern Section gradually became identified colloquially as 'Coral Bay'. This was primarily as a result of its connection with the tourism/resort industry which was endeavouring to develop with that centre as a focus for the general locality.

The adoption of the *Land Administration Act 1997* changed approval requirements for amendments to Townsites from the previously required Government Gazetted process to solely Ministerial Approval. Late In 2004, action was initiated by the then Department of Planning and Infrastructure (State Lands Services Group) to abolish the Northern Section (Maud's Landing) and rename the Southern Section as Coral Bay, as a result of planning and development considerations, including the Ningaloo Coast initiatives (WAPC SPP 6.3), dating back to 2002. On 6 January 2005, approval to abolish the Northern Section of the Maud's Landing Townsite and include all that portion of land into the Lyndon District occurred.

On 11 January 2005, a Geographic Names Committee recommendation for the archiving of the administrative boundaries and names of Maud's Landing Townsite and Locality, a new name for Coral Bay Townsite, and a new Place (geographic) Name for Maud's Landing, were all approved. On 13 January 2005, the Ministerial Order Document Numbered J149464 was lodged to register the archiving of the Maud's Landing Townsite and Locality names.

On 26 February 2010, approval for the name of the Southern Section of Maud's Landing Townsite as Coral Bay Townsite occurred and this was formalized that same day in the Ministerial Order Document Number of L250392, which has a Lodgement Date of 8 March 2010.

Since then, three (3) amendments to Coral Bay Townsite boundaries have occurred as a result of Ministerial Order Document Numbers L293725, L370933 and L398840, which have Lodgement Dates of 21 April 2010, 9 July 2010 and 12 August 2010, respectively. Each Deposited Plan supporting those Ministerial Order Documents identifies the townsite name as "Maud's Landing Townsite", but this is explained by the fact that each one was compiled as a result of surveying, drafting and lodgement prior (February 2007) to the official name change to "Coral Bay" in 2010 (Department of Regional Development and Lands Correspondence Files 07588-1896/08 and 09).

2.5 Planning Framework

2.5.1 State Planning Policies and Initiatives

State Planning Strategy

A revised State Planning Strategy aimed at achieving the main planning principles for Western Australia is currently under development by the Department of Planning on behalf of the WAPC. Its key objectives are to guide long-term land use planning to achieve a coordinated response to future challenges, and to ensure that the population can grow and still meet community aspirations for a high quality of life and a clean environment.

The 1997 State Planning Strategy highlighted the need for essential infrastructure in Coral Bay, including quality water and wastewater services.

State Planning Policy (SPP)

The WAPC prepares state planning policies under Part 3 of the *Planning and Development Act 2005*. Once published in the Government Gazette, policies must be given due regard in future planning decisions and actions including in the preparation of local planning strategies and schemes.

State Planning Policies relevant to the preparation of this CBSSP are detailed below.

SPP 1 – State Planning Framework

SPP 1 provides an overarching policy framework for the WAPC's policies, strategies and guidelines for planning, land use and development.

SPP 2 – Environment and Natural Resources

SPP 2 is a broad sector level policy which seeks to ensure environmental and natural resource considerations are integrated with planning decisions and actions and the conservation of important areas.

SPP 2.6 - State Coastal Planning Policy (2013)

SPP 2.6 provides direction for planning and land use in coastal areas, including coastal setbacks for development and public ownership of foreshore areas. The policy requires strategic coastal plans, the allocation of development setbacks to allow for coastal processes, and coastal foreshore reserves.

The 2013 gazetted policy amends a number of policy provisions relevant to Coral Bay, including coastal setback allowances for sea level rise, building height limits and cyclone events to be treated as severe storm surge events.

SPP 3 – Urban Growth and Settlement Policy

SPP 3 requires new settlements to be well planned and coherent, providing housing choice, lifestyle opportunities, and access to employment, services and recreation. In regional areas, the policy requires regional strategies to provide clear guidance on future settlement patterns and growth areas. Local Planning Strategies should identify sufficient land for future populations and housing for at least a 10 year period.

SPP 3.1 – Residential Design Codes of Western Australia

SPP 3.1 provide the basis, primarily for local government control of residential development in Western Australia. While no permanent residential is proposed within the settlement, this policy provides guidance in regards to density and built form within the settlement.

SPP 3.4 – Natural Hazards and Disasters

SPP 3.4 applies to the planning and development of land that could be affected by natural hazards and disasters. In Coral bay, this may include severe storms and cyclones, storm surge, flood, coastal erosion and bushfires.

SPP 6.3 – Ningaloo Coast

SPP 6.3 applies to all land within the Ningaloo Coast policy area, including Coral Bay. The objectives of the policy are to provide guidance on acceptable and sustainable development; maintain the Ningaloo Coast as an all-seasons recreation and nature-based tourism destination and limit growth with managed staged development; preserve and protect the natural environment and enhance and rehabilitate degraded areas; and consolidate future residential, commercial, higher-impact tourism and industrial development in the towns of Carnarvon and Exmouth.

All future planning and development on the Ningaloo Coast is to be assessed against the policy's guiding principles, summarised below:

1. Sustainable development - planning and development must be sustainable, integrating environmental protection, social advancement and economic prosperity.
2. Community aspirations – planning and development must be consistent with the vision for the Ningaloo Coast.
3. Aboriginal heritage – planning and development must provide for the on-going protection of Aboriginal heritage and the development of culturally appropriate tourism where relevant.
4. Economic development – planning and development should actively assist in creation of regional wealth, support new industry development and economic activity that is in accordance with sustainable development principles. Planning and development must also support provision and maintenance of infrastructure.
5. Interdependence – development must not significantly interfere with current natural ecological processes (physical and biological).
6. Limits of acceptable change – development must be within the limits of acceptable change. That is, the maximum level of alteration for a resource that society is prepared to accept.
7. Precautionary principle – the onus is on a development proponent to show a development does not pose any likelihood of serious or irreversible environmental harm. Where this cannot be demonstrated, the proponent must show that the harm can be managed; or else the development should not proceed.
8. Cumulative impact – planning and development must consider its cumulative impact along the Ningaloo coast.
9. Protection of high-conservation values – development must not adversely affect high-conservation areas such as the Ningaloo Marine Park.
10. Protection of remote values – development must not interfere with identified remoteness values.
11. Protection of biodiversity – planning must consider biodiversity and development must not significantly interfere with the biodiversity in a particular area.

The policy requires that:

- All planning instruments, including local and regional planning strategies, structure plans and planning schemes apply SPP 6.3 and the NCRS including the *Coral Bay Settlement Plan 2004*
- All planning applications and decisions in Coral Bay are to be consistent with SPP 6.3 and the NCRS including the *Coral Bay Settlement Plan 2004* No applications for higher impact tourism, residential, commercial or industrial developments will be approved unless they are within the townsites of Carnarvon and Exmouth, and are consistent with SPP 6.3, the NCRS and the local planning strategy and scheme.



The CBSSP continues to follow the requirements and guiding principles of SPP 6.3.

2.5.2 Other Relevant State Policies

Tourism Planning Taskforce Report, 2006 and Planning Bulletin 83/2013 – Planning for Tourism (PB 83)

The Tourism Planning Taskforce was established in September 2002 to address concerns about the use of tourist zoned land for residential development, and the impact of strata schemes on tourism developments. A Taskforce report on the issue was endorsed by the WAPC and the State Government in 2006, and PB 83 adopted in June 2007 to implement the Taskforce recommendations.

PB 83 was updated in 2013, and reflects a review of tourism accommodation development (including the recommendations of the Tourism Planning Taskforce) commissioned by the Board of Tourism Western Australia. The bulletin sets out the policy position of the WAPC on tourism development and guides decision-making by the WAPC and local government on subdivision, development and scheme amendment proposals for tourism purposes.

Given the significance of tourism in Coral Bay, further consideration of the policy elements are required. In particular, the applicability of tourism precincts and tourism sites to the Coral Bay settlement.

WAPC Structure Plan Preparation Guidelines (2012)

The WAPC Guidelines aim to standardise terminology and hierarchy of structure plans, and provide assistance and guidance on the format and content of structure plans. Specifically they will:

- Ensure information provided within structure plans is appropriate to the scale and level of the plan.
- Provide clarity as to the type of information generally not included in structure plans.
- Establish consistency in the format and content of structure plans for the State.
- Provide clarity and consistency on statutory and non-statutory elements of structure plans.
- Provide clear guidance to applicants, local government and the WAPC on the preparation of structure plans.
- Assist decision-making authorities in assessing whether a structure plan has provided the required information.

The CBSSP has been prepared in accordance with the Guidelines.

WAPC Planning Bulletin 99 Holiday Homes Guidelines (September 2009) (PB 99)

This bulletin sets out the interim position of the WAPC in relation to the planning and regulation of holiday homes in Western Australia. The bulletin provides guidance to local governments when dealing with issues associated with holiday homes in the local government planning framework. The bulletin proposes possible changes to local planning schemes and the preparation of local planning policies, tailored to address the specific issues encountered by local governments.

Its objectives are:

- To facilitate a consistent, equitable and efficient planning process for the regulation of holiday homes in Western Australia.
- To support the tourism industry by the promotion of voluntary accreditation of holiday homes.
- To encourage good quality, well managed holiday homes for use by short-term visitors generally in locations that will enhance the tourism experience while minimising potential impacts on adjoining residents.
- To support the role of holiday homes as part of the tourism industry.

It further defines holiday home types, and then encourages local governments to develop local policies on holiday homes, and recommends the establishment of a holiday homes register.

WAPC Guidelines Holiday Homes - Short Stay Use of Residential Dwellings

This document establishes guidelines for the short stay use of residential homes as holiday homes for tourism accommodation. It excludes short term accommodation where there is an onsite manager or owner such as bed and breakfast accommodation and guesthouses.

It seeks to ensure that short stay use of residential homes occurs within appropriate locations to enhance the tourism experience and reduce existing or future land use conflicts such as impacts on residential amenity. The policy aims to further ensure that all new holiday home rental accommodation is in accordance with relevant legislation, local planning schemes and policies, and management plans.

The policy outlines the planning approval process for such holiday homes, as well as the considerations and conditions of approvals, which would include a holiday home management plan and emergency plans. It also recommends the establishment of a holiday home register and that holiday home owners/managers attain accreditation from the Tourism Council of Western Australia.

2.5.3 Regional Planning

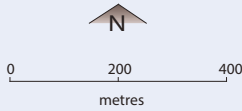
Ningaloo Coast Regional Strategy – Carnarvon to Exmouth (2004)

The NCRS is a 30 year strategic land use plan that establishes a framework for sustainable tourism and land use on the Ningaloo Coast. The regional strategy was released concurrent with SPP 6.3, which provides a legislative implementation mechanism for the strategy.

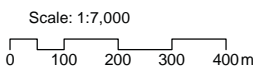
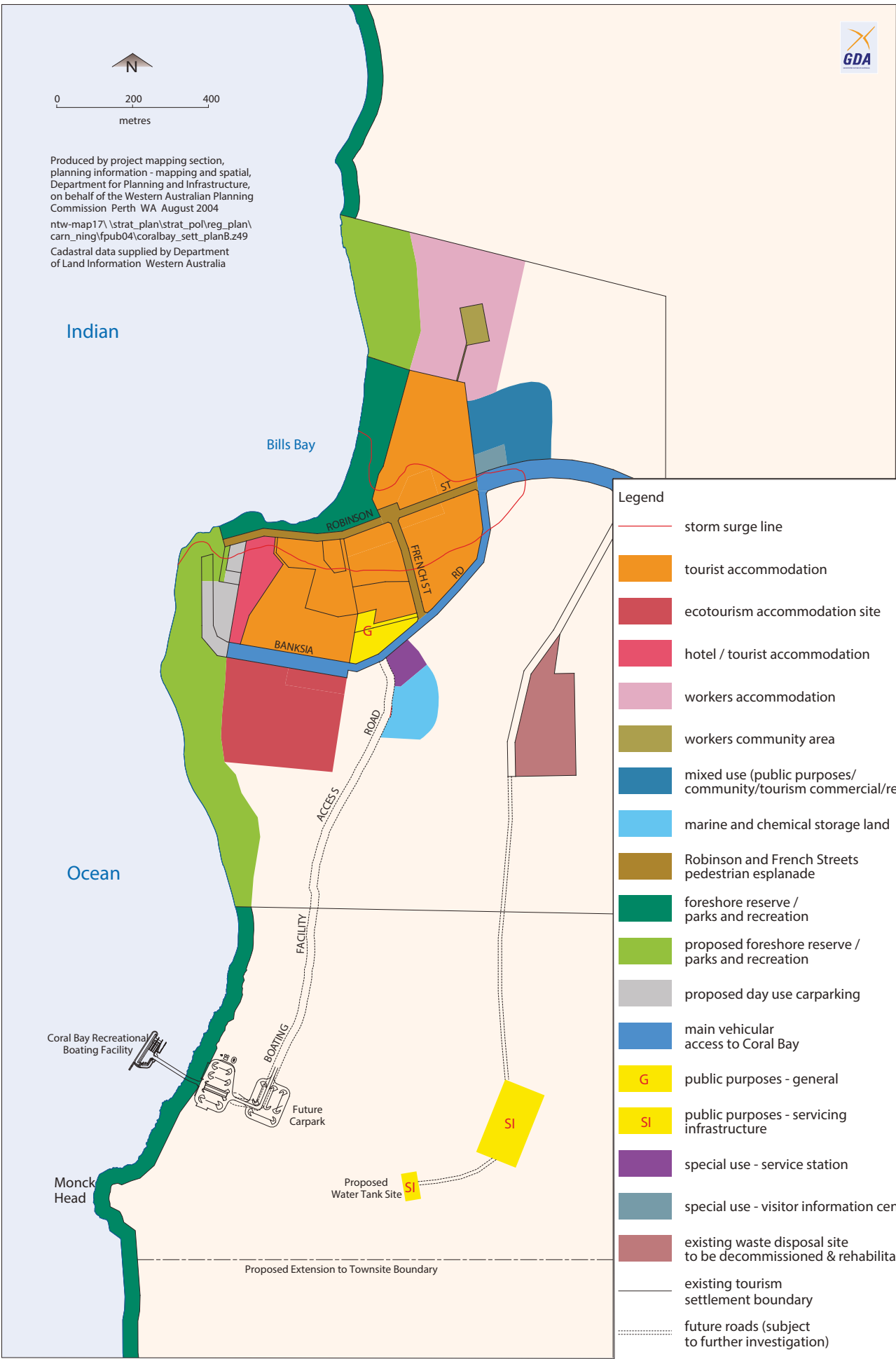
The strategy is comprised of a regional land use plan, a coastal tourism framework, planning and environment guidelines for sustainable tourism, and structure plans for Carnarvon, Exmouth and Coral Bay.

The strategy:

- Reinforces the role of Carnarvon and Exmouth as the key administrative and service centres.
- Recognises Coral Bay as the only tourism settlement in the study area. The role of the Coral Bay settlement being to provide a range of tourist accommodation, food services, groceries, limited automotive service, information, tours and packaged activity options.
- Establishes a coastal tourism framework for areas outside Carnarvon, Exmouth and Coral Bay. This framework has included Maud's Landing as a day use site, and the area of coast to the north and south of Coral Bay as 'semi-remote'.
- Defines a network of primary access roads which are owned and managed by Main Roads WA, including Coral Bay Road.
- Defines a network of coastal access roads which provide direct access to the coastal area and the majority of pastoral stations. Road standards vary and are generally the responsibility of local government.
- Includes the *Coral Bay Settlement Plan 2004* (Figure 4) which addresses planning, land use and infrastructure issues in the settlement and identifies a range of further studies to be completed.
- Proposes new governance arrangements for the Ningaloo Coast, including interim arrangements for the Western Australian Planning Commission to exercise development control over the coastal strip including Coral Bay.



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Shire of Carnarvon Coral Bay Structure Plan

Figure 4: Coral Bay Settlement Plan, 2004

Source: Ningaloo Coast Regional Strategy, 2004

Management Plan for the Ningaloo Marine Park and Murion Islands Marine Management Area 2005 – 2015

The plan was prepared by the former Department of Conservation and Land Management and WA Marine Parks and Reserves Authority in 2005. The plan sets out management strategies to protect the environment and ensure sustainable recreational and commercial uses. The plan has zoned the majority of Coral Bay under the Maud's Sanctuary Zone; recommended a number of research and monitoring programs associated with the Coral Bay marine environment and the impact of human activities; and considered requirements for management of recreational activities.

Gascoyne Regional Planning and Infrastructure Framework (2014)

This strategic framework has been prepared for the region, which encompasses four local governments – the Shires of Carnarvon, Exmouth, Shark Bay and Upper Gascoyne. The objectives of the framework are to:

- Provide the regional context for land-use planning in the Gascoyne.
- Provide an overview of the major regional economic, social, cultural and environmental issues.
- Identify the priority actions required to enable comprehensive regional planning and to guide local planning processes.
- Indicate the regional infrastructure projects to facilitate further economic and population growth in the Gascoyne.

2.5.4 Local Planning

Shire of Carnarvon District Zoning Scheme No. 11 (DZS 11)

The Shire's DZS11 was Gazetted in 1995, and applies to the whole Shire area with the exception of the Carnarvon townsite which is the subject of Local Planning Scheme No. 10 (Scheme 10). Scheme 10 and DZS11 form the principle land use planning control mechanisms in the Shire of Carnarvon, supported by policies to guide decision making.

Since adoption of DZS 11, ten amendments have been initiated, with six completed. Three of the completed amendments relate to planning in Coral Bay.

Aspects of the Scheme which are particularly relevant to Coral Bay are summarised below:

- The Coral Bay Settlement Zone covers the Coral Bay settlement, and requires all land use and development proposals to be:
 - Considered in the context of a Settlement Plan and the recommendations of the Coral Bay Taskforce Report on Infrastructure Requirements for Coral Bay.
 - Accompanied by a site development plan addressing a range of issues as set out in the scheme.
 - Able to be connected to public water and effluent disposal systems, address aesthetic and landscape considerations, and to not exceed 9 metres in height above natural ground level
- The Coral Bay Settlement Zone is divided into a number of planning precincts, with goals, provisions and use class permissibility set out for each precinct. The precincts are defined in Schedule 5 as follows:
 - Tourism – to promote short stay accommodation facilities and associated amenities.
 - Tourism Retail – to promote a mix of tourist related retail activities.
 - Foreshore Protection – to create a managed recreation environment, and balanced conservation and recreation activities.
 - Natural Environs Precinct – to maintain a natural backdrop to the Coral Bay Settlement while recognising development potential identified in the Settlement Plan.
 - Service Trades – an area for service industrial and service commercial uses with small scale enterprises.
 - Worker Accommodation Precinct – to provide a discrete residential village for residential occupancy by persons who need to reside in Coral Bay for business or employment.

- Maud's Landing is zoned Resort Development. The purpose of the Resort Development Zone is to enable planned and progressive development for a tourist resort in accordance with the Gascoyne Coast Regional Strategy. A comprehensive structure plan is required to be approved by the Minister for Planning prior to subdivision or development approval being granted.
- Coral Bay and Maud's Landing fall within the Ningaloo Policy Area, where it is Council's intent not to support further development outside Coral Bay and Maud's Landing. Any proposals would be required to develop an overall development plan and be referred to the Department of Parks and Wildlife (formerly Conservation and Land Management).

The Shire of Carnarvon Council resolved in February 2012 to undertake a review of DZS 11, a decision endorsed by the WAPC and published in the Government Gazette on 1 June 2012.

The CBSSP provides guidance for the review and amendment of the current DZS 11 or new local planning scheme, these Schemes will also enable the implementation of the CBSSP.

Coral Bay Settlement Plan 2004

Prepared as a component of the NCRS, the *Coral Bay Settlement Plan 2004* aims to guide land use and infrastructure for a 30 year period.

The following land use matters are addressed by the Coral Bay Settlement Plan:

- A limit on growth of the settlement to 3600 overnight visitors (tourists) and 400 semi-permanent workers (including their families), and a further 500 day visitors.
- A mixed use (public purposes/community/tourism commercial/retail) area to cater for government offices, community needs and any potential future expansion of tourism commercial/retail uses.
- New sites for the relocation of the service station; and marine and chemical storage uses
- No new development permitted within the storm surge area.
- An option for emergency and minor recreational boating repairs to occur either at the service station site or the marine and chemical storage site.
- Robinson Street to be subject to future planning as a pedestrian mall, allowing for staged implementation of a shaded, safe, walkable environment with passive recreation opportunities.
- Road layout, access and parking to be subject to future planning for a pedestrian oriented settlement, with upgrades to Banksia Drive to support the pedestrianisation of Robinson Street, and consideration to boat and trailer parking in all new development.
- The identification of an area to accommodate a purpose built workers accommodation facility on leasehold title, with its own community area separate from tourist accommodation.
- Freehold or leasehold residential land – the prevention of any residential land in Coral Bay, (redirected to Exmouth and Carnarvon) apart from the provision of workers accommodation facilities. The Ningaloo Coast Regional Strategy did not support permanent residential land release because of the environmental sensitivity of the area, the increased demand for infrastructure and the objective of the strategy to direct residential land development to Exmouth and Carnarvon.
- Subdivision of land not to be supported until the long term planning objectives for the settlement have been finalised with provision of appropriate public infrastructure and workers accommodation, and inventory of existing accommodation and other relevant studies.
- Tourist accommodation to promote variety, and retention of a minimum of 50 per cent of tourist accommodation for camping and caravanning.
- An ecotourism accommodation site.
- Dedicated, adequate foreshore reserves, including incorporation of Lot 54 Robinson Street.
- Public purposes land required for infrastructure and servicing, including water and power.
- Visitor information centre site.
- Decommissioning of the existing waste disposal site.
- A Coral Bay recreational boating facility at Monck Head.



The Settlement Plan identified a number of further studies that required undertaking including:

- Storm surge study
- Nutrient and drainage management plan
- Tourist accommodation inventory
- Local tourism planning strategy
- Local commercial strategy
- Traffic, access, permeability and transport study (including process for pedestrianisation of Robinson Street)
- Accommodation needs of workers at Coral Bay

2.5.5 Overall/Outline Development Plans

See Figure 5 - Coral Bay Outline Development Planning Context

Coral Bay Workers Accommodation Village Outline Development Plan (BAC Village, 2010)

This outline development plan, prepared by Hames Sharley on behalf of the Baiyungu Aboriginal Corporation (BAC) establishes a framework for the development of workers accommodation on the site designated for this purpose in the *Coral Bay Settlement Plan 2004*.

Key elements of the outline development plan are summarised below:

- The ODP provides for development of appropriate accommodation for workers that is away from the main tourist activity areas, with a further separation of permanent workers and less permanent single and seasonal workers and an area for community recreation facilities.
- The ODP occupies a developed area of 14.10 hectares and an overall area of 33.275 hectares on Lot 308.
- When prepared it extends beyond townsite boundary into the Cardabia pastoral lease. It proposed the townsite boundary is amended which since has occurred.
- The site was located on unallocated crown land at the time the ODP was prepared and is currently undeveloped. It has subsequently been converted to freehold title (Lot 308) and contains the National Lifestyle Village's seasonal workers accommodation facility.

Bayview Coral Bay Masterplan (Bayview Coral Bay, 2007)

This plan provides a framework for future development of the Bayview Coral Bay landholdings. The key elements of the Masterplan include:

- Provides for a total of 2190 beds, including 1096 caravan and camping beds (828 caravan and camping beds to leasehold Lot 52. Lease to expire in 2040).
- Identifies a series of precincts to be developed or redeveloped including:
 - Private leasehold holiday homes
 - An adventure camp
 - 3 star motel
 - Backpackers
 - Commercial precinct
 - Caravan and camping on lot 52 (leasehold) and lot 2 (freehold)
 - Lodge and tourist villas
 - 4 star resort
 - Chalets
 - Serviced apartments
 - Service area and cooling pond
 - Function centre and community activities.
- Includes precinct plans, a pedestrian strategy, vehicle access and parking recommendations.

- Requires the retention of the reception and café building adjacent Robinson. The owners are prepared to support relocating the reception to Banksia Drive at the end of its operational life.
- Vehicular access on French Street is required however the road should be low-speed and pedestrian friendly with on-street parking.

Ningaloo Coast Resort Overall Development Plan (Batavia Holdings Pty Ltd, 2010)

The ODP was prepared over vacant land (Lot 10) at the rear of the People's Park Caravan Village. Key elements of the plan include:

- Recognition that 39% of people visiting People's Park Caravan Village are international travellers.
- The remainder of Banksia Drive (500 m) and car park must be completed to ensure the viability of the development, to enable the development of an eco-resort south of Banksia Drive and to pedestrianise Robinson Street.
- Key design, operational and management initiatives include: sustainable eco-sensitive design (breeze paths, AAA, energy efficient), eco-tours.
- 4-star villas and studio apartments to a maximum height of 7.5 m.
- If Robinson Street is closed to vehicles, the operators of the People's Park Caravan Park is prepared to relocate the entrance, reception and associated facilities to Banksia Drive.
- 32 one-storey studio units and 49 one and two storey villas totalling 264 beds.
- Manager's residence.

Coral Bay Shopping Village Overall Development Plan (Batavia Holdings Pty Ltd, 2011)

- This is the overall development plan for the Coral bay Shopping Village at Lot 12 Robinson Street. The intent of the ODP is to provide an expansion which provides for retail and tourist services and redevelopment of the site up to 10 commercial tenancies. Implementation of the plan will required the removal of the existing fuel tanks and pumps

Ningaloo Reef Resort Overall Development Plan (Aspen, 2012)

This plan will enable the redevelopment of the Ningaloo Reef Resort to accommodate up to 264 beds. Key elements of the plan include:

- The subject site consists of Lot 1 that contains the Ningaloo Reef Resort, Lot 54 contains a house which was subject to a lease and Lot 68 contains a sewerage pumping station.
- The portion of Lot 501 located within the subject site is vacant and unused at present.
- Aspen, the owner of Lot 1, is currently in negotiations with the Crown (State Land Services) to purchase or lease lots 54 and 68 to allow for the extension of the resort. It is expected that the future development application will include an application for amalgamation of the different portions.
- The proposed development will only have vehicular access from the south via Banksia Drive, as the northern side will have an interactive pedestrian frontage via Robinson Street, which is set to become a pedestrian mall according to the Settlement Plan and Foreshore Management Plan.
- Access to the main buildings will be through a forecourt, which will include landscaping and seating areas for patrons. An additional landscaping area will also be provided that includes an attractive green grotto. None of these features include substantial structures so it is located within the recommended coastal setback.
- The Hotel and Tavern Area will serve the whole of the Coral Bay town site, and will contain the main entrance to the resort. It is proposed to be three storeys high.
- Just south of the Hotel and Tavern will be the 'Entry' area, containing lobby and reception areas.

- To the east of the Hotel is a sheltered Recreation area, which will include a pool and grassed areas of relaxation sheltered from the often windy prevailing breeze.
- In the eastern and southern section of the site the accommodation areas will be developed.

2.5.6 Other Relevant Plans

Coral Bay Foreshore Management Plan (Department of Parks and Wildlife, 2011)

This plan was initiated by the former Department of Parks and Wildlife (DPaW) in March 2006 and was put on hold in 2007 as a draft report until further funding and development strategies could be resolved.

In April 2010 DPaW re-engaged Ecoscape to update and complete this management plan with the inclusion of detailed landscape concept plans for Baz's Park and Fletcher Hill. These initiatives are based on extensive community stakeholder consultations carried out in 2006 and in 2010 to confirm any shifts in community priorities associated with several new development proposals including:


- The proposed development of an eco-resort to the south of the current town site.
- The proposed development of a 4 star resort west of the shopping centre.
- The proposed development of a new car park east of Fletcher Hill.
- The potential closure of Robinson Street and extension of Banksia drive around the south side of the town site to the proposed car park at Fletcher Hill.
- The proposed extension of the town site north for additional workers accommodation and camping facilities.
- The operations of the new Marine Facility at Monck Head.

The study area was divided into High, Moderate and Low Use zones and activities were identified based on level of use, primary activity and priority of implementation.

Each management zone has a detailed set of management issues and recommendations; followed by a series of opinions of probable cost divided into key stakeholder responsibilities to ascertain where funding is needed to deliver these strategies.

The recommendations highlighted for the areas adjacent the Robinson Street precinct including Fletcher Hill and Baz's Park will play a key role in informing the local structure planning process for the town centre of Coral Bay. Key recommendations that will inform the Structure Plan include:

- Land Ownership
 - Amend land tenure from UCL to Foreshore Reserve under the DPaW management to ensure consistent future management efforts are applied to the foreshore in its entirety.
- Drainage
 - Ensure all car park drainage is captured and infiltrated as close to source as possible before draining into the foreshore reserve and Bills Bay.
- Environmental
 - Eradicate noxious weed species including Buffel grass and monitor success using quadrat-based, long term sampling using identified bush regeneration techniques identified in the Foreshore Management Plan.
- Recreational Amenities
 - Utilise Baiyungu Track as the main north-south track (Primary Path) and connect identified Secondary Paths providing access to the beach from the Baiyungu Track and into the town site using best practice track design including Australian Standards.
 - Provide directional and management signage to designated beach access including emergency or special condition access requirements.
 - Provide clear management signage for boating access, wind surfing, kite surfing and jet skiing to minimise potential user conflicts.
 - Relocate toilet block to southern end of proposed car park at Fletcher Hill integrating grey water recycling, passive environmental design and nominated sustainable materials.

- 
- Relocate fish cleaning facility to the Coral Bay Maritime Facility.
 - All turf areas to be irrigated with an automatic system, and managed with an established maintenance agreement and contained by pathways on all sides.
 - Ameliorate visual impacts of car park with irrigated tree planting and associate parkland amenities.
 - Design to cater for visitors accessing the lookout from the proposed car park.

Coral Bay Access Study (Department for Planning and Infrastructure, 2009)

This study was prepared for the then Department of Planning and Infrastructure in 2009. It responds to the recommendations of the NCRS supporting pedestrianisation of Robinson Street, with Banksia Drive as the principle access route, servicing established and proposed uses to the south of the settlement. The study addresses four locations: entry to Coral Bay; access to the Coral Bay airstrip and (proposed) workers village site; access to the eastern boundary of Lot 46 Robinson Street; and the extension of Banksia Drive and the western car park, including access to adjoining lots. The study provides and costs design options for each location.

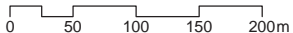


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Shire of Carnarvon Coral Bay Settlement Structure Plan
Figure: 5 Coral Bay Overall/Outline Development Planning Context

3. Biophysical Site Context

3.1 Climate and Climate Change

Climatic Influences

The Gascoyne region experiences a varied climate ranging from hot and often inhospitable extremes in summer; to balmy pleasant temperatures in winter. High rainfall during the summer months, influenced by storm and cyclone events is offset by the high evaporation rate; this is expressed through the arid and parched environment.

The climate of the study area is classified, arid, with two seasons; a hot summer which extends from October to April and a mild winter from May to September. The hottest month is January with mean maximum temperatures of 37.9°C and the coolest month is July with mean minimum temperatures of 24.1°C (DAL Science and Engineering Pty Ltd, 2002a). Coral Bay area has an annual evaporation of about 2700 mm, which significantly exceeds the 200-300 mm typical annual rainfall. Rainfall can occur in summer and winter, with summer rainfall from cyclones being irregular but sometimes heavy. Lighter more regular falls occur in winter with June the wettest month of the year. The proximity of the reef system to shore is in part the result of the region's characteristically arid climate with low average annual rainfall and extremely low levels of run-off. Although arid, there is considerable variation in the climate both within the region and from year to year (Marine Parks and Reserves Authority, 2005).

Climate Change

Trends identified in the region continue to be generally consistent with that elsewhere in the world. Mean temperatures have increased as much as 0.1°C per decade over the past century, a faster increase in night time than daytime temperatures, and sea level has been rising at an average of about 20 mm per decade over the past 50 years (Intergovernmental Panel on Climate Change, 2001).

Significant potential impacts from climate change identified on Australasian land-based ecosystems included alteration in soil characteristics, water and nutrient cycling, plant productivity, species interactions, and ecosystem composition and function, exacerbated by any increases in fire occurrence and insect outbreaks. Aquatic systems would be affected by changes in runoff, river flow, and associated transport of nutrients, wastes, and sediments. These changes and sea-level rise would affect estuaries and mangroves. Australia's coral reefs were considered to be vulnerable to temperature-induced bleaching and possibly to sea-level rise and weather change (Intergovernmental Panel on Climate Change, 2001).


Wind Regime

The synoptic wind patterns in the Coral Bay region are largely controlled by the west to east movement of a belt of anti-cyclonic system which undergoes a seasonal latitude migration resulting in south to south westerly winds in summer and east to south easterly winds in winter (DAL Science and Engineering Pty Ltd, 2002a).

The sea breeze is a local scale phenomenon that is generated by the temperature differential between the land and the ocean (DAL Science and Engineering Pty Ltd, 2002b). Strong southerly sea breezes typically develop during summer afternoons, but on the western coast of the Cape the winds are predominantly from the south-west with velocities ranging from 1-3 m/sec to over 10 m/sec and the sea breeze develops by late morning (DAL Science and Engineering Pty Ltd, 2002a). Cyclonic winds although infrequent may be severe, exceeding speeds of 150 km/hr. Winds during Cyclone Vance (1998) were recorded in excess of 250 km/hr (Marine Parks and Reserves Authority, 2005).

3.2 Soils and Geology

The Coral Bay Settlement Structure Plan area is located within the Gascoyne Platform of the Southern Carnarvon Basin. The Gascoyne Platform is a structurally high area containing up to 5000m of faulted and



folded Ordovician to Devonian (488-359 million years old) rocks, comprising dolomite, sandstone, and shale. These sedimentary rocks are overlain by shale, sandstone, radiolarite, and siltstone of the 'Winning Group' (120-90 million years old). Overlying the Winning Group are younger (less than 90 million years old) limestones and calcarenites up to a maximum thickness of 300m. Although the younger rocks are cavernous in places, water supplies of significant quality and quantity are not utilised in the area. The sub-basin is comprised of a series of sediments that dip to the west. The sediments range in age from Quaternary, through Tertiary and Cretaceous to Devonian, which in turn rests on Proterozoic bedrock.

Beneath the area lies a series of calcarenites and limestones of Quaternary (Bundera Calcarenite) and Tertiary age (Trealla Limestone and Giralia Calcarenite). Although these sediments are cavernous in places, water supplies of significant quality or quantity are not harvested in the area. They have a maximum thickness of up to 300 m, but at the production bore total 200 m.

Below the limestones and calcarenites lie sediments of the Early Cretaceous Winning Group. They consist of up to 200 m of Gearle Siltstone, which overlies up to 70 m of Windalia Radiolarite, and roughly 10 m of Muderong Shale. These sediments consist of siltstone, argillaceous sandstone, clayey siltstone, marl and shale and do not contain any water source (Department of Water, 2010).

The basic geology of the Ningaloo region is characterized as a mixture of Pleistocene limestone and sands (GEMS 2005).

3.3 Landform and Topography

Landscape Character


Coral Bay townsite is located within the North West Cape Range landscape character type as defined by Reading the Remote (Calm, 1972). The North West Cape Range is characterised by the rugged limestone cliff landforms of the Cape Range. The range dissects the region, creating a backbone within the otherwise flat peninsula landscape with fringing coastal plains. The townsite sits in the narrow western coastal plain central to the Ningaloo Reef.

The western coastal plain is dominated by the dramatic visual contrast between the dark shaded ranges and the narrow coastal landscape. Strong sea breezes buffet the crystalline waters covering the diverse and spectacular Ningaloo Reef. Numerous gullies and creeks dissect the coastal plain, developed by scouring waters travelling down from the flat-topped plateaus of uplifted limestone through rugged canyons and deeply dissected ravines. Similar to the eastern plain, shallow channels cross the plain in parallel flow lines fanning sediment across the low lying terrain enhancing an ancient linear dune system.

Topography

In regards to its geomorphology, Coral Bay forms a component of what is known as the dune and cusped spit coast. This coastal environment is characterised by the existence of the Ningaloo Reef offshore (Thompson McRobert Edgeloe, 2005). The general topography of Coral Bay is dominated by linear sand dunes running in a north-south alignment. These often steep dunes form prominent ridgelines that provide some protection in inter-dunal swales from prevailing southerly and westerly breezes. The town site is nestled between these dunes creating an intimate scale for the town site and its physical setting on the coastline. A number of undeveloped parcels of land straddle the tops of dunes to the north and south sides of town that may require careful development height considerations to maintain an understated presence on the natural topography of this coastline. The landform and soil types do not place significant constraints on development of the area (Thompson McRobert Edgeloe, 2005).

Fletcher's Hill to the western edge of the town forms the predominant landform feature offering views across town and north across Bills Bay to Skeleton Bay and Maud's Landing beyond. There is also a large dune to the east of town that provides a natural 'gateway' effect for visitors approach by the only sealed road into



Coral Bay, with a number of crosses erected to the southern peak of this dune signifying in informal dog cemetery.

3.4 Flora and Fauna

There is a very limited selection of tree species that are likely to grow successfully in foreshore and near coastal locations. Wind is possibly a greater limiting factor than salt spray. Whilst there is a significant range of vegetation occurring naturally at Coral Bay, shrubs are the largest and the occurrence of trees is rare (Hames Sharley, 2010).

The pre-development vegetation complex is classified as 'Coastal Dunes (veg assoc. 662): Triodia Hummock grassland; shrub steppe; mixed acacia scrub and dwarf scrub with soft spinifex and Triodia basedowii' (Beard, 1975). Today, the townsite is dominated by Tamarisk (*Tamarix aphylla*) and a variety of exotic palm tree species. Tamarisk is an exotic species from America which is similar in appearance to the native Casuarinas. Another very invasive weed species, the Buffel grass (*Cenchrus ciliaris*) has destroyed and continues to compete with the local flora within the foreshore dune system. Erosion is also a major issue with this prominent coastal town as a result of uncontrolled access and poorly defined management responsibility along the coastal headland.

At Maud's Landing, a series of low foredunes extending parallel to the coastline support low and open hummock grassland, with approximately 50% total cover. The species composition is very simple. Immediately behind the foredunes is an open plain with an open shrubland dominated by *Acacia coriacea*. The firmer substrate and protection provided by foredunes corresponds to vegetation of a greater stature, and a more diverse species composition. There are no Priority species or species of particular interest present.

The parabolic dune system which covers most of Point Maud supports predominantly a Low Shrubland with isolated patches of larger shrubs. Flora species include *Acacia coriacea*, *Santalum spicatum* and *Heterodendrum oleaefolium*. A Hummock Grassland can be found on the foredunes along North Bills Bay. The vegetation here is species poor, much as it is on the foredunes at Maud's Landing. The dominant species is Spinifex longifolius, with clumps of *Atriplex isatidea* and *Acacia coriacea* shrubs emergent. One species, *Acacia ryaniana*, (Priority 2) on the Department of Parks and Wildlife's Priority list has been recorded in the area.


Overall, the vegetation can be described as good, if very dry. The open beach mainly provides perching and foraging habitat for birds and some larger lizards. Foxes, dingoes and feral cats may also be present. Wading birds are present seasonally (Goble-Garratt and Associates, 2002).

3.5 Groundwater and Surface Water

Water Form and Drainage

Located in a naturally formed swale, the town site is surrounded by north-south rows of a linear dune system. This low lying landform is also subject to storm surges during cyclonic events the extent of which is shown on the opportunities and constraints plan.

Coral Bay depends entirely on groundwater for its water supply. This is sourced from the main aquifer – the Birdrong Sandstone – which intersects Cretaceous sediments, and lies beneath the Muderong Shale. The aquifer is poorly indurated quartz sandstone of up to 30 m thickness. It is highly productive and provides abundant water to the Carnarvon Basin's many pastoral bores. The aquifer is confined, and has a substantial pressure head in this area. It is recharged where it outcrops or subcrops in the Gregory Range to the east of Coral Bay, though the recharge quantity is considered to be minimal. The water temperature of the aquifer is expected to be fairly high (55 – 60°C), as are the salinity levels (5000 – 6000 mg/L TDS). The production bore intersects the aquifer at 781 m where it is 34 m thick (Department of Water, 2010).



In 2005 the Water Corporation constructed a deep artesian bore 1/04 about 1.5 km south of the town. The bore intercepts the Birdrong aquifer at a depth of about 800 m. The depth and confined nature of the aquifer provide a high level of water quality protection. The potential risks to water quality posed by the land uses and activities in the water reserve (drinking water treatment facilities) are considered to be negligible (Department of Water, 2010).

3.6 Marine Environment

Ningaloo Reef

The Ningaloo Reef is the largest fringing coral reef in Australia, and is one of the longest fringing barrier reefs in the world. The Ningaloo Reef tract is formed from a series of discontinuous barrier reefs and lagoonal reefs off the west side of North West Cape. The reef is unique, as it is one of only a few places in Australia where thriving growth of coral occurs in close proximity to the mainland shore (Environmental Protection Authority, 2002).

A large section of the Ningaloo Reef tract has been reserved in the Ningaloo Marine Park to protect the high conservation values, as well as allowing compatible use of its resources. The Ningaloo Marine Park is located in an overlap zone between the tropical Indo-West Pacific and the temperate Southern Australian biogeographical zones. Consequently, the waters of the Ningaloo Marine Park support a diverse flora and fauna consisting of assemblages of tropical and temperate species, a number of which are at the limits of their geographical ranges. Numerous marine species found in the Ningaloo Marine Park are listed under State and Federal legislation as well as in the International Union for the Conservation of Nature Red List.

The Ningaloo Marine Park (State and Commonwealth Waters) is utilised by migratory marine species including the humpback whale (*Megaptera novaeangliae*) and the whale shark (*Rhincodon typus*). The conservation status of these species is endangered and rare respectively. The annual autumn migration of whale sharks has triggered the development of a significant tourism industry in the Marine Park. Other migratory marine mammals have been observed, including the endangered blue whale and the vulnerable fin whale. Various bird species listed under the Japan Australia Migratory Bird Agreement and the China Australia Migratory Bird Agreement also use the Ningaloo Marine Park foreshore. The dugong (*Dugong dugong*) is present in the Marine Park. Three species of sea turtle utilise sections of the Park for breeding, including the green turtle (*Chelonia mydas*), the hawksbill turtle (*Eretmochelys imbricata*) and the loggerhead turtle (*Caretta caretta*). These species are listed under State and Federal legislation due to their significance to biodiversity conservation. The Ningaloo Marine Park is vested in the Marine Parks and Reserves Authority (MPRA) (Environmental Protection Authority, 2002).

Ningaloo Coast World Heritage Recognition

The Ningaloo Coast World Heritage nomination was submitted to the World Heritage Committee by the Australian Government in January 2010, with the support of the Western Australian Government. Consultation on the nomination was undertaken since 2004. During 2010 and early 2011, the nomination was assessed by the International Union for the Conservation of Nature (IUCN) and the World Heritage Committee. The committee decided to inscribe the Ningaloo Coast on the World Heritage List on 24 June 2011.

The Ningaloo Coast was inscribed on the World Heritage List for its natural beauty and biological diversity. In particular, the listing recognises the:

- Striking natural landscapes of Cape Range and Ningaloo Reef.
- High biological diversity of the reef.
- Opportunity for visitors to encounter one of the world's largest annual aggregations of whale sharks, as well as other marine mammals, turtles and manta rays.
- Unusual diversity of marine turtle species.

- Rare and diverse plants and animals of Cape Range, particularly the subterranean cave creatures.

World Heritage listing is the highest global recognition of the importance of a site. World Heritage listing:

- Recognises the significance of the Ningaloo Coast at an international level as one of the world's best examples of natural heritage.
- Creates an obligation on the Australian and Western Australian governments to ensure the World Heritage values of the area are conserved so existing and future generations can enjoy them.
- Creates the requirement for development proposals that are likely to significantly affect World Heritage values, including relevant actions that occur outside the boundaries of the World Heritage Area, to be referred to the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

3.7 Cyclone Hazard and Coastal Processes

Coastal Processes

The coastline structure is governed by Ningaloo reef system and the existence of rock deposits towards the shore. The reef system fluctuates in continuity and depth, causing significant changes in the shelter provided in its lee. The structure of the reef defines preferential flow pathways, creating various unusual coastal processes. The shoreline that results from such processes is a sequence of embayments, tombolas and cusped forelands. The shelter provided by reefs is affected by water depth, causing the shoreline response to storm events to be highly dependent on the corresponding surge and coincident tide.

Coral Bay is situated at the southern end of Bills Bay, which lies between Point Maud and Monck Head. The embayment bed is almost entirely covered with reef corals, which typically reach 2-3 m to a level of approximately lowest astronomic tide (GEMS, 2005).

The embayment bed is made up of a limestone pavement, which is overlain by a thin layer of sand. The town site is positioned directly east of Fletcher Hill, which separates sandy shoreline to the north, and rocky shoreline to the south. The shoreline located in front of the town is a sandy beach facing the north, which accumulates in the lee of Fletcher Hill. The beach is a natural accumulation point under prevailing conditions; however it is possible that a considerable amount of this material would mobilise in a cyclonic event. Due to shelter from both wind and wave, accumulating material builds a flat beach structure which has a very low fore-dune roughly 1m above the high water mark.

The settlement extends into the swale behind the fore-dune, which spreads for a substantial distance before intersecting the secondary dunes. The shoreline directly to the north of the town site is characterised by a limestone shore platform, which is overlain by a thin layer of sandy beach. A sharp transition to a steeply scarped foredune occurs at the high water mark, rising up to 12 m high and extending parallel to the shore platform. The dunes located behind the frontal dune are not parallel, but are indicative of Aeolian morphodynamics.

South of Fletcher Hill, the dune field is indicative of gradual progressive accretion, with a narrow sandy beach, moderate foredune, high primary dune and secondary dunes. The height of Fletcher Hill and the dunes southwards suggests that much of this area has a limestone base. Limestone shore platforms and low limestone cliffs exist south of Paradise Beach, towards Monck Head (GEMS, 2005).



Cyclone Hazard

Occasional, but intense, tropical cyclone activity is experienced in the Coral Bay area from January to March. Rain is associated with this activity, as well as the passage of less intensive cold fronts in winter. Winds are primarily south to south west in summer and east to south east in winter. Furthermore, strong southerly sea breezes develop in summer afternoons. Storm winds may arise from cyclonic activity during summer and mid latitude depressions in winter.

Wind direction during cyclonic events is highly variable. Such events occur in the region approximately every three to five years. During cyclonic events, wind speeds often exceed 90 km/hr. The region can experience category 5 cyclones with destructive storm surge and wind speeds in excess of 200 km/hr. A category 5 cyclone has not yet been recorded in the immediate vicinity of Coral Bay.

This climate combined with seasonal strong winds requires particular attention to design and sustainability principals in order to create a pleasant environment for tourists and an adequate response to possible cyclonic events (Thompson McRobert Edgeloe, 2005).

Among the key considerations for the development of Coral Bay is the potential for risk to property and life from storm surge in extreme weather events. Further assessment of storm surge may be required as part of particular development applications or as additional information becomes available (Thompson McRobert Edgeloe, 2005).

The worst case track Category 5 storm will reportedly produce a peak steady water level of 3.2 m for the 2100 sea level increase (GEMS, 2005). However, a 2010 report by the Department of Transport recommends that a vertical sea level rise of 0.9 m be applied when considering the setback distance and elevation to allow for the impact of coastal processes over a 100 year planning timeframe. Theoretically, this corresponds to an increase to 4.1 m AHD. This value is to be adopted in the structure plan (DAL Science and Engineering Pty Ltd 2002c). Figure 10 – Opportunities and Constraints demonstrates the extent of storm surge inundation.

4. Sociocultural Context

4.1 Indigenous Heritage and Native Title

The area of the Ningaloo Marine Park including Coral Bay has significant Indigenous heritage values associated with historical and current use by indigenous people. Archaeological evidence from the Cape Range peninsula indicates that Indigenous people have inhabited and used the coastal resources of the Ningaloo coast for over 30,000 years.

To date there has not been a determination of native title in the area the subject of this Structure Plan.

The Gnulli People (WAD 6161/1998) are the registered native title claimants over an area which includes the Coral Bay Structure Plan area. The Gnulli native title claim covers approximately 87,876 km² of land and sea in Gascoyne/Murchison region. It lies in the Shires of Ashburton, Carnarvon, Exmouth, Shark Bay and Upper Gascoyne.

Compliance with the Commonwealth *Native Title Act 1993* (NTA) is required before Unallocated Crown Land (UCL) or non-exclusive tenure can be developed in a way that would affect the continued exercise of native title rights and interests, such as creation of new freehold titles or other tenure with a right to exclude others. Yamatji Marlpa Aboriginal Corporation (YMAC) is the legal representative for the Gnulli Claim Group.

The BAC, which is not a Registered Native Title Body Corporate, has purchased and is managing Cardabia Station, near Coral Bay.

In Western Australia, indigenous heritage is protected under the *Aboriginal Heritage Act 1972* (AHA).

Heritage Sites

Two Registered Aboriginal Heritage sites were identified within the study area (Table 2 and Figure 7). It should be noted however that other sites of significance, as defined by the AHA, are likely to fall within the Structure Plan area but, for various reasons, may not currently be on the Register of Sites. All sites of significance, as defined under the AHA, are protected whether they are registered or not. It is incumbent on land owners and proponents to ensure that development complies with the AHA.

Land owners and proponents should refer to the State's Aboriginal Heritage Due Diligence Guidelines² to undertake their own assessment of the likely risk of impacting a site of significance prior to development, to assist in complying with the AHA.

Site ID	Site Name	Site Details*
159	Coral Bay 02	Artefacts / Scatter, Midden/ Scatter
6616	Coral Bay Access 2	Artefacts / Scatter, Midden/ Scatter

Table 2 - Registered Aboriginal Heritage Sites

² Available from the WA Department of Aboriginal Affairs:

http://www.daa.wa.gov.au/Documents/HeritageCulture/Heritage%20management/AHA_Due_Diligence_Guidelines.pdf



Figure 7 - Registered Aboriginal Heritage Sites. Source: Department of Aboriginal Affairs online search

An Agreement between the BAC and the Western Australian Government was announced on 23 March 2006 and signed in June 2009, facilitating planned expansion of the Coral Bay town site.


4.2 European Heritage

The first recorded non-indigenous contact with North West Cape was a sighting by the crew of the Dutch ship *Zeewolf* in 1618. Later in the same year, the first known landing was made by Captain Jacobz of the ship *Mauritius*.

The area has an extensive maritime history, such as the lighthouses for passing vessel traffic and the whaling trade, with numerous shipwrecks resulting from the number of vessels that plied the coast. American whalers operated in the area as early as the 1790s, some 90 years before the land was utilised by pastoralists for grazing. Whaling at this time was a ship-based operation and, while it is likely landings were made to acquire fresh water and possibly fresh meat, no infrastructure was established on land. The whalers are reported to have initially targeted sperm whales and later, in response to a better understanding of whale migrations, humpback whales.

The pastoral industry commenced with the establishment in 1876 of Minilya Station, which originally encompassed the whole of the Cape Range peninsula. This area was progressively subdivided into the present station areas, with Yardie Creek, Ningaloo, Cardabia and Warroora Stations occupying the western coastline. Yardie Creek Station was subsequently acquired by the Western Australian State Government to form part of the Cape Range National Park.

There are no recognised European Heritage sites within the study area; however, there are remains of a whaling factory at Norwegian Bay north of Coral Bay that provides a glimpse of the industry that existed from 1913 till 1957. Shipwrecks are of great interest to many visitors since they provide a tangible link with the



history of the reserves in a dynamic environment. Submerged wrecks can also provide dive sites that combine a historical and natural experience due to the array of marine life that accumulates on and around the wrecks (Michael Robinson and Associates, 2002).

There is also a lighthouse at Vlamingh Head, northern tip of Cape Range National Park, which represents one of the area's most visual human landmarks. The lighthouse was decommissioned in 1967 (Marine Parks and Reserves Authority, 2005).

4.3 Tourism

The Ningaloo Coast attracts large numbers of interstate and international visitors despite its remote location yet Coral Bay experiences a higher proportion of visitors from within Western Australia. This is primarily due to the popularity of the settlement to visitors, especially families seeking accommodation within caravan parks and due to its location in close proximity to the sheltered and shallow beach at Bills Bay. Coral Bay exhibits the characteristics of a coastal resort with an accommodation focus on caravan parks (Jones et. al, 2009).

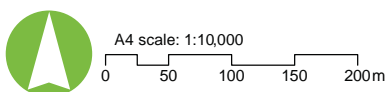
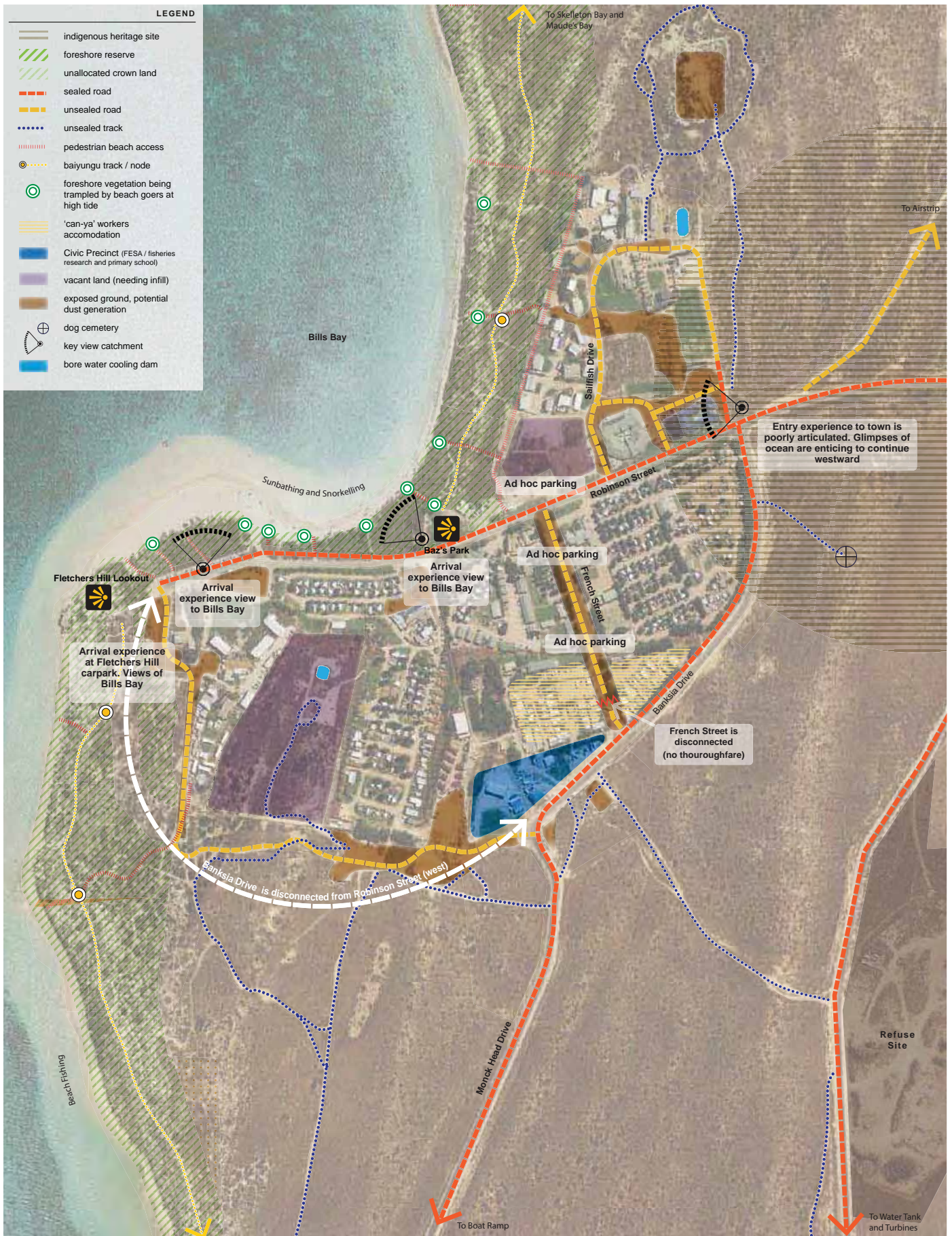
Research and extensive visitor surveys undertaken by the Cooperative Research Centre for Sustainable Tourism has determined that the primary attraction to Coral Bay and the Ningaloo Coastal Regions is the natural environment with the Ningaloo Reef being the region's major draw card. Surveys have provided the following key findings:

- Snorkelling is the most important recreation activity in the region.
- Word of mouth is the most common source of information, which thus places great importance on visitors enjoying their time in the region.
- The main visitor type to the region is primarily self-drive visitors who are seeking nature-based experiences, to escape from the cold and to get away from it all.
- The remoteness is a key factor in both ensuring that the environment retains the values attractive to visitors and in creating a place where people feel they can escape from urban living.
- There are different activity patterns and travel patterns between Western Australian, interstate and international visitors, and age is an important factor in understanding length of stay (older visitors stay substantially longer).

Tourism Research Australia data for the Shires of Carnarvon and Exmouth revealed that over the years 2010 to 2012 the average estimated number of visitors to Carnarvon and Exmouth was approximately 59,700 to 191,300 respectively. While Carnarvon records 25% more visitors than Exmouth, Exmouth records a 20% higher estimate of total visitor nights owing to the longer average length of stay for holiday purposes.

What is notable is the number of visitors that visit both local government areas. 34,000 visitors or 32% and 39% of the total visitors to Carnarvon and Exmouth respectively visit both Shires. This translates into an estimated 291,000 total visitor nights activity from travellers visiting both Carnarvon and Exmouth. 68% of those visitors are from within Western Australia.

The Sociocultural conditions of Coral Bay are presented in Figure 8.



5. Economic and Social Context

5.1 Population and Demography

The 2011 Census recorded a resident population in Coral Bay of 254. This figure grew 32% (82 people) from the 2006 Census. The settlement's population remains artificially low because of the paucity of residential accommodation and the historical lack of developable residential land. This situation is at the core of the settlement structure planning which addresses, to some degree, the role and function of the settlement as a population centre and its potential to cater for increased numbers of residents, workers and visitors.

The average household size is 1.7 persons, compared with the State average of 2.5 persons per household. The median household income of \$680 is less than half the state average with 50% of the households having a weekly income of less than \$1,000 and 22% having a weekly income of less than \$600. The median individual income of \$612 is approximately 9% below the State average meaning that a significant percentage of the households in Coral Bay survive on a single income. More than 86% of the households in Coral Bay comprise couples with no children; this is nearly 130% higher than the State average.

Tourism is discussed in section 4.3 above.

5.2 Service Provision

The current provision of retail/commercial floorspace in Coral Bay amounts to approximately 2,290m² and is distributed across four main areas being the Coral Bay Arcade Shopping Centre, Ningaloo Reef Resort, Reef Cafe and Bayview Caravan Park reception and the Coral Bay Shopping Village. There is an estimated 650m² of supermarket space across two sites with the larger of the sites (approximately 432m²) located in the Coral Bay Arcade Shopping Centre which also accounts for approximately 58% of all Coral Bay floorspace.

5.3 Demand Modelling and Development Implications

Determining the projected demand for retail and commercial floorspace for Coral Bay at different development thresholds requires scenario modelling of expenditure derived from residents, visitors and workers in the settlement. Each of these user groups will have different expenditure profiles and behaviours and the pool of expenditure generated from them will be impacted by factors such as seasonality and the extent to which expenditure that could occur in Coral Bay escapes to other locations.

Presently, the annual pool of captured expenditure in Coral Bay across the categories of convenience retail, food and beverage, recreation and equipment and other is estimated at approximately \$19.5 million. Assuming different development scenarios, the pool of captured expenditure (in current dollar terms) from projected future residents and future visitor capacity is estimated at \$38.4 million; a potential 97% increase on current estimates. Assuming this pool of expenditure and depending on different floorspace turnover estimates, the requirement for additional floorspace in Coral Bay may range from up to 6,200 to 8,500 m². Additional commercial floorspace can be provided by accommodation providers to cope with the demand generated by their respective growth.

6. Infrastructure and Utilities

6.1 Coral Bay Reverse Osmosis Water Desalination Plant

A plan developed by the Department of Water that sets the standards required to protect the potable drinking water source that supplies Coral Bay. The plan provides information on the existing supply and demand for potable water in Coral Bay and describes the future capacity of the facility.

Some key points relevant to the Coral Bay Settlement Structure Plan:

- Coral Bay's water is sourced from the Birdrong aquifer, which is part of the Carnarvon Artesian Basin. The confined sandstone aquifer is recharged in the Gregory Range east of Coral Bay.
- A deep artesian bore 1/04 about 1.5km south of Coral Bay was constructed in 2005. The bore intercepts the Birdrong aquifer at about 800 m depth.
- Risk of contamination of the water source is considered negligible due to land uses in the area and water reserve (treatment facility) and also due to the confined nature of the aquifer.
- The water treatment facility land and water tank land should be formalised under the Carnarvon District Zoning Scheme.
- Water from bore 1/04 is pumped to cooling tanks before being desalinated by reverse osmosis and disinfected. Water is then pumped to the 800kL holding tank further south and then fed by gravity to the settlement.
- The plant can provide up to 200kL per day (73,000kL per year). Its capacity can be increased to 400 kL per day should demand increase.
- Current water demand in Coral Bay fluctuates between 30 to 95kL per day depending on the number of visiting tourists.
- The Department of Water has granted groundwater licence 156265(1) to the Water Corporation to abstract 330ML per year from the Carnarvon – Birdrong to supply drinking water to Coral Bay.

The Water Treatment Plant location is identified in Figure 9 – Water Corporation Infrastructure.

6.2 Coral Bay Wind Diesel Electrical Power System

Coral Bay's wind diesel power station is considered one of the most environmentally friendly power supplies in Western Australia. The facility consists of a combination of wind turbines, innovative flywheel energy storage system and modified diesel generators. The power station was officially launched in August 2007. Key elements of the design and operation of the facility include:

- The facility consists of three 275kW wind turbines, seven 320kW containerised low-load diesel generators, a 500kW flywheel energy storage system, two 81,000L bulk diesel storage tanks and a 2000L diesel day service tank.
- The system saves approximately 500,000L of diesel which equates to a greenhouse gas emission reduction of 1300 tonnes a year.
- The wind turbines can be laid on the ground for maintenance or during bad weather such as prior to cyclonic storm events.
- At times the wind turbines can deliver more than 90% of the settlement's electricity however; on average more than 60% of Coral Bay's electricity supply per year is generated by the wind turbines.
- Peak current draw on the system is approximately 100kW per day. The system has ample capacity to enable expansion to the Coral Bay townsite population.
- The power station is owned and operated by Verve Energy. Horizon Power owns and operates the underground distribution network and retail electricity to customers.



6.3 Water Corporation Waste Water Treatment Site

DM Civil were engaged by the Water Corporation to construct the complete sewerage scheme for Coral Bay. This comprised construction of 967m of sewer reticulation within the town site, a 9m deep type 40 sewage pumping station, 4,578m of pressure main and 4 wastewater treatment ponds, situated approximately 4km east of town.

Various innovative techniques were used to minimise environmental impact. Dewatering product disposal was piped or transported to a remote location away from the townsite. Bentofix X1000 bentonite impregnated matting was used as an impervious treatment pond liner. In addition, as Coral Bay is rated a cyclonic area, sewer access chamber covers were anchored to the bases by casting eyelet fixings in the two components and using stainless steel cables and turnbuckles to connect them. This vital infrastructure project ensured that Coral Bay and its natural surroundings are free of pollution from discharge that previously filtered onto existing vegetation, into groundwater or the ocean.

The treatment facility has the capacity to treat wastewater for up to 4000 people. Any increase of the population beyond 4000 would require expansion to the current infrastructure. Expansion of the facility is possible but will require additional pond(s) and associated infrastructure.

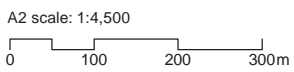
Water Corporation Infrastructure in the Coral Bay Settlement area is presented in Figure 9.



Map By: S.M. P:\GIS\Projects\230187_Coral_Bay_Structure_Plan\WaterCorp_Infrastructure_Map102.mxd 16/10/2012 16:44

Legend

Aerial Image Vintage October, 2011



Date: 16/10/2012 Version: 1 Job No: 230187
 Coordinate system: MGA Zone 49

Shire of Carnarvon Coral Bay Settlement Structure Plan

Figure 9 : Water Corporation Infrastructure

6.4 Shire of Carnarvon Refuse Disposal Site

The landfill site is located less than 1 km south east of Coral Bay on Sanctuary Road. The landfill is operated for the Shire of Carnarvon, by John Farne Contractors under license by the Department of Environment Regulation.

The landfill is sited within a limestone pit excavation of limited capacity. There is limited suitable heavy earthmoving equipment available locally to excavate further pits or to provide ongoing supplies of cover material.

A main landfill pit is used for municipal solid waste (MSW) and commercial and industrial (C&I) waste. C&I and other dry wastes are placed at the bottom of the excavation and MSW waste placed at the top and pushed over the dryer waste. Material from the excavation is used as cover and consisted of coarse limestone rubble. A separate pit is provided for fish offal and is located near the entrance to the site. The remaining life of the landfill is uncertain but will be determined by management practices. The Shire of Carnarvon has identified a site for a replacement landfill 6km from town, adjacent to the Coral Bay wastewater treatment facility.

Issues regarding the operation of the site include the high cost of transport inhibits recycling, green waste is unable to be burnt due to the close proximity to town, there is no power or water on site to assist with site development and limited signage (Bowman & Associates Pty Ltd, 2009).

6.5 Open Space

Public open space in Coral Bay is formalised at Baz's Park within the Foreshore Reserve and is currently managed by a combination of Department of Parks and Wildlife staff, primary land owners, maintenance staff and the Shire of Carnarvon depending on the management tasks at hand.

The beach areas of Bills Bay and Paradise Beach are the most popular open space recreation areas in the town, and have high visitation. At high tide, these areas are consumed by rising sea water that drives visitors either into the water, into the dune vegetation, to Baz's Park or back to their accommodation.


Irrigation is supplied by the Bayside Coral Bay's bore water supply to the south of town. This water is of a poor quality with high mineral salt and algal content necessitating a high level of application to maintain green turf. The availability of bore water is abundant, however all supply facilities under current use are in private ownership.

6.6 Pedestrian and Vehicle Movement

Coral Bay is a tourism destination due to its location and proximity to the Ningaloo Reef. It has a small permanent population, which is augmented by a large transient population in peak seasons by visitors to the region. Therefore, there is a strong pedestrian-orientated regime existing in the town where the main reasons for travel by visitors is to access recreational areas such as the beach, retail and commercial hubs and return to the various accommodation providers. Vehicle dependency by visitors is considered low as the 'walk-ability' radius of town is only approximately 350m.

Access into the town is via Coral Bay Road, off the Minilya-Exmouth Road. Many visitors to the region fly into Learmonth Airport in Exmouth and drive to Coral Bay.

Considered the 'main street' Robinson Street is both the principal pedestrian link through town and primary thoroughfare for vehicles to all tourist accommodation providers, and the retail and commercial centre. The perceived conflict between pedestrians and vehicles historically prompted the initiative to transfer Robinson Street into a pedestrian thoroughfare. The pedestrianisation of Robinson Street would; however, be subject to constructing Banksia Drive around the southern perimeter of town to the base of Fletchers Hill, providing



additional vehicle parking, and relocating accommodation providers' receptions and points of vehicular access to Banksia Drive. It would also prevent access to the only fuel outlet in town. This initiative may not provide the best outcome in terms of visitor experience or traffic circulation and may raise issues over safety in the event of town evacuation due to bushfire or cyclone.

Movement options are detailed within Figure 10 Opportunities and Constraints. Option A, which introduces one-way vehicular flow west along Robinson Street and the partial pedestrianisation of French Street, was the Working Group's agreed preference.

The Baiyungu Track is an initiative of the BAC and involved extensive consultation with numerous local and state agencies. The Baiyungu Track was launched by the Minister for Regional Development and Lands in April 2009 and will be a significant track along the Ningaloo coastline, with a series of interpretive elements and its track head located in Coral Bay.

There are no formalised cycle or dual use paths through and around Coral Bay, representing a a major opportunity for the area.

6.7 Coral Bay Airstrip

The Coral Bay airstrip is located on land formally part of the Cardabia Station pastoral lease but currently described as Lot 352 on Plan 69599 being Crown Reserve 50805. The land is managed by the Department of Transport which is responsible for inspecting the unsealed airstrip at least twice per month and undertaking maintenance on an as-needed basis. The Department of Transport is generally not the agency responsible for the management and maintenance of regional airstrips in Western Australia.

The airstrip is uncontrolled and services the Royal Flying Doctor Service in emergency events and other light aircraft; generally temporary visitors to the area.

The current airstrip is poorly located due to occasional flooding events that make access difficult. In response, a portion of Unallocated Crown Land approximately 9km to the east of Coral Bay was identified as a possible location for a future airport to service Coral Bay and surrounds. The proximity of Learmonth Airport, a lack of visitor need, onerous management responsibilities and funding constraints have collectively prevented its development.

7. Structure Plan

7.1 Vision for Coral Bay

The 25 year vision for Coral Bay is that the settlement should remain the premier Ningaloo Coast tourist node. This vision is based on the rationale provided by the NCRS, the overriding need to conserve the Ningaloo coastal environs, as well as community sentiment to protect the natural appeal and holiday fabric of Coral Bay.

The vision is a continuation of the 'Principal Planning Objective' outlined in the *Coral Bay Settlement Plan 2004* which states that:

"Coral Bay shall continue to be an attractive destination for tourists and visitors seeking to experience the natural features of the Ningaloo Reef and the remote holiday atmosphere of Coral Bay through improved sustainable tourism practices."

Figure 10 outlines the opportunities and constraints within the Coral Bay Settlement, and Figure 11 provides the Concept Master Plan that demonstrates the full potential of the CBSSP vision. The Concept Master Plan also incorporates established development proposals and plans that exist over the settlement. Figure 1, the CBSSP, designated the appropriate land uses to proceed within Coral Bay based on the vision, the planning objectives and actions outlined within this document.

7.2 Population Capacity

The *Coral Bay Settlement Plan 2004* establishes a population cap within Coral Bay of 4500 people. This is broken down to 3600 accommodation beds, 400 workers and 500 day visitors. In preparing the *Coral Bay Settlement Plan 2004* the then Ningaloo Sustainable Development Office applied calculations of desirable lot yields based on building heights and form, unit densities and land owner and local community sentiment in order to establish the population caps.

Approximately 1967 tourist beds are currently licensed within Coral Bay. In addition, 26 privately owned holiday homes exist on Lot 46 Robinson Street. These dwellings can provide up to approximately 180 beds resulting in a total tourist accommodation supply of approximately 2147 beds. The permanent resident population of Coral Bay, as at the 2011 Census, was 254 people which comprised workers and their families. The number of day visitors on average during peak season has never accurately been determined. Therefore the current peak overnight population of Coral Bay is approximately 60% of the *Coral Bay Settlement Plan 2004* strategic population cap of 4000 (excluding day visitors).

The CBSSP raises the existing cap by 800 based on calculations regarding acceptable densities and anticipated lot yields. This figure is split to provide 520 additional beds contained within a future 'Holiday Homes' precinct (Lot 308) and 280 additional beds within a future short stay overflow caravan park site. Table 3 below summarises the proposed increases in population caps by accommodation type.

Bed Type	Existing	Coral Bay Settlement Plan 2004, including allocations proposed by landowners	Coral Bay Settlement Structure Plan 2013 (CBSSP)
Permanent resident/ worker population (including family)	254 (2011 Census)	400	400
Backpackers	120	220	220
Caravan/camping	1416	1428	1708
Resort/chalet/serviced apartment	431	1744	1744
Holiday home	180	208	728
Day visitors	500	500	500
Total	2901	4500	5300

Table 3 - Proposed Increase in Coral Bay Population Caps.

The proposed increase in the holiday home and caravan park population was tested against the CSIRO's Ningaloo InVitro Model and the Sustainable Tourism Cooperative Research Centre's Ningaloo Collaboration Cluster Ningaloo Destination Model.

The CSIRO InVitro Model is a whole of system model for exploring the implications of alternative management and development plans for the Ningaloo-Exmouth Region (Fulton, 2012). The Ningaloo Collaboration Cluster model was created through comprehensive consultation with relevant stakeholders and results from extensive local surveys in order to estimate economic, environmental, and social outcomes for different tourism planning scenarios (Jones, 2012).

Figure 12 summarises the results of the InVitro modelling where the base case is the population cap proposed by the NCRS. It demonstrates the projected impacts of large resort based, holiday home and caravan park population growth. The full results of the InVitro modelling are attached in Appendix C.

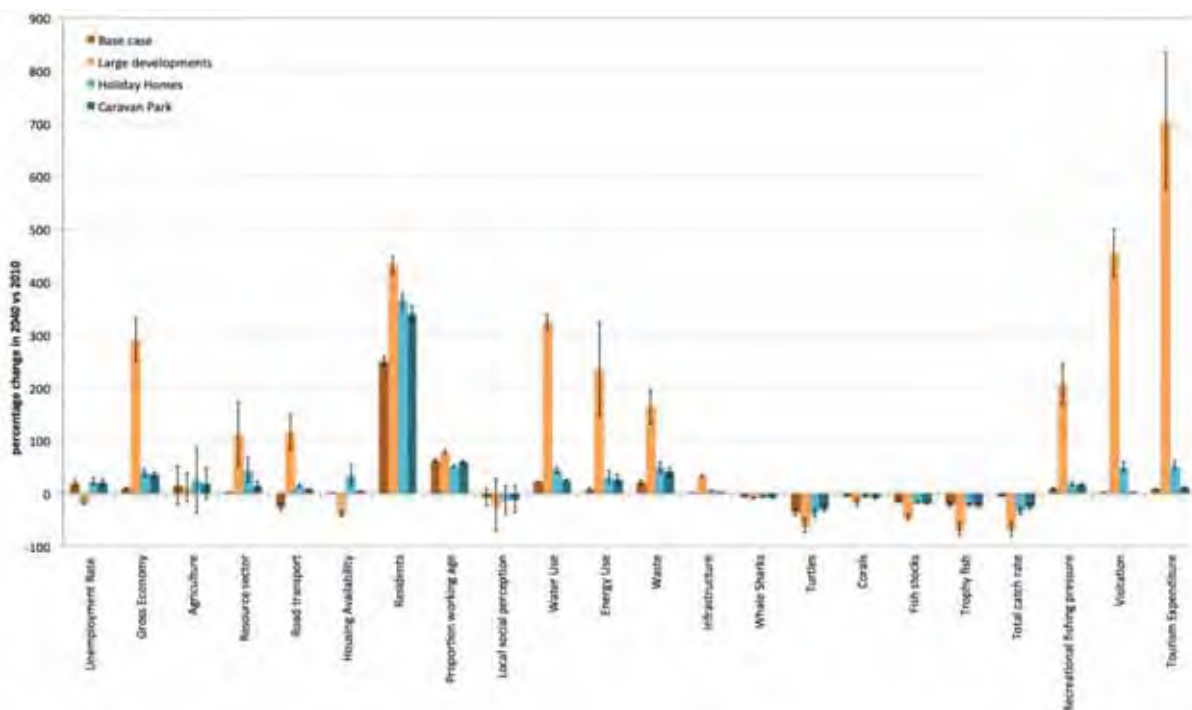


Figure 12 - Impact of Population Growth in Coral Bay Source - InVitro modelling in support of Coral Bay Structure Plan Review (Fulton, 2012)

The CBSSP does not propose an increase in resort based population so although the impacts detailed above are significant for future planning, especially with regard to positive economic growth, the results should be disregarded for the purposes of this CBSSP. In terms of holiday home and caravan park population growth, the impacts of increasing the overnight population cap by 800 beyond the current strategic cap of 4000 are deemed relatively minor by CSIRO. A negative exception being greater pressure on fish stocks but conversely, positive economic growth in the settlement and greater region.

The following series of tables summarise the results from the Sustainable Tourism Cooperative Research Centre's Ningaloo Collaboration Cluster Ningaloo Destination modelling (full results attached in Appendix D).

	Existing Capacity	Ningaloo Coast Regional Strategy (2004)	Scenario 1 Holiday Home growth	Scenario 2 Caravan Park growth
Visitor Nights	386,476	843,607	1,077,888	1,061,099
Expenditure (\$ million)	25	57	74	73

Table 4 - Annual Ningaloo Destination Model Visitor Nights and Expenditure Data

	Existing Capacity	Ningaloo Coast Regional Strategy (2004)	Scenario 1 Holiday Home growth	Scenario 2 Caravan Park growth
Going to the Beach	369,813	769,842	952,258	945,889
Fishing from Shore	66,194	98,754	113,687	112,675
Fishing from Boat	98,318	158,863	183,680	180,612
Snorkelling	215,365	474,819	600,167	596,051
Eating Out	90,480	172,360	214,109	210,323
Sightseeing	76,867	132,043	164,085	160,656
Shopping	46,341	73,557	86,757	85,306

Table 5 - Annual Activity Levels in Coral Bay

	Existing Use	Ningaloo Coast Regional Strategy (2004)	Scenario 1 Holiday Home growth	Scenario 2 Caravan Park growth
Water (kL)	173,951	357,317	458,986	442,327
Electricity (kWH)	17,538,394	50,604,416	61,015,904	57,236,488
Annual Landfill (m3)	8,493	14,051	16,001	15,866

Table 6 - Annual Resource Use

	Existing Capacity	Ningaloo Coast Regional Strategy (2004)	Scenario 1 Holiday Home growth	Scenario 2 Caravan Park growth
Internationals per 100 Australian Visitors	19	19	22	23
Showcasing the Region	6	10	10	10
Average visitors per night (peak season)	1,943	4,027	4,683	4,527

Table 7 - Social Impacts

	Ningaloo Coast Regional Strategy (2004)	Scenario 1 Holiday Home growth	Scenario 2 Caravan Park growth
Spangled Emperor	-22%	-27%	-28%
Corals	-3%	-4%	-4%
Whale Sharks	-3%	-4%	-4%

Table 8 - Environmental Impacts

One notable result from this modelling is the additional strain on the settlement's resources including electricity, water and land for waste disposal. The Water Corporation has confirmed that current peak draw is 95 kL per day. The settlement's reverse osmosis water treatment facility has a future capacity to deliver up to 400 kL per day. The increase in population proposed by the CBSSP over the next 25 years can be supplied potable water by the Water Corporation. Verve Energy has indicated that the wind-diesel electrical generation system also has sufficient capacity to support an additional 800 people beyond what the NCRS prescribed. The need for an alternate land fill site or waste transfer station has been identified for some time with the Shire of Carnarvon indicating the preferred option being a location adjacent the existing town waste-water treatment facility approximately 6km to the east of the settlement.

A negative impact from population growth that arose from the modelling is a reduction fish stocks. Table 8 above demonstrates a potential reduction in the Spangled Emperor (indicator species) by up to 6%. This is assuming current fishing practices and management is maintained. Only a 1% impact on corals and Whale Shark sightings are predicted to occur through the proposed population increase. It is critical that relevant agencies including Fisheries Western Australia and the DPaW responding through appropriate management mechanisms.

The economic benefits to Coral Bay and the greater Gascoyne Regions through increased visitors provide a significant incentive for increasing the population cap prescribed by the NCRS.

7.3 Accommodation

7.3.1 Existing Tourism Accommodation Sites

Objective

To carefully manage existing tourism accommodation sites as the primary economic driver in Coral Bay.

Considerations

The current existing core of tourist accommodation is provided by Aspen Ningaloo Lodge, Peoples Caravan Village and Bayview Coral Bay (including Ningaloo Club Hostel).

Adopted and pending ODP's over all three of the current tourist accommodation sites (and contiguous land holdings) propose approximately 3260 beds, with another 340 eco-tourism beds proposed by the BAC at Lot 500 on P57358, raising the total to 3600 beds in accordance with the overnight cap set by the NCRS.

Policy Position

The status quo with regards to existing bed number caps at existing tourist accommodation sites in line with adopted ODP's will be maintained and therefore includes no increase in the number of beds at Aspen Ningaloo Lodge, People Park Caravan Village, Bayview Coral Bay (including Ningaloo Club Hostel), part Lot 46 Robinson Street or Lot 500 Banksia Drive.

Actions

- Designate a comprehensive 'Tourism' precinct including existing and pending tourism developments.
- Designate Lot 500 as 'Tourism' site to provide the land owner the flexibility to develop the land for tourism purposes in response to markets demand.

7.3.2 Overflow Caravan and Camping

Objective

To fulfil in the need for overflow caravan and camping accommodation during peak season.

Considerations

Consultation with existing caravan and camping accommodation providers, tourists and the public has determined that during peak tourist season, caravan and camping sites are generally fully booked, even up to a season in advance. Every year many travellers are turned away resulting in significant economic leakage and negative perceptions of the settlement, establishing a need for additional caravan and camping sites in the settlement.

To address this, the CBSSP proposes that land between Monck Head Drive and Lot 500, described as UCL Lot 64 on P30121 and part UCL Lot 501 on P57358 (approximately 2.5 hectares), be designated 'Tourism (Overflow Caravan and Camping)' to enable the development of a future short stay overflow caravan park and camping site capped at 280 beds (70 bays). Development of the site and ongoing management is intended by the Shire of Carnarvon although the provision of on-site services and facilities will be minimal. The site is likely only to operate during peak tourist season.

Designation of the site is intended to enable greater capture of travelers seeking short stay caravan and camping sites whilst making journeys north and south of the Ningaloo coast and beyond. The location of the site at the intersection of Banksia Drive and Monck Head Drive is separated from the beach and Robinson Street by approximately 650m via Banksia Drive or French Street. The provision of adequate dual use paths on both roads will be required to enable safe access to the beach and commercial outlets on Robinson Street without the need for visitors to use vehicles that put strain on public parking facilities. The site is also appropriately located adjacent the 'Service Trades' site where a future service station is proposed and also abutting Lot 500 which is designated 'Tourism'.

Notwithstanding the designation of this site for overflow camping through the provision of a third Caravan Park, the CBSSP also grants consideration of this site to be set aside and developed for future workers' accommodation should this use not be accommodated on Lot 308 by the landowner.

Policy Position

An overflow caravan and camping facility to optimally capture visitors to Coral Bay during peak season, should be available to assist with short stay accommodation when the existing caravan and camping grounds are fully occupied.

The overflow caravan park land may also be considered for development of workers' accommodation, should this use not be accommodated on Lot 308 by the landowner.

Actions

CBSSP to designate an overflow caravan and camping site on UCL Lot 64 on P30121 and part UCL Lot 501 on P57358 (approximately 2.5 hectares) as 'Tourism (Overflow Caravan and Camping)' capped at 280 beds (70 bays).

7.3.3 Workers

Objective

To designate and manage land for *bona fide* workers and business owners in Coral Bay.

Considerations

Advice received from the Sustainable Tourism Cooperative Research Centre is that 400 workers' accommodation beds is sufficient to cater for 4400 overnight visitors and 500 day visitors.

In mid-2012 the State Government completed construction of the seasonal workers' accommodation facility on the south-eastern portion of Lot 308 on P52556. The portion of land is leased from the BAC and in turn sub-leased to National Lifestyle Villages that manage and operate the facility. The facility was funded by *Royalties for Regions* program and provides 37 seasonal staff houses for up to 70 workers in the town. The development provides dedicated staff housing to successful applicants (targeted at local business owners) and assists with taking pressure off existing accommodation. This development is indicated as 'Workers' Accommodation' in Figure 1.

In addition to the National Lifestyle Villages seasonal workers development, some of the remaining portion of Lot 308 is designated 'Workers Accommodation' in the CBSSP as per the current DZS 11.

Workers' accommodation can be provided by proprietors of caravan parks on site, however, only for management staff, in accordance with the *Caravan and Camping Grounds Act 1995*. Long stay sites required for managers' accommodation within existing caravan parks must be designated on the annual caravan park licenses issued by the Shire of Carnarvon in accordance with *Caravan and Camping Grounds Act 1995*.

Also, land identified on the southwestern corner of the Banksia/Monck Head Drive intersection for 'Tourism (Overflow Camping/Caravan Park)' (Lot 64 and adjacent portion of Lot 501) this land could accommodate government managed workers' accommodation on a land lease arrangement, as part of the various options concept.

Policy Position

Survey-strata subdivision of land or lease arrangements for the purposes of workers' accommodation may be considered for Lot 308 and as part of any strata-subdivision process, appropriate management statements shall be prepared and attached to the strata titles in addition to caveats that ensure that dwellings are only occupied by legitimate 'workers' and their families.

Subdivision in fee simple (freehold) shall only be allowed to create lots for strata and lease developments in a 'superblock' arrangement for Lot 308 if the Shire of Carnarvon and the WAPC are satisfied that subdivision is for strata or lease development and not for permanent residential subdivision.

Workers' accommodation can be provided by proprietors of caravan parks on site, however only for management staff. Long stay sites required for managers' accommodation within existing caravan parks must be designated on the annual caravan park licenses issued by the Shire of Carnarvon in accordance with *Caravan and Camping Grounds Act 1995*.

Land identified on the southwestern corner of the Banksia/Monck Head Drive intersection for 'Tourism (Overflow Camping/Caravan Park)' (Lot 64 and adjacent portion of Lot 501) may also accommodate government managed workers' accommodation on a land lease arrangement.

Actions

- Privately owned Lot 308 on P52556 to remain as 'Workers' Accommodation' site with bed cap for 400 for workers.

- Designate UCL Lot 64 on P30121 and part UCL Lot 501 on P57358 (approximately 2.5 hectares) also for 'Workers Accommodation' (leasehold) subject to an approved structure plan and bed cap for 400 workers, in the event that Lot 308 is not developed for this purpose.
- Insert into the local planning scheme a suitable clause to:
 - ensure that 'Workers' Accommodation' precincts are only occupied by legitimate workers;
 - stipulate that subdivision in fee simple (freehold) on Lot 308 shall only be allowed to create lots for strata and lease developments in a 'superblock' arrangement if the Shire of Carnarvon and the WAPC are satisfied that subdivision is for strata or lease development and not for permanent residential subdivision (refer to section 7.3.4 for guidance on 'superblock' subdivision).
 - control the use of 'Workers' Accommodation' in caravan parks to cater solely for management staff.

7.3.4 Holiday Homes

Objective

To provide for a holiday home precinct to enable the expansion of the existing, but limited, supply of holiday homes within Coral Bay, and to attract a larger variety of tourists seeking an alternative style of accommodation.

Considerations

The proposed increase in the holiday home and caravan park population was tested against the 'CSIRO's Ningaloo InVitro Model' and the 'Sustainable Tourism Cooperative Research Centre's Ningaloo Collaboration Cluster Ningaloo Destination Model'.

The CSIRO modelled the following four scenarios for Coral Bay residents and visitor population:

- Scenario 1: NCRS as base case (4500) which is the current cap
- Scenario 2: Large development scenario (7700)
- Scenario 3: Holiday homes (800) in addition to current cap of 4500
- Scenario 4: Holiday homes (500) and new caravan park (300) in addition to current cap of 4500

This model has concluded that the large development scenario is overwhelming in terms of its regional wide economic returns, ecological costs and large increase in demand for utilities. The model also concluded that in terms of holiday home and caravan park population growth, the impacts of increasing the overnight population cap by 800 beyond the current strategic cap of 4500 is relatively minor. Based on this information, the additional 800 overnight population was allocated as 280 for a new caravan park and 520 for holiday homes on Lot 308, in addition to workers' accommodation. The use of holiday homes managed for short stay accommodation is considered in keeping with the character and natural features of Coral Bay.

Policy Position

The existing 26 dwellings on Lot 46 on P215007 Robinson Street are included within a 'Holiday Home' precinct and these dwellings may accommodate up to approximately 208 people.

In addition to the 'Workers' Accommodation' provisions in DZS 11, Lot 308 is also designated 'Holiday Homes' where subdivision may be supported to accommodate lease tenure or survey strata arrangements for the purposes of short term holiday home accommodation.

At local planning scheme amendment or local planning scheme review stage, the landowner of Lot 308 has the responsibility to indicate to the Local Government how the land is to be designated respectively for 'Holiday Homes' and 'Workers' Accommodation'. If this is not achieved, then Lot 308 shall remain for 'Workers' Accommodation' only as provided for in DZS 11.

The local planning scheme shall provide an adequate definition for 'Holiday Homes' which is to include that *"no home will be occupied by any individual for a period of greater than 3 months in any 12-month period (only short-stay accommodation permitted)"*.

The local planning scheme shall manage the development of 'Holiday Homes' in the following way:

- Identify 'Holiday Homes' as a 'D' use (Discretionary) requiring planning application.
- Set out the use classes and development requirements for 'Holiday Homes'.
- Require the preparation of a local structure plan (LSP) to guide site specific physical character and development of 'Holiday Homes'.
- Require management provisions, as per PB 99 (or other relevant documents, as Council sees fit) to be met at the Development Application stage.
- Require notifications on titles regarding management provisions in the local planning scheme to alert future residents/owners of provisions that relate to the use and management of land.

A variety of densities could be allowed on subdivided lots of various sizes as determined by future approved structure plans. However the overall bed numbers for Lot 308 will remain capped at 520 for 'Holiday Home' use and 400 for 'Workers' Accommodation' use (the latter calculated inclusive of all workers' accommodation numbers across Coral Bay).

Subdivision in fee simple (freehold) shall only be allowed to create lots for strata and lease developments and no subdivision will be approved for lots less than 4000m². This minimum lot size may only be varied where the Shire of Carnarvon and the WAPC are satisfied that subdivision is for strata or lease development and not for permanent residential use. These restrictions, including limitations on bed numbers as determined in the structure plan, should be reflected in any future scheme provisions and structure plans as indicated in the draft scheme provisions attached to the endorsed structure plan.

Appropriate caveats lodged on certificates of title, strata management plans and local planning scheme provisions will provide adequate control for short-stay occupancy.

Actions

- Designate privately owned Lot 308 on P52556 also for 'Holiday Homes' development with a bed cap of 520.
- Designate portion of privately owned Lot 46 on P215007 (approximately 1.8 hectares; known as the 26 leasehold holiday accommodation units) at an R20 density with a bed cap of 208.
- Provide for a 'Holiday Homes' precinct in the local planning scheme with relevant provisions to manage and control this use in Coral Bay, as outlined within the Policy Position above.

7.3.5 Residential Subdivision


Objective

To retain Coral Bay as a premier tourism node of the Ningaloo Coast and tourism settlement.

Considerations

The 25 year vision for Coral Bay is that the settlement should remain the premier Ningaloo Coast tourist node based on the rationale provided by the NCRS, overriding need to conserve Ningaloo coastal environs; and community sentiment to protect the natural appeal and holiday fabric of Coral Bay. This follows the established *Coral Bay Settlement Plan 2004* Principal Planning Objective that:

"Coral Bay shall continue to be an attractive destination for tourists and visitors seeking to experience the natural features of the Ningaloo Reef and the remote holiday atmosphere of Coral Bay through improved sustainable tourism practices."



Coral Bay is a tourist settlement and therefore not a typical town requiring essential services, emergency and social infrastructure that would be subject to normal market pressures for expansion and development. Creation of a typical (or 'normalised') townsite within this location is not considered appropriate as it would trigger requirements for significant physical and social infrastructure provision, detract from the tourism and holiday fabric of the settlement, and impact the sensitive and unique environment the settlement lies within and requires careful and ongoing management. The Structure Plan proposes a population cap on both workers' accommodation and overnight visitors, thereby carefully managing its growth and development to protect the sensitive environment it lies within.

Policy Position

Subdivision of land within the CBSSP area (including tourist areas), to facilitate permanent residential occupation shall not be permitted under the CBSSP or local planning scheme. This provision is to ensure that the tourist character and holiday fabric of the settlement is maintained.

Carnarvon and Exmouth shall remain the permanent population centres along the Ningaloo Coast.

7.4 Commercial

Objective

To provide for sufficient commercial space to meet demand for both convenience goods and tourist related retail.

Considerations

Lot 12 is subject to redevelopment under the Coral Bay Village Overall Development Plan which will see the decommissioning of the existing fuel outlet, including storage tanks, and construction of ten new shop tenancies. The site will be continued to be used for retail and hospitality (restaurant, café and tour booking) purposes. Vehicular access to the site will be limited as Robinson Street will be converted to one-way only (westward direction) with no on-street parking and restricted vehicle access from Robinson Street.

The existing Coral Bay Arcade on part Lot 46 will remain with the proposed development of a tavern adjacent the shopping centre under the Bayview Coral Bay Masterplan. Possible relocation of the existing medical clinic to Lot 307 on P52556 could enable an expansion to existing retail, hospitality and tour booking commercial uses.

In addition to the two designated commercial sites, tourist accommodation providers within the 'Tourism' precincts may apply to provide restaurants, café services and tour bookings that will be open to the general public as well as the future service station proposed at Lot 62 on P30121. The combination of designated commercial sites and tourist accommodation sites will ensure adequate commercial floorspace is available to service the total 5300 person peak population proposed by the CBSSP.


The two existing commercial sites on Robinson Street (Lot 12 on P69406 and part Lot 46 on P215007) could therefore be designated 'Commercial'.

Policy Position

The two existing commercial sites in Coral Bay offer sufficient retail opportunity within the settlement, as guided by existing ODPs and Master Plans.

Actions

- Designate privately owned Lot 12 on P69406 and part of privately owned Lot 46 on P215007 as 'Commercial'.

- 
- Provide for a 'Commercial' precinct to be inserted into the local planning scheme with appropriate scheme provisions.

7.5 Government Services and Cultural Precinct

Objective

To consolidate government service offices that require a greater presence in the settlement, such as the Western Australian Country Health Service (medical centre), the DPaW, Department of Fisheries, and Shire with other Departments.

Considerations

The need has been identified for a greater government presence, cultural facilities and an entrance statement for the settlement. The current land owner, Department of Lands, have also requested Lot 307 to remain 'Government Services and Cultural Precinct' (to reinforce the 'mixed use - public purposes' designation in the NCRS 2004). Some Departments don't require a permanent presence and only visit the settlement from time to time, requiring flexible tenancy arrangements.

Designation of Lot 307 will also enable the development of a visitor/ indigenous interpretive centre and for a settlement entrance statement to be constructed. Designs for an entrance statement should complement the unique beauty and significance of Coral Bay and the Ningaloo Reef World Heritage status and this initiative should be facilitated in a collaborative manner between the Shire and the Department of Parks and Wildlife to reinforce Coral Bay's unique identity.

The relocation of the Western Australian Country Health Service clinic and offices from the Coral Bay Arcade at Lot 46 will also free-up commercial retail and hospitality floorspace to enable the arcade to function entirely commercially.

A growing permanent worker population may require the Department of Education to provide an enhanced education facility at this location to replace the existing Carnarvon School of the Air service (currently provided adjacent to the Fire and Emergency Services Authority offices at Lot 304 on P52550 Banksia Drive).

Actions

- Designate UCL Lot 307 on P52556 as 'Government Services and Cultural Precinct'.
- Provide for 'Government Services and Cultural' precinct in the local planning scheme with appropriate provisions.
- Lot 307 to provide an entrance statement for the settlement, reflecting the unique location, and potential visitor and/or indigenous interpretive centre.

7.6 Industrial


7.6.1 Service Trades

Objective

To provide land for 'Service Trades' and secure a site for fuel retail.

Considerations

The decommissioning of the existing fuel outlet at Lot 12 Robinson Street and relocation to the corner of Monck Head Drive and Banksia Drive (Unallocated Crown Land) has been a consideration over a number of years.



The Department of Lands indicated that it is prepared to transfer the lot to freehold and privately sell the land provided development of the site as a service station and fuel outlet has been demonstrated as feasible and will commence immediately after settlement.

Policy Position

The relocation of fuel and related services to the corner of Monck Head Drive and Banksia Drive (Unallocated Crown Land) is supported.

A convenience automotive store and secure trailer parking is also considered appropriate use for the site.

Actions

Designate UCL Lot 62 on P30121 as 'Service Trades'.

7.6.2 Composite Industry

Objective

To support six to eight combined 'Workers' Accommodation' lots with 'Light/Service Industry' uses.

Considerations

A need has been identified for composite industry to allow tradespeople to have sufficient working and storage space combined with workers' accommodation. The provision of workshop and storage units with internal self-contained dwelling facilities will deliver invaluable land and facilities for tradespeople providing services to the Coral Bay business and resident population, to store materials and centralise the provision of such trades.

A strip of Unallocated Crown Land measuring approximately 1.3 hectares abutting the southern side of Banksia Drive has been designated 'Composite Industry'. The land is described as part Lot 320 on P53672 Banksia Drive.

The subject portion of land requires excision from Lot 320 and transfer to the Shire of Carnarvon as a Crown Reserve with power to lease. The Shire would be responsible for allocating and managing occupancy of the facility including compliance matters and general amenity.

Policy Position

A centralised composite industry area for the benefit of *bona fide* Coral Bay tradespeople is required to avoid industrial trade work and storage occurring on an *ad hoc* basis in inappropriate locations.

Actions

- Designate approximately 1.3 hectares portion of Lot 320 on P53672 abutting Banksia Drive as 'Composite Industry'.
- Provide for 'Composite Industry' precinct to be inserted into the Local Planning Scheme with appropriate scheme provisions.


7.6.3 Light Industrial

Objective

To formalise the existing storage area south of the water treatment facility on a portion of Lot 511 on P53813.

Considerations

Currently land south of the Water Corporations water treatment facility comprising part Lot 511 on P53813 (Unallocated Crown Land) is being used for informal domestic storage. The site exhibits a number of shipping containers that are owned by various residents of the settlement. Attempts have



been made in the past by the then Department of Regional Development and Lands to formalise use of the site through excising a portion of the land and vesting in the Coral Bay Progress Association and leasing to tenants. To date this arrangement has not been reached.

Under the CBSSP the land is designated 'Light Industrial' and should be vested in the Shire of Carnarvon as a Crown Reserve with power to lease. The Shire would be responsible for allocating and managing occupancy of the facility including compliance matters and general amenity.

Surplus land within Lot 511 is also designated 'Light Industrial' to enable the future expansion of the storage site and other light industrial type uses including marine and chemical storage if demand determines

Policy Position

The lack of suitable space for household and commercial storage is acknowledged and provision must be made for a controlled storage facility.

Actions

- Designate approximately 3 hectares portion of Lot 511 on P53813 abutting Sanctuary Road south of the water treatment facility as 'Light Industrial'.
- Provide for 'Industrial' precinct to be inserted into the Local Planning Scheme with appropriate scheme provisions.

7.7 Open Space

7.7.1 Foreshore Reserve

Objective

To properly manage the Coral Bay Foreshore.

Considerations

Land designated 'Foreshore Reserve' on the CBSSP should be vested in, and managed by the DPaW. In addition to existing foreshore reserves, the CBSSP also designates part UCL Lot 306 on P52556 and part UCL Lot 501 on P57358 as foreshore reserve.

The Shire of Carnarvon is committed to undertake a more pro-active role in the governance of Coral Bay and surrounds and seek to establish a partnership approach for the delivery of management and compliance with the DPaW and other agencies. An opportunity may exist in the future for the BAC to assist with the management of the foreshore reserve considering the Baiyungu Track traverses the coastline within the foreshore reserve. This scenario would require adequate management and funding agreements being reached between government and the corporation.

Policy Position

The Coral Bay foreshore is to be properly managed and protected, with land designated 'Foreshore Reserve' on the CBSSP to be vested in and managed by DPaW in partnership with the Shire of Carnarvon.

Actions

- Designate part UCL Lot 306 on P52556 and part UCL Lot 501 on P57358 as 'Foreshore Reserve'.
- Provide for 'Foreshore Reserve' precinct to be inserted into the local planning scheme with appropriate scheme provisions.

7.7.2 Recreation

Objective

To maintain and improve the use of 'Baz's Park' as a centralised focal point of recreation.

Considerations

Part Lot 45 Robinson Street contains 'Baz's Park' and could be designated 'Recreation' under the CBSSP. The site provides the centralised focal point for some active and passive recreation in the settlement and contains public ablutions and a fish cleaning station, the latter being inappropriately located and in need of relocation. A redevelopment of the site could be undertaken in accordance with the former Department of Environment and Conservation's *Coral Bay Foreshore Management Plan (2011)*. It is considered that the site should remain under the management of the DPaW; however the Shire of Carnarvon should assist with the on-going maintenance of facilities and the grounds. This includes negotiation with private landowners that are currently providing ground water for irrigating public spaces to ensure there is a legitimate public supply. If negotiations don't succeed, this may necessitate the Shire of Carnarvon and the DPaW providing a bore.

Policy Position

A central recreational area is considered essential with Baz's Park to provide the focal point. Land designated 'Recreation' on the CBSSP should be vested in, and managed by the DPaW in partnership with the Local Authority.

Actions

- Designate part of Lot 45 (Reserve 215007) 'Recreation'.
- Provide for 'Recreation' precinct to be inserted into the local planning scheme with appropriate scheme provisions.

7.8 Public Purposes

Refer to section 6 Infrastructure and Utilities above for further detail.

7.8.1 Utilities

Objective

To ensure essential services and infrastructure are provided within Coral Bay.

Electricity Supply - considerations

Lot 315 on P54580 south of Sanctuary Road is owned by Verve Energy and is the location of the settlement's wind-diesel electrical power plant. Although not a Crown Reserve the site is designated 'Public Purposes – Electricity Supply'. In addition, the three sites within Lot 316 on P54580 (unallocated Crown Land) containing wind turbines are also designated 'Public Purposes – Electricity Supply'.

As previously detailed, Verve Energy has stated that the existing wind-diesel power system has adequate capacity to support the proposed future population of 5300 people which includes the minimal requirements of day visitors.

Actions

- Formal access to Lot 315 shall be provided through the future Gazettal of Sanctuary Road.

Water Supply - considerations

The Water Corporation is licensed to extract ground water from the Birdrong aquifer and treat water at its reverse osmosis treatment facility at Lot 301 on P47762 south of Sanctuary. The land is owned by the Water Corporation and is designated 'Public Purposes – Water Supply' although not a Crown Reserve.

The site currently treats and supplies approximately 95 kL per day during peak periods of draw. The facility has the current capacity to supply up to 200 kL per day and is able to be upgraded to supply up to 400 kL. Based on the current peak overnight population (approximately 2401 people), in order to supply the proposed overnight population of 4800 (in addition to 400 permanent resident workers and their families), the facility will require upgrading.

Actions

- Formal access to the site shall be provided through the future Gazettal of Sanctuary Road.
- Upgrading of the existing Water Corporation infrastructure to meet total demand for potable water supply.

Waste Water Treatment - considerations

The Coral Bay Waste Water Treatment Facility is located 6 km to the east of the settlement to the south of Coral Bay Road. The facility has capacity to treat waste water generated by 4000 people and may require a future upgrade by the Water Corporation.

Telecommunications - considerations

Reserve 40008 will be designated 'Public Purposes – Telecommunications and shall remain vested in Telstra for the purposes of providing the on-going use of the site as a telephone exchange.

7.8.2 Refuse Disposal

Considerations

Whilst the lifespan of the present waste disposal landfill site at Lot 530 on P64057 Sanctuary Road has been extended over recent years due to improved operational and management practices, its relocation to land adjacent the settlement waste water treatment facility and rehabilitation of the current site is recommended within the next 5 years. The site remains designated 'Public Purpose – Waste Disposal'.

In order to assist funding the replacement of the existing waste disposal landfill site, it is recommended that the Shire of Carnarvon introduces an environmental bed levy (or fee) to tourist accommodation beds. This levy (or fee), set under Part 6 (Waste Services); Division 3 (Local Laws and local Government Rates, fees, and Charges) of the *Waste Avoidance and Resource Recovery Act 2007* and administered by the Shire of Carnarvon, should be structured on a 'tourist per night' charge and collected by tourist accommodation managers acting as the agent for the local government on a fee for service basis. It is suggested that typical rubbish charges presently levied on tourist accommodation managers would be waived in return for collecting the environmental bed levy (or fee).

Actions

- Relocation of the waste disposal landfill site recommended within the next 5 years.
- Introduce a bed levy (or fee) applicable to environmental management matters under appropriate legislation.

7.8.3 Boat Launching Facility

Considerations

The most southern portion of Lot 321 on P53672 (Reserve 50541) and the boat launching facility extending beyond the coastline at Monck Head has been formalised through the designation of 'Public Purpose – Boat Launching Facility'. The facility remains under the management of the Department of Transport.

7.8.4 General Use

Considerations

Lot 304 on P52550 and Lot 305 on P52550 Banksia Drive currently occupied by the Fire and Emergency Services Authority, Murdoch University and used in part by the Carnarvon School of the Air are designated 'Public Purpose – General Use'.

Actions

Retain Lot 304 as 'Public Purpose – General Use' to enable the on-going use of the sites for their current purposes.

7.8.5 Airstrip

Considerations

The need for expansion of the site or relocation to a new site has not been demonstrated. Any future requirement for an airport to service Coral Bay and surrounds may occur on land designated by the Gascoyne Development Commission to the east of the settlement. Refer to section 6.7 Coral Bay Airstrip above for further information.

Actions

The Coral Bay airstrip at Lot 352 on P69599 shall be designated 'Public Purpose – Airstrip' and remain under the management of the Department of Transport.

7.8.6 Conservation

Objective

The objective of the 'Public Purpose - Conservation' precinct is to ensure that on-going management and use of land shall be undertaken in accordance with the *Management Plan for the Ningaloo Marine Park Murion Islands Marine Management Area 2005-2015* and any subsequent management plan.

Actions

- Land designated 'Public Purpose – Conservation' to remain Unallocated Crown Land.
- The Shire of Carnarvon and Department of Department of Parks and Wildlife shall ensure that informal off-road vehicle use is adequately controlled to enable vegetative and habitat regeneration.

7.9 Movement Networks

Refer to Section 6.6 Pedestrian and Vehicle Movement for further information.

Objective

To eliminate conflict between vehicles and pedestrians and to address the need for safe vehicular circulation throughout the settlement.

Considerations

In consideration of the extent of pedestrian activity on Robinson Street and French Street, the need was identified in the *Coral Bay Settlement Plan 2004* for both roads to be closed to vehicular traffic. The *Coral Bay Settlement Plan 2004* proposed the elimination of conflict between vehicles and pedestrians accessing the beach and Baz's Park from accommodation generally located on the southern side of Robinson Street. Robinson Street is currently the main street of Coral Bay that also provides the key east-west linkage across the settlement. The existing pedestrian path on the northern side of the road is inadequate to enable the safe and comfortable movement of pedestrians and cyclists across the settlement and to the beach and therefore the majority of people use the road pavement for transit. This situation has generated public safety issues, and from an urban design and visual amenity perspective is less than ideal.

The CBSSP provided four options for the Coral Bay movement network, outlined in Figure 10. Based on submissions received during advertising, and proper and orderly planning considerations, Option A, which will see Robinson Street converted to one way traffic and French Street pedestrianised, has been selected as the best available route. Option A provides for:

- creation of a loop road system around the settlement to enable logical and permeable vehicle movements within the settlement, without impinging pedestrian movements.
- provision of an improved pedestrian path to the north of Robinson Street to allow for the safe and comfortable movement of both pedestrians and cyclists.
- capitalising on the arrival experience of Coral Bay by creating a scenic one-way tourist drive that captures key views of Bills Bay (shown in Figure 8 Socio-Cultural Experiences, CBSSP Report).
- continues to provide access for emergency and service vehicles within the centre of the townsite.
- the current Robinson Street road reserve is 20.41m wide. Option A proposes movement of traffic within a smaller road reserve, thereby providing for more space and infrastructure for pedestrians.


Based on the above points, and the Detailed Area Concept Plans (**Appendix A**, CBSSP Report), Option A provides an efficient movement network within the settlement, as well as meeting the original objectives for Robinson Street within the *Coral Bay Settlement Plan 2004*. The delivery of this option remains dependent on the relocation of the fuel depot, as well as construction of Banksia Drive.

Policy Position

In light of the need for vehicular circulation around the settlement, the CBSSP proposes transferring Robinson Street to one way traffic flow only west from French Street with no vehicle access along the northern side for the full extent of Robinson Street from the Banksia Drive intersection and no standing/ parking and only service/emergency vehicle access permitted for the full extent of Robinson Street from French Street.

A 0.1m wide pedestrian access-way (public purpose reserve) will be provided along Robinson Street on the northern side from the Banksia Drive intersection westward and on the southern side from the French Street intersection westward. This reserve will prevent access onto Robinson Street, and will be shown on the diagrams of survey as a Public Purpose Reserve, vested in the Crown under section 152 of the *Planning and Development Act 2005* and managed by the local government. The Shire may create right-of-way easements across the strip(s) for emergency vehicles. This will also require the construction of Sailfish Drive, generally in accordance with the Bayview Master Plan, and Banksia Drive, to be constructed generally in accordance with the *Worley Parsons Access Study 2009*, with the following exceptions:

- i. The intersection at the eastern entrance of the town shall be reviewed with consideration given to a four-way roundabout in the longer term.

- 
- ii. The car park at the terminus of Banksia Drive (Fletchers Hill) shall be provided with sufficient road reserve area to enable parking and turning for standard vehicles, caravans, boat trailers and coaches.
 - iii. The car park at the terminus of Banksia Drive (Fletchers Hill) shall be provided with sufficient road reserve area to enable one-way traffic flowing from Robinson Street to continue onto Banksia Drive.

The following additional infrastructure works are recommended to complement the transfer of Robinson Street to one-way only:

- i. The Robinson Street carriage way shall be surface treated and pacified adequately to ensure vehicle movements are at low speed.
- ii. A pedestrian/dual use path shall be provided on the northern side of Robinson Street reducing the width of the road carriage way to a delineated single lane.
- iii. Public parking shall be provided within the existing road reserve on the northern side of Robinson Street opposite French Street adjacent Baz's Park.

French Street shall remain an open (Gazetted) road however, adequately barricaded at the Robinson Road junction without denying access to the Bayview Holiday Park, and at the southern end north of land commonly referred to as 'Little Kenya'. This will prevent vehicular access and allow suitable surface treatment to formalise pedestrian and cycle access only.

The *Worley Parsons Access Study 2009* requires revision to establish the appropriate design of the Fletchers Hill car park to accommodate projected volumes of vehicles including tourist coaches and vehicles towing boats and caravans. Any future study must also give consideration to the detailed design of Robinson Street including the provision of parking bays, dual use paths, surface treatments and grade and suitable mechanisms for traffic pacification.

Appendix A provides detailed area concept plans that demonstrate possible future designs of various road, pedestrian/ dual use paths and open space locations throughout the settlement.


Actions

- Excise A 0.1 metre wide pedestrian access-way (public purpose reserve) along Robinson Street on the northern side from the Banksia Drive intersection westward and on the southern side from the French Street intersection westward in order to prevent access onto Robinson Street and such land to be shown on the diagrams of survey as a public purpose reserve, vested in the Crown under section 152 of the *Planning and Development Act 2005* and managed by the local government for a public purpose. The Shire may create right-of-way easements across these strip(s) for emergency vehicles.
- Banksia Drive should be constructed to its full proposed alignment as a matter of extreme urgency to unlock the development potential of land adjacent to it for the benefit of Coral Bay as a whole.
- Sanctuary Road requires Gazetted to provide formalised access to the water treatment facility, wind-diesel power station and light industrial area.
- Monck Head Drive south of Banksia Drive shall be Gazetted as a road and transferred from the Department of Transport to the Shire of Carnarvon.

7.10 Storm Surge Special Control Area

Objective

To provide for Category 5 storm surges incorporating anticipated vertical sea level rise and provide sufficient setbacks for such an event.



Considerations

The storm surge Special Control Area designated on the CBSSP is based on the worst case track Category 5 storm that will reportedly produce a peak steady water level of 3.2 m for the 2100 sea level increase (GEMS, 2005). A vertical sea level rise of 0.9m has been applied when considering the setback distance and elevation to allow for the impact of coastal processes over a 100 year planning timeframe. This has resulted in a storm surge level of 4.1m AHD.

Policy Position

No habitable buildings should be permitted to be developed within the Special Control Area unless suitable flood mitigation mechanisms are incorporated into the design and construction. The local planning scheme should apply specific provisions controlling the storm surge special control area.

Actions

- Indicate the “Storm Surge Area” on the local planning scheme.
- Incorporate scheme provisions to control development within the storm surge area.

7.11 Summary of Proposed Changes between the Coral Bay Settlement Plan and Coral Bay Settlement Structure Plan

The following table summarises the key proposed changes between the *Coral Bay Settlement Plan 2004* and CBSSP.

Theme	Coral Bay Settlement Plan 2004	Coral Bay Settlement Structure Plan 2014
Vision	Coral Bay shall continue to be an attractive destination for tourists and visitors seeking to experience the natural features of the Ningaloo Reef and the remote holiday atmosphere of Coral Bay through improved sustainable tourism practices (Principal Planning Objective).	Coral Bay should remain the premier Ningaloo Coast tourist node based on the rationale provided by the NCRS, the overriding need to conserve the Ningaloo coastal environs as well as community sentiment to protect the natural appeal and holiday fabric of Coral Bay. Principal Planning Objective to remain the same as the <i>Coral Bay Settlement Plan 2004</i> .
Population Cap	Population cap at 3600 overnight visitor beds, 400 workers and 500 day visitors (4500 total).	Population cap established by Coral Bay Settlement Plan expanded to include 520 holiday home beds and 280 overflow caravan park and camping beds (5300 total).
Movement Network	The full extent of Robinson Street and French Street from Banksia Drive closed to vehicles and designated a pedestrian mall.	Robinson Street from French Street designated one-way west only to vehicles and dual use path network provided on the northern side. French Street north from 'Kenya' shall remain a Gazetted road but closed to traffic and a dual use path network and landscaping provided.
Workers Accommodation	Workers accommodation precinct confined to the southern portion of Lot 308 on P52556.	'Workers Accommodation' precinct provided on Lot 308 with Lot 64 on P30121 and adjacent part Lot 501 on P57358 to be considered for leasehold worker's accommodation sites should the owner of Lot 308 not wish to proceed with this land use.
Holiday Homes	No dedicated holiday home precinct provided.	'Holiday Home' precinct provided over the existing 26 Holiday Homes on Lot 46 on P215007 and the balance of Lot 308 on P52556.
Tourism	Lot 1 on D77929 designated as a hotel/ tourist accommodation site.	Lot 1 on D77929 included within the 'Tourism' precinct.
	The northern portion of Lot 500 on P57358 designated as an ecotourism accommodation site.	The full extent of Lot 500 on P57358 designated within the 'Tourism' precinct.
Commercial	No dedicated commercial precinct provided.	Part Lot 46 on P215007 (Coral Bay Arcade and future tavern) and Lot 12 on P69406 (Coral Bay Village) both designated as 'Commercial' precinct.
Foreshore	Foreshore reserve includes Baz's Park.	Part Reserve 37500 known as Baz's Park designated 'Recreation'.
Caravan and Camping	No designated overflow caravan park/camping ground provided.	Land being part Lot 64 on P30121 and part Lot 501 on P57358 on the south western intersection of Banksia Drive and Monck Head Drive designated as 'Tourism (Overflow Camping/Caravan Park)'.
Industrial	No light industrial area provided. Marine and chemical storage area provided to the south of Lot 62 on P30121.	No designated marine and chemical storage area provided. Part Lot 511 on P53813 south of the water treatment facility designated as a 'Light Industrial' precinct.
	No composite industry site provided.	Approximately 1.3 hectares being part Lot 320 on P53672 being designated 'Composite Industry'.
Public Purposes	Limited designated public purpose reservations provided that demonstrate the location and use for public infrastructure.	All public infrastructure sites including the boat launching facility, water treatment facility, diesel wind turbine electricity generation facility, waste disposal, telecommunications, general use and airstrip appropriately designated 'Public Purpose'.

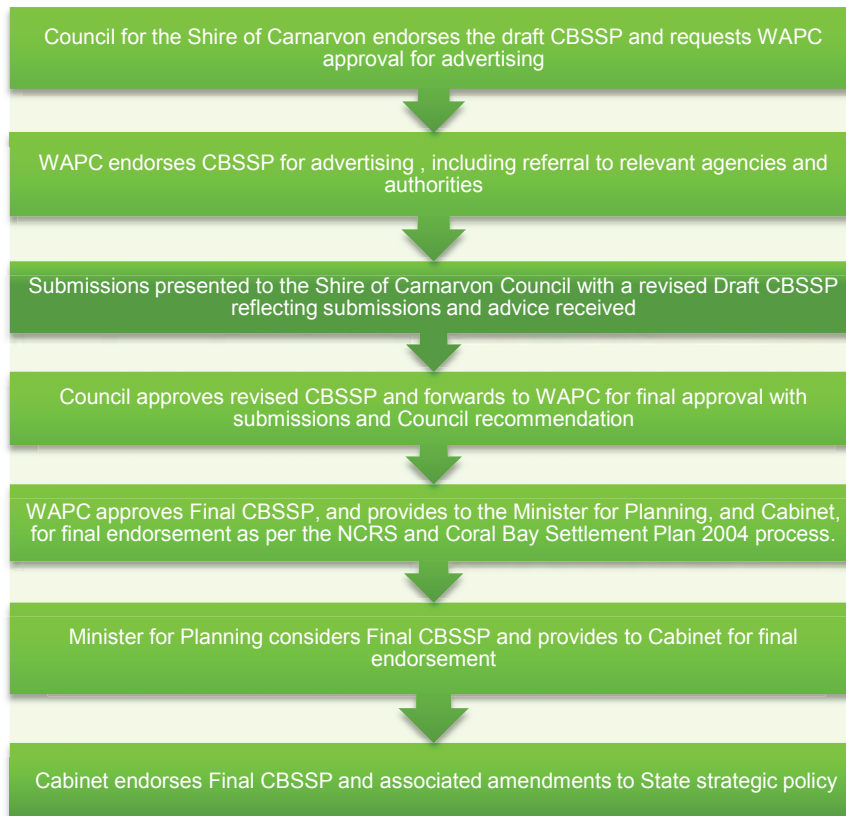
Table 9 - CBSSP Inconsistencies with Current Strategic Framework

8. Implementation

8.1 Statutory Planning Requirements

8.1.1 Adoption of the District Structure Plan

The CBSSP will be both a WAPC and Cabinet endorsed strategic document, and will form the basis for further decision-making by the State and the Local Government. The CBSSP has undergone the following approval process:



8.1.2 Local Planning Scheme

DZS 11 does not contain the relevant provisions to enable the statutory adoption of the structure plan by the Shire of Carnarvon Council or WAPC to enable statutory approval. It is recommended that DZS 11 be amended to reflect the proposed changes in the CBSSP or when the Scheme is reviewed.

8.1.3 Detailed Design and Development Control

The CBSSP, including relevant appendices (Landscape Character Guidelines and Detailed Area Concept Plans), will provide guidance to the Shire of Carnarvon in its consideration of development proposals and amendments to the local planning scheme, the CBSSP will also guide the WAPC in its determination of applications to subdivide land and any future proposed DZS 11 amendments.

8.2 Recommended Strategic Level Actions

Table 10 below provides the key recommended actions to be undertaken by each relevant agency to ensure the appropriate implementation and application of the CBSSP:

Ningaloo Coast Regional Strategy (2004) including Coral Bay Settlement Plan(2004)	
ACTION	RESPONSIBILITY
Undertake relevant amendments to both strategic documents to align with the objectives, content and specific provisions of the CBSSP including deleting inconsistencies and replacing the settlement plan with the CBSSP.	WAPC
State Planning Policy 6.3 – Ningaloo Coast	
ACTION	RESPONSIBILITY
Undertake relevant amendments to SPP 6.3 to align with amendments and corrections to the Ningaloo Coast Regional Strategy if considered necessary.	WAPC
Local Planning Strategy	
ACTION	RESPONSIBILITY
Prepare a local planning strategy that has strategic regard to the CBSSP and expands on the framework where required to respond to change. The structure plan is to provide the basis for the review of the <i>Shire of Carnarvon District Zoning Scheme No. 11</i> and subsequent local planning scheme amendments.	Shire of Carnarvon WAPC
Undertake extensive future public, key stakeholder and government agency consultation on broader planning and management initiatives to ensure on-going protection of the Ningaloo Coastal environs.	Shire of Carnarvon
Local Planning Scheme	
ACTION	RESPONSIBILITY
Undertake a review of DZS11 to insert relevant provisions, zoning and permissibility to accurately reflect the objectives and specific provisions of the CBSSP.	Shire of Carnarvon WAPC
Local Planning Policy	
ACTION	RESPONSIBILITY
Adopt the Coral Bay Detailed Area Concept Plans and Coral Bay Landscape Character Guidelines as local planning policies to provide guidance to land owners and other developers in the appropriate scale, form and layout of development.	Shire of Carnarvon
Tenure, Land Management and Responsibility	
ACTION	RESPONSIBILITY
Undertake all boundary realignments, subdivisions/ amalgamations, land excisions and allocations to reflect the boundaries demonstrated on the CBSSP. This will also require preparation and allocation of appropriate management orders and reservations over land to be designated as Crown Reserves for the applicable purposes. Enter into agreements to formally allocate land to entities that may be responsible for future development	Conservation Commission of WA Marine Parks and Reserves Authority Shire of Carnarvon WAPC Landgate Department of Lands Other relevant government agencies Utility providers

Table 10 – Recommended Actions


8.3 State Level Consideration

The CBSSP represents State level strategic planning for the continuing development of Coral Bay as premier tourist destination. Modifications to this plan, which align with the vision and intent of the CBSSP, may be approved by the WAPC.

Any proposals in conflict with this intent such as changes of Coral Bay into a typical town with permanent residential land release, (also referred to as ‘normalisation’) shall require Cabinet consideration.

9. References

- Agreements, Treaties and Negotiated Settlements (ATNS) (2012). 'Agreement between the Baiyungu Aboriginal Corporation and the State of Western Australia'. Available From: <http://www.atns.net.au/agreement.asp?EntityID=3774>
- Beard, J (1975), 'Pilbara - Vegetation Survey of Western Australia, Sheet 5, 1:1 000 000 Vegetation Series'. University of Western Australia Press, Nedlands, W.A., 1 map.
- Bowman & Associates Pty Ltd (2009). 'Feasibility Study into Waste Management at Gascoyne Regional Landfills'. Prepared for the Gascoyne Development Commission.
- DAL Science and Engineering Pty Ltd (2002a) Public Environmental Review for two proposals for the development of a single boating facility at either Monck Head, or North Bills Bay, near Coral Bay. Department for Planning and Infrastructure.
- DAL Science and Engineering Pty Ltd (2002b) Public Environmental Review for two proposals for the development of a single boating facility at either Monck Head or North Bills Bay, near Coral Bay: Technical Appendix One-Coral Bay Boating Facility Coastal Geomorphology and processes. Department for Planning and Infrastructure.
- DAL Science and Engineering Pty Ltd (2002c) Public Environmental Review for two proposals for the development of a single boating facility at either Monck Head or North Bills Bay, near Coral Bay: Technical Appendix Four- Coral Bay Boating Facility - Terrestrial Vegetation and Fauna Study. Department for Planning and Infrastructure.
- Department of Conservation and Land Management (1972) Reading the Remote, Landscape Characters of Western Australia. Como, Western Australia.
- Department of Environment and Heritage (2005) History of the Ningaloo Marine Park (Commonwealth Waters) [Online]. Australian Government From: <http://www.deh.gov.au/coasts/mpa/ningaloo/history.html> [2006,
- Department of Environment and Heritage (2006) Ningaloo Reef and Cape Range, Learmonth Minilya Rd, Exmouth, WA [Online]. Australian Heritage Database, Place Details From: http://www.deh.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105881 [2006,
- Department of Transport – Coastal Infrastructure, Coastal Engineering Group (2010). 'Sea Level Change in Western Australia – Application to Coastal Planning'.
- Department of Water (2010). 'Coral Bay Water Reserve – Drinking water source protection plan – Coral Bay town water supply'. Water Resource Protection series. Report WRP 117.
- Ecoscope (2010), Coral Bay Foreshore Management Plan. Department of Parks and Wildlife.
- Environmental Protection Authority, Perth, Western Australia (2002). Coral Coast Resort - Coral Coast Marina Development Pty Ltd. Bulletin 1073.
- Fulton, E (2012). InVitro modelling in support of Coral Bay Structure Plan Review. CSIRO.
- Global Environmental Modelling Systems (GEMS) (2005). 'Cyclone Inundation Modelling for Coral Bay and the Blowholes. Part 1: Coral Bay'. GEMS Report 2005/363. Prepared for Ningaloo Sustainable Development Office, Shire of Carnarvon.
- Hames Sharley WA Pty Ltd (2010). 'Outline Development Plan - Coral Bay Workers Accommodation Village'. Prepared for BAC Village Pty Ltd.
- Intergovernmental Panel on Climate Change (2001) Climate Change 2001: Working Group II: Impacts, Adaptation and Vulnerability. Cambridge University Press.



Jones, T (2012). Simulations of options for the Coral Bay Structure Plan using the Ningaloo Destination Model. Sustainable Tourism Cooperative Research Centre.

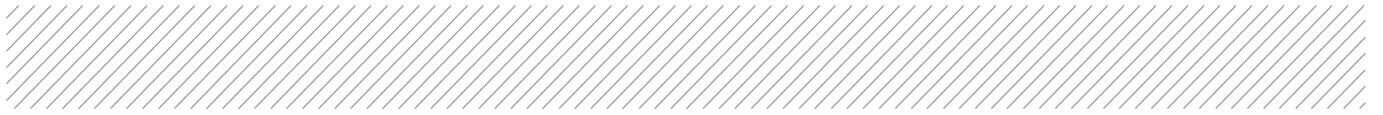
Jones, T. Hughes, M. Wood, D. Lewis, A & Chandler, P (2009). Ningaloo coast region visitor statistics: collected for the Ningaloo destination modelling project. Cooperative Research Centre for Sustainable Tourism.

Marine Parks and Reserves Authority (2005) Management Plan for the Ningaloo Park and Murion Islands Marine Management Area. Department of Parks and Wildlife, Perth.

Michael Robinson and Associates (2002) Public Environmental Review for two proposals for the development of a single boating facility at either Monck Head or North Bills Bay, near Coral Bay: Technical Appendix 6- Report on Archaeological and Anthropological issues. Department for Planning and Infrastructure.

Thompson McRobert Edgeloe (2005). 'Bayview Coral Bay Master Plan. Version 5'.

Yamatji Marlpa Aboriginal Corporation (2012). 'Native Title Claim Updates – Yamatji Region'. Available from: www.ymac.org.au



Appendix A

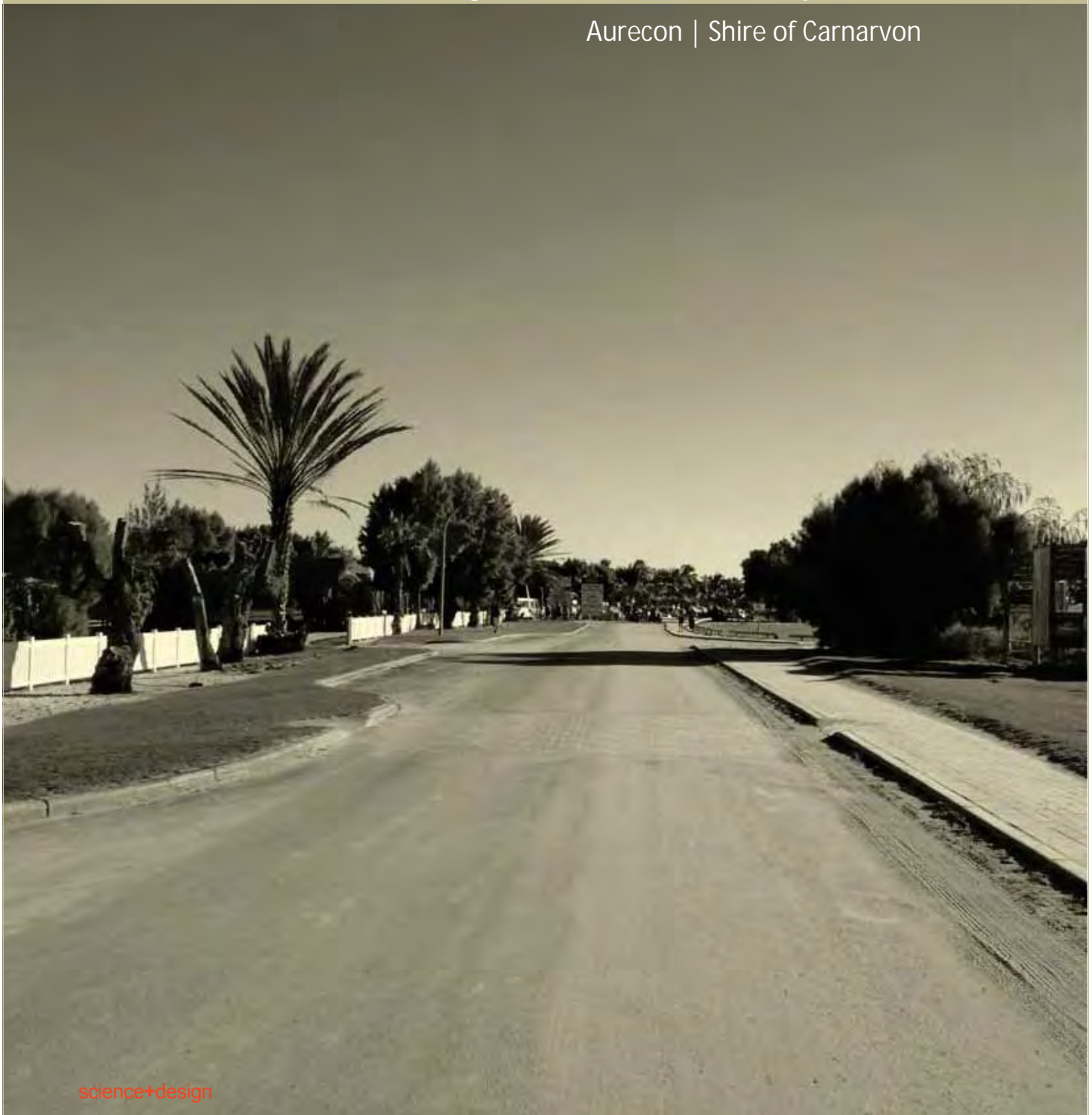
Coral Bay

Detailed Area Concept Plans



Coral Bay Detailed Area Concept Plans

Aurecon | Shire of Carnarvon



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Coral Bay Detailed Area Concept Plans

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Introduction

The Coral Bay Detailed Area Plans are intended as a support appendix to the Coral Bay Settlement Structure Plan prepared in collaboration with Aurecon for the Shire of Carnarvon. Being one of Western Australia's premier tourist destinations, the Coral Bay Settlement is currently experiencing significant residential, commercial and retail growth. This increased growth has placed significant pressure on the public realm and the associated surrounding landscapes. The following Detailed Area Concept Plans provide examples of typical spatial arrangements for a variety of key streetscape and public space areas around the town.

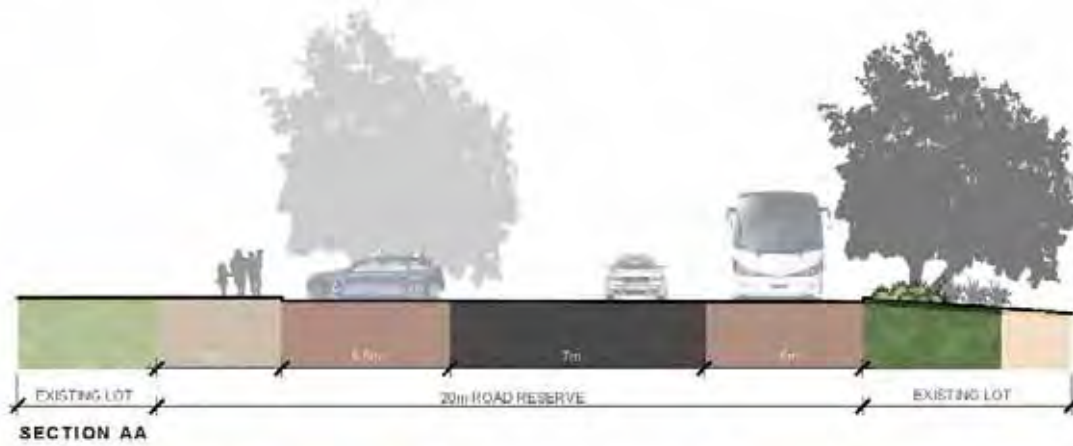
Location Plan



Figure 1, Robinson Street

Robinson Street is the main thoroughfare through the town, providing access to the local community infrastructure and tourist accommodation. It features the following design features:

- Significantly reduced road width
- 4m wide dual use paths
- 90° roadside parking
- Parallel parking on the southern side of the street, which has capacity for tourist coach pull-over
- Extensive street tree planting to provide amenity, shade and wind protection
- Two-way road access



LEGEND

- footpath
- turf
- vegetation
- car parking
- tree planting

LOCATION



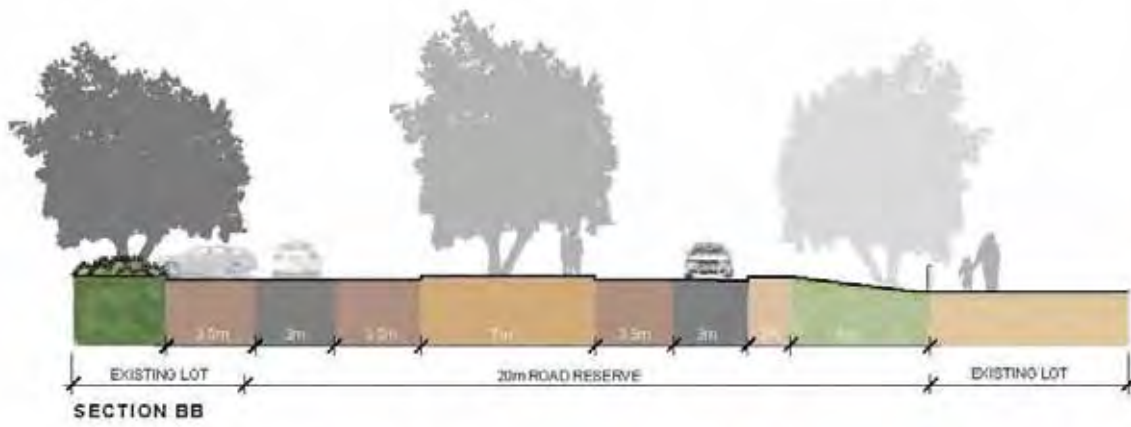
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Shire of Carnarvon Coral Bay Settlement Structure Plan
 Detailed Area Concept Plan
 Figure 1 : Robinson Street Retail and Commercial Precinct

Figure 2, Robinson Street Turnaround

Further west, Robinson Street terminates with a roundabout, continuing on as a one-way street. This turnaround is a key public space, becoming the arrival point for Coral Bay. It features the following design features:

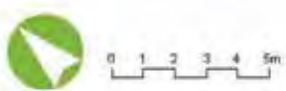
- Views towards Bill's Bay
- Opportunities to access Baz's Park
- Bus bays for tourist coaches
- Bus bays for tourist coach drop-off and pick-up
- Advanced tree planting
- Interpretive signage and toilet facilities
- Pedestrian linkages to French street thoroughfare
- Maintains and reinforces access to existing and proposed resorts and commercial businesses



LEGEND

- | | | | |
|-------------|--|---------------|--|
| footpath | | tree planting | |
| turf | | shelter | |
| vegetation | | | |
| car parking | | | |
| bolards | | | |

LOCATION



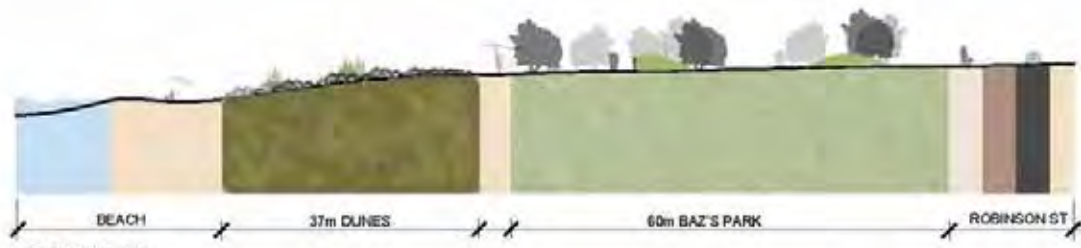
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Shire of Carnarvon **Coral Bay Settlement Structure Plan**
 Detailed Area Concept Plan
 Figure 2 : Robinson Street turn-around

Figure 3, Baz's Park

Baz's Park is the primary public park within the settlement of Coral Bay and should be reinforced as a community hub and recreation area providing a gathering space and beach access point. It features the following design features:

- Reduced road pavement width with adjacent embayed parking
- One-way road access
- 4m wide dual use paths
- The parkland features subtle mounding and swales to reflect the dunal character
- Swales are positioned to capture and treat (remove silt and nutrients) stormwater before it enters the marine environment
- Extensive tree planting and shade structures to provide amenity, shade and wind protection
- Removal of existing toilet and fish cleaning facilities
- Reinforce beach access to protect foreshore vegetation
- Connection to Baiyungu track and key interpretive trail node



SECTION CC
 Horizontal scale: 1:1000
 Vertical scale: 1:2000



LEGEND

- | | | | | | |
|----------------|--|---------------|--|-------------------|--|
| footpath | | tree planting | | shade shelter | |
| turf | | existing tree | | interpretive node | |
| vegetation | | | | | |
| Balyungu track | | | | | |

LOCATION



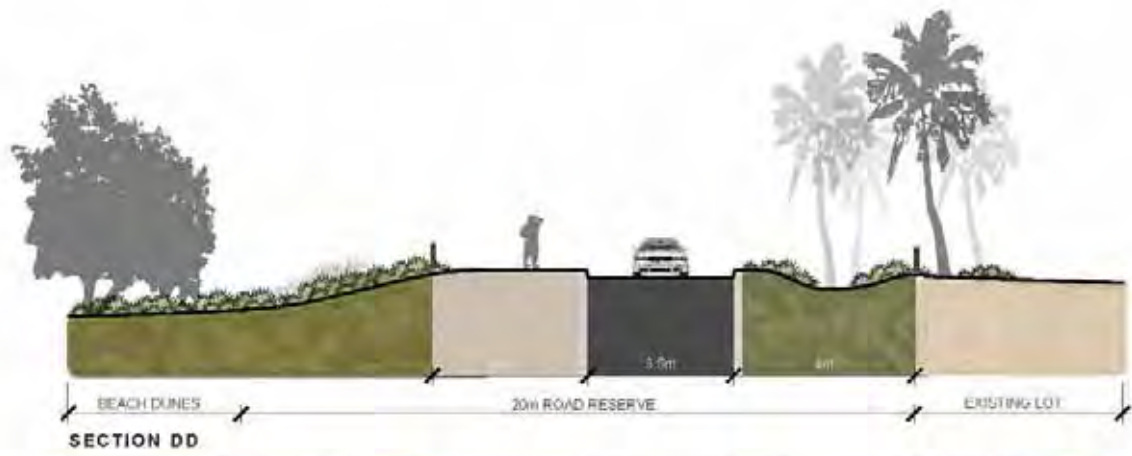
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Shire of Carnarvon Coral Bay Settlement Structure Plan
 Detailed Area Concept Plan
 Figure 3 : Baz's Park

Figure 4, Foreshore

The one way street continues on from Baz's Park adjacent to beach foreshore. It features the following design features:

- Reduced road pavement width
- One-way road access
- 4m wide dual use paths
- Maintain protective fencing to dunes
- Swales and tree planting to reinforce existing palms with local Cycad species in an informal (clumped) arrangement
- Accessibility for emergency vehicles will accommodate Jinker access



LEGEND

footpath		existing palm	
lawn		proposed palm	
vegetation		DEC fence	
stone rip-rap			
sand track			

LOCATION



0 1 2 3 4 5m

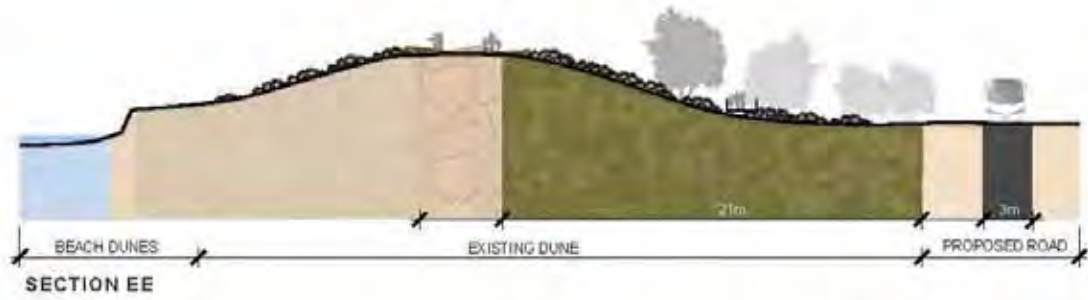
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Coordinate system: GDA_1994_MGA_Zone_48

Shire of Carnarvon Coral Bay Settlement Structure Plan
Detailed Area Concept Plan
Figure 4 : Foreshore

Figure 5, Fletchers Hill Lookout

Fletchers Hill Lookout is a key destination for Coral Bay tourists, providing views across the settlement. It features the following design features:

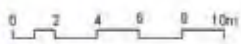
- Tourist coach access
- Provision of new toilets
- Extensive car parking
- 4m wide dual use paths
- Connection to Baiyungu track and key interpretive trail node at lookout point
- Small pockets of turf parkland to provide for visitor arrival and picnics
- Universal ramp provides access to lookout
- Dune rehabilitation planting
- Adjacent built form nestled in to dunes to ensure minimal visual impact
- Baiyungu track heads south towards boat launching facilities



LEGEND

- boardwalk  tree planting 
- Baiyungu track  Fletchers lookout 
- dune rehab 

LOCATION



Date: 30/01/2013 Version: 1
 Coordinate system: GDA_1994_M_GA_Zone_48

Shire of Carnarvon Coral Bay Settlement Structure Plan
 Detailed Area Concept Plan
 Figure 5 : Fletchers Hill Lookout

Figure 6, Banksia Drive Carpark

Banksia Drive and the adjacent car park provide access to the southern part of the settlement heading back towards the proposed road connecting to Fletchers Hill Lookout. It features the following design features:

- Extensive street tree planting to provide amenity, shade and wind protection
- Formalised 90° roadside parking
- Formalised pedestrian circulation to provide access to primary school, FESA facilities and French street pedestrian thoroughfare
- Roadside revegetation to control dust



SECTION FF



LEGEND

footpath		tree planting	
barf			
vegetation			
car parking			

LOCATION



0 1 2 3 4 5m

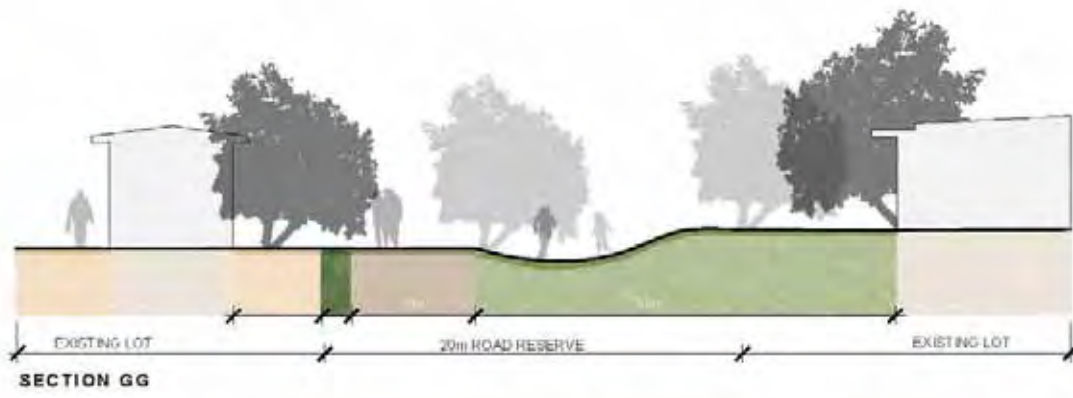
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Shire of Carnarvon Coral Bay Settlement Structure Plan
 Detailed Area Concept Plan
 Figure 6 : Banksia Drive Carpark

Figure 7, French Street

The French Street road reserve is proposed to be redeveloped as a pedestrian thoroughfare connected Banksia Drive to the central area of Robinson Street. It features the following design features:

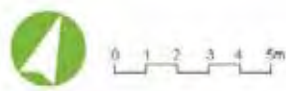
- Extensive park and street tree planting to provide amenity, shade and wind protection
- Graded landscape to channel stormwater
- Planting and revegetation using local species
- Maintain a passive connection to neighbouring properties
- Potential for play and exercise equipment



LEGEND

- footpath
- turf
- vegetation
- tree planting

LOCATION



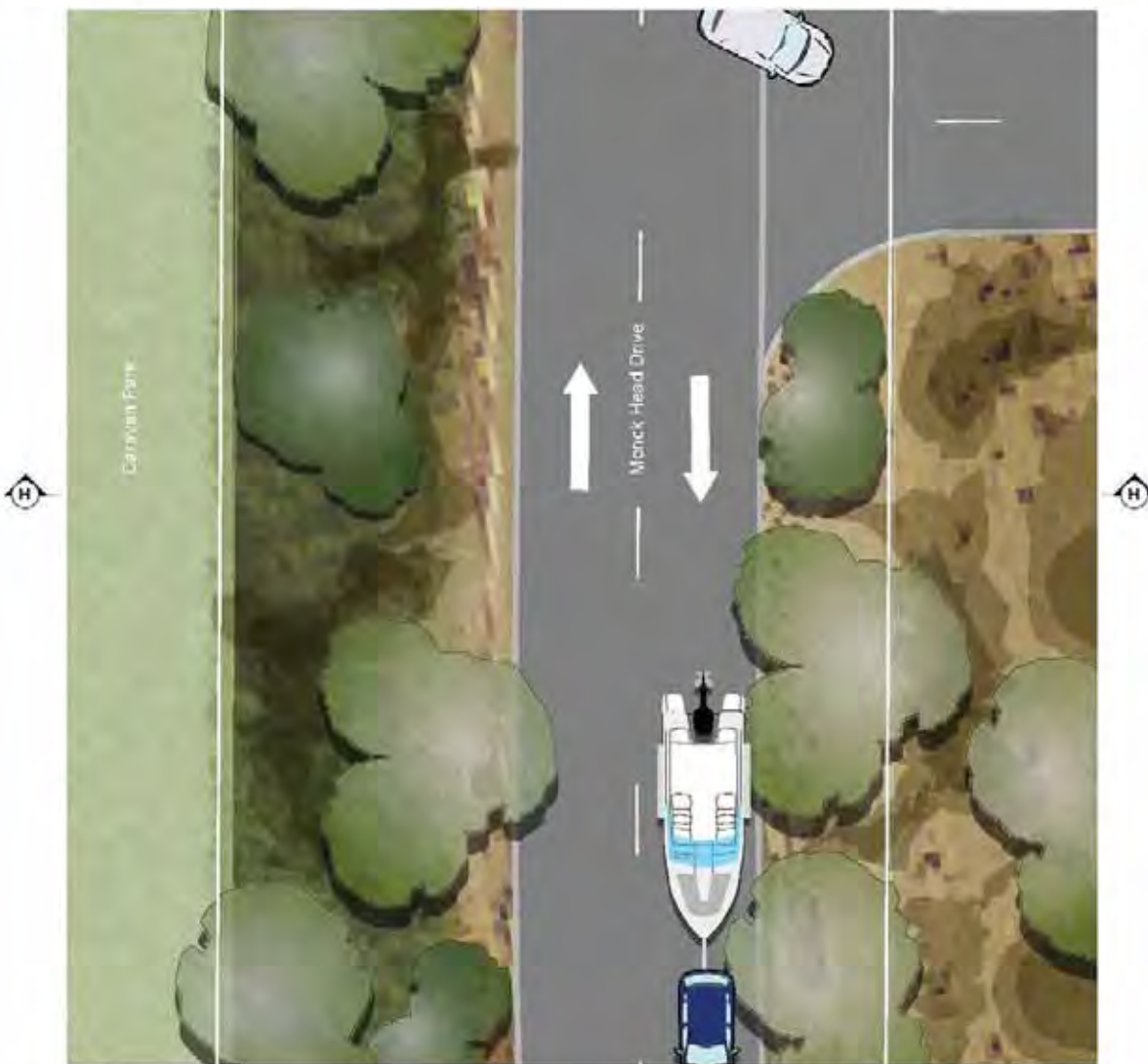
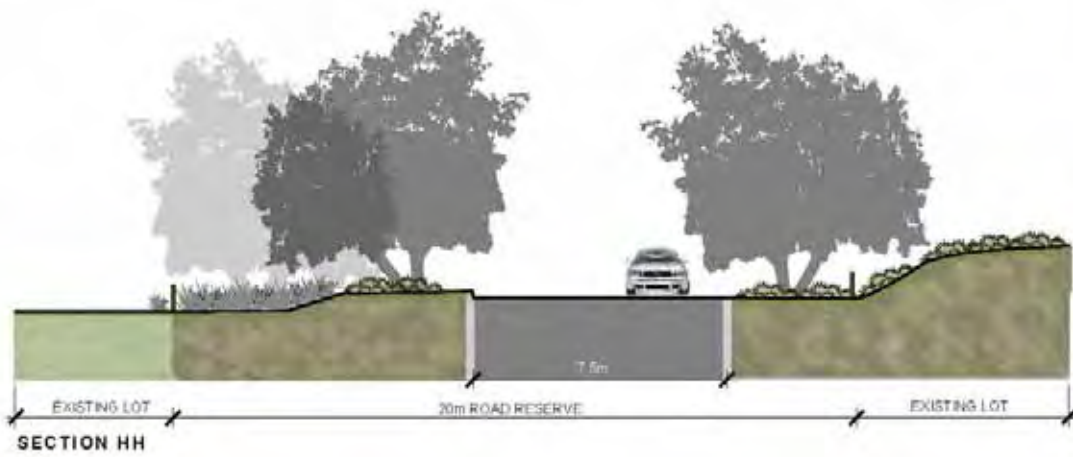
Date: 30/1/2013 Version: 1
 Coordinate system: GDA_1984_MGA_Zone_49

Shire of Carnarvon **Coral Bay Settlement Structure Plan**
 Detailed Area Concept Plan
 Figure 7 : French Street

Figure 8, Monck Head Drive

At this point Monck Head Drive connects south towards the boat launching facilities and the new service station. It features the following design features:

- Roadside revegetation and tree planting to provide amenity, shade and wind protection
- Swales to accommodate drainage



LEGEND

- turf
- existing vegetation
- tree planting

LOCATION



0 1 2 3 4 5m

Date: 30/01/2013 Version: 1
 Coordinate system: GDA_1984_MGA_Zone_48

Shire of Carnarvon Coral Bay Settlement Structure Plan
 Detailed Area Concept Plan
 Figure 8 : Monck Head Drive

Street Trees

The proposed tree planting for the Coral Bay Settlement advocates the use of locally occurring tree species augmented with the use of existing exotic tree species for high amenity areas. Generally, there should be a shift away from the extensive use of Tamarisk and Coconut Palms due to the risk of coconut injuries and cyclone wind throw.

Refer to the street recommendations for images and heights of the trees appropriate to the Coral Bay environment.



Brachychiton populneus



Corymbia terminalis



Eucalyptus camaldulensis



Ficus macrophylla



Ficus microcarpa vari. hillii

Common Bush Trees



Cupaniopsis anacardioides



Eucalyptus victrix



Eucalyptus microtheca



Lagunaria patersonii



Melaleuca lanceolata

Common Bush Trees



Allocasuarina littoralis



Casuarina equisetifolia incana



Tamarix parviflora

Common Bush Trees



Washingtonia robusta



Livistona yardiensis



Delonix regia

Common Bush Trees



Banksia integrifolia



Pittosporum phylliraeoides



Santalum spicatum

Common Bush Trees

Tree Schedule (incl mature height)

Western Australian

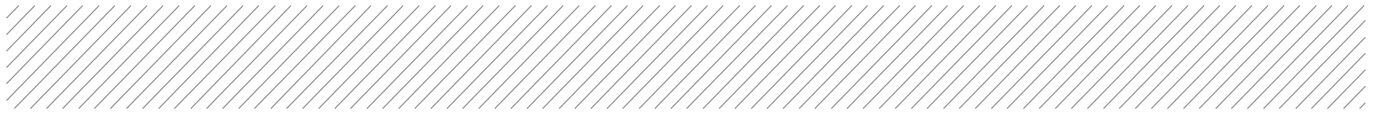
<i>Allocasuarina fraseriana</i>	Western Sheoak	8m
<i>Allocasuarina lehmanniana</i>	Dune Sheoak	7m
<i>Allocasuarina littoralis</i>	Black Sheoak	9m
<i>Corymbia terminalis</i>	Bloodwood	18m
<i>Cupaniopsis anacardioides</i>	Tuckeroo	10m
<i>Eucalyptus camaldulensis</i>	River Red Gum	15m
<i>Eucalyptus leucophloia</i>	Mignum	10m
<i>Eucalyptus microtheca</i>	Coolibah	10m
<i>Eucalyptus oleosa</i>	Red Mallee	11m
<i>Eucalyptus victrix</i>	Coolibah	12m
<i>Ficus platypoda</i>	Desert Fig	6m
<i>Livistona yardiensis</i>	Yardie Creek Palm	20m
<i>Melaleuca lanceolata</i>	Rottnest Island Tea Tree	12m
<i>Pittosporum phylliraeoides</i>	Weeping Pittosporum	5m
<i>Santalum spicatum</i>	Sandalwood	5m

Australian

<i>Banksia integrifolia</i>	Coast Banksia	5m
<i>Brachychiton populneus</i>	Kurajong	20m
<i>Casuarina equisetifolia incana</i>	Horsefali Sheoak	6m
<i>Ficus macrophylla</i>	Moreton Bay Fig	15m
<i>Ficus microphylla var 'hillii'</i>	Hill's Fig	15m
<i>Lagunaria patersonii</i>	Norfolk Island Hibiscus	12m

Exotic

<i>Delonix regia</i>	Royal Poincianna	10m
<i>Tamarix parviflora</i>	Small Flower Tamarisk	5m
<i>Washingtonia robusta</i>	Washingtonia Palm	25m



Appendix B

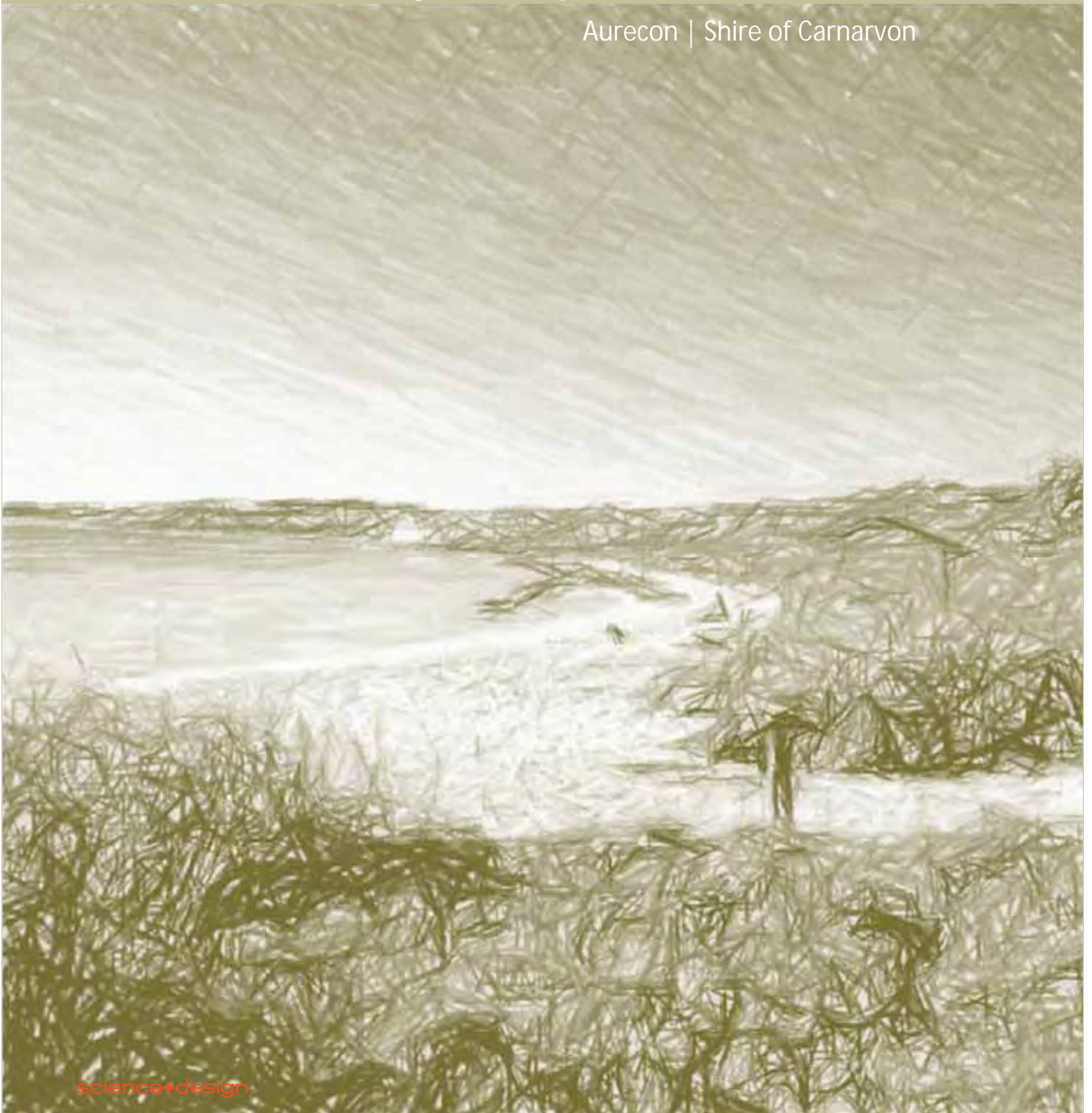
Coral Bay

Landscape Character Guidelines



Coral Bay Landscape Character Guidelines

Aurecon | Shire of Carnarvon



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Coral Bay Landscape Character Guidelines

Our Reference: 8845-2815-12R

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1.0 introduction

1.1 summary

The Coral Bay Landscape Character Guidelines are intended as a support appendix to the Coral Bay Settlement Structure Plan prepared in collaboration with Aurecon for the Shire of Carnarvon. The Landscape Character Guidelines will inform and conserve the visual character of Coral Bay and any future development proposed for the settlement and its surrounds. This document has been prepared in response to increased pressure on the Ningaloo Reef World Heritage Area and associated landscapes as one of Western Australia's premier tourist destinations and to expand the capacity and range of accommodation, retail and commercial development in Coral Bay.

This report documents and summarises the key landscape values derived from extensive community and stakeholder consultation and aims to establish appropriate management strategies for protecting the character of Coral Bay.

In summary, the recommendations of the Landscape Character Guidelines are to:

- Retain and enhance existing topography and coastal vegetation in a natural form
- Assist in assessing development proposals in terms of scale relative to its local context
- Carefully manage building heights to minimise visual impacts from external vantage points
- Encourage site responsive built form and orientation to enhance sustainable development
- Encourage clustered dwelling arrangements to support a social context
- Maintain the local architectural vernacular of verandas and sheltered exterior living environments
- Low key, public lookouts on dune tops to provide equitable visual access to the vast surrounding landscape
- Optimise paths through dunes, rehabilitating degraded areas and old paths and minimise vegetative cover loss and wind-born dust generation

The Landscape Character Guidelines are based on a landscape assessment that provides a comprehensive and systematic method of identifying, understanding, and mapping the landscape values of a place; and a method for determining and sensitively managing both the values and the impacts of development. An outcome of this interactive process will be a Structure Plan that ensures that the development is in harmony with the surroundings and that enhances the 'sense of place'.

1.2 key terms defined

For the purposes of this study the following key terms are defined:

Environment – refers to the biophysical and social attributes of a place – typically composed of climate, geology and landform, vegetation, water-form, fauna and built structures.

Landscape – refers to the ‘sensed’ environment. It’s associated values are often expressed in a diverse range of aesthetic, social and historic ways – both visually and non-visually.

Sensed - detected by instinct or inference rather than by recognized perceptual cues (word-net.princeton.edu/perl/webwn).

Landscape Values – are the values people derive from their ‘sensed’ interpretation and experience of the environment.

Landscape Character Unit – a specific area of land and/or water with common characteristics derived from a combination of climate, landform, vegetation, water-form, and cultural land use patterns.

Landscape Assessment – a systematic planning process that defines environmental attributes as landscape values experienced by people.

Horizon Line – the point of transition from land or water based feature to the sky from the viewer’s vantage point. For the purposes of this study, it is assumed vantage points are located at 1600mm the average eye-height of a standing person) above the ground surface or the surface of the ocean. It should be noted that vegetation and structures contribute to the shape (or silhouette) of the horizon-line.

1.3 Landscape assessment

This report has incorporated a landscape assessment that responds to landscape sensitivity and has been adapted specifically to Coral Bay and its surrounding environment. The methodology is as follows:

- Identification of Landscape Values held by community members and stakeholders through a consultation process
- Site Appreciation - Bio-physical & Socio-cultural Character
- Landscape Values & Management Strategies

2.0 landscape values

2.1 landscape perceptions

In order to assess a landscape and manage the impacts of development on this landscape, it is necessary to know what is valued about the particular place. For this assessment, a desktop analysis of the site as well as local community input provided the basis for identifying the landscape values. The following is a brief summary of the literature review and consultation that formed the basis of understanding the landscape values of Coral Bay.

Landscape Significance:

The assessment of landscape significance identifies the features that are most important to the experience and enjoyment of people. They are normally separated into three categories, aesthetic, social and historic. Aesthetic significance is assessed using visual criteria based on assumptions drawn from preference research in Australia and overseas, and from formal aesthetic theory. It assumes that aesthetic significance increases with:

- topographic character
- level of natural character or wilderness
- land use compatibility
- presence, extent and edge of water forms
- presence of outstanding natural features
- legibility of features
- sympathy in land use response to natural features.

Social significance is defined as:

- places that are a recognised recreation site
- places which demonstrate a strong association with people
- places which are frequently listed by surveys for reasons other than visual attractiveness or interest and
- places that have been previously documented as having a strong association with people.

Historic significance is defined as:

- features with tangible historic characteristics (features, physical evidence)
- Places with intangible historic characteristics (stories, ceremonies, hidden evidence)

2.2 site appreciation

Coral Bay is the most developed and closest access point to the Ningaloo Marine Park and is an important tourism node. A range of tourism accommodation is offered and current capacity is estimated to be in the region of 2150 overnight visitors. Approximately 250 workers and business owners currently live in the settlement.

Both overnight and day visitation to Coral Bay has been increasing over a number of years and this is expected to continue. Visitors to Coral Bay arrive via bus, regional airlines, and private or hire car (driving time from Perth is approximately 11 hours). Opportunities for rest and recreation in Coral Bay cover both terrestrial and marine activities. These holiday activities include shore based fishing, snorkelling, wind surfing and kite surfing (south of Monk Head), tours (kayak adventures, boat tours, deep sea fishing and ATV safaris), bush walking, and general wildlife observation.

The principal planning objective for Coral Bay is for the settlement to continue to be an attractive destination for tourists and visitors seeking to experience the natural features of the Ningaloo Marine Park and the remote holiday atmosphere of Coral Bay through improved sustainable tourism and recreational practices (The Coral Bay Settlement Plan, Ningaloo Coast Regional Strategy Carnarvon to Exmouth, 2004), of which the Coral Bay Settlement Structure Plan (2013) aims to reinforce this objective. The focus is on improving the character and experience that attracts people to Coral Bay so that it reflects a village atmosphere, facilitating sustainable management of the area the protection of the unique natural qualities of the coastline and adjacent marine park.

The planning objective for the foreshore reserve is “to reserve remaining foreshore areas in the north and south of the Coral Bay tourist settlement and manage the reserve to ensure the protection of the coastal environment for the benefit of the general community” (Ningaloo Coast Regional Strategy Carnarvon to Exmouth, 2004).

To help realise this objective in visual character terms extensive landscape-based analyses has been prepared including: Landscape Character Analysis; Biophysical Context; Socio-cultural Context and through extensive Community Consultation and referencing back to previous studies and supporting documents. The outcomes of these analyses are documented spatially in the appendices and form the basis for the management recommendations outlined this report.

2.3 landscape character

The Coral Bay town site is located within the North West Cape Range landscape character type as defined by Reading the Remote (Calm, 1972). The North West Cape Range is characterised by the rugged limestone cliff landforms of the Cape Range. The range dissects the region, creating a backbone within the otherwise flat peninsula landscape with fringing coastal plains. The town site sits in the narrow western coastal plain central to the Ningaloo Reef.

The western coastal plain is dominated by the dramatic visual contrast between the dark shaded ranges and the narrow coastal landscape. Strong sea breezes buffet the crystalline waters covering the diverse and spectacular Ningaloo Reef. Numerous gullies and creeks dissect the coastal plain, developed by scouring waters travelling down from the flat-topped plateaus of uplifted limestone through rugged canyons and deeply dissected ravines. Similar to the eastern plain, shallow channels cross the plain in parallel flow lines fanning sediment across the low lying terrain enhancing an ancient linear dune system

2.4 biophysical context

TOPOGRAPHY

The general topography of Coral Bay is dominated by linear sand dunes running in a north-south alignment. These often steep dunes form prominent ridgelines that provide some protection in interdunal swales from prevailing southerly and westerly breezes. The town site is nestled between these dunes creating an intimate scale for the town site and its physical setting on the coastline. A number of undeveloped parcels of land straddle the tops of dunes to the north and south sides of town that may require careful development height considerations to maintain an understated presence on the natural topography of this coastline.

Fletchers Hill to the western edge of the town forms the predominant landform feature offering views across town and north across Bills Bay to Skeleton Bay and Maude's Landing beyond. There is also a large dune to the east of town that provides a natural 'gateway' effect for visitors approach by the only sealed road into Coral Bay, with a number of crosses erected to the southern peak of this dune signifying in informal dog cemetery.

VEGETATION

The pre-development vegetation complex is classified as 'Coastal Dunes (veg assoc. 662): Triodia Hummock grassland; shrub steppe; mixed acacia scrub and dwarf scrub with soft spinifex & Triodia basedowii' (Beard, 1975). Today, the townsite is dominated by Tamarisk (*Tamarix aphylla*) and a variety of exotic palm tree species. Another very invasive weed species, the Buffel grass (*Cenchrus*

ciliaris) has destroyed and continues to compete with the local flora within the foreshore dune system. Erosion is also a major issue with this prominent coastal town as a result of uncontrolled access and poorly defined management responsibility along the coastal headland.

GEOLOGY

The site's geology is mainly characterised as coastal dunes, beaches and beach ridges. The foreshore region to the west is classified as bundera calcarenite and to the east of the townsite the geology is calcarenite with calcrete soils (Geological Survey of WA (GSWA), 2000).

WATER FORM AND DRAINAGE

Located in a naturally formed swale, the town site is surrounded by north-south rows of a linear dune system. This low lying landform is also subject to storm surges during cyclonic events the extent of which is shown on the opportunities and constraints plan.

CLIMATIC INFLUENCES

The region experiences a varied climate ranging from hot and often inhospitable extremes in summer; to balmy pleasant temperatures in winter. High rainfall during the summer months, influenced by storm and cyclone events is offset by the high evaporation rate; this is expressed through the arid and parched environment.

The climate of the study area is classified, arid, with two seasons; a hot summer which extends from October to April and a mild winter from May to September. The hottest month is January with mean maximum temperatures of 37.9°C and the coolest month is July with mean minimum temperatures of 24.1°C (DAL Science and Engineering Pty Ltd, 2002a). Coral Bay area has an annual evaporation of about 2700 mm, which exceeds the annual rainfall along the coast of between 200-300 mm. Rainfall can occur in summer and winter, with summer rainfall from cyclones being irregular but sometimes heavy. Lighter more regular falls occur in winter with June the wettest month of the year. The proximity of the reef system to shore is in part the result of the region's characteristically arid climate with low average annual rainfall and extremely low levels of run-off. Although arid, there is considerable variation in the climate both within the region and from year to year (Marine Parks and Reserves Authority, 2005).

CLIMATE CHANGE

Trends identified in the region continue to be generally consistent with that elsewhere in the world. Mean temperatures have increased as much as 0.1°C per decade over the past century, a faster increase in night time than daytime temperatures, and sea level has been rising at an average of about 20 mm per decade over the past 50 years (Intergovernmental Panel on Climate Change, 2001).

Significant potential impacts from climate change identified on Australasian land-based ecosystems included alteration in soil characteristics, water and nutrient cycling, plant productivity, species

interactions, and ecosystem composition and function, exacerbated by any increases in fire occurrence and insect outbreaks. Aquatic systems would be affected by changes in runoff, river flow, and associated transport of nutrients, wastes, and sediments. These changes and sea-level rise would affect estuaries and mangroves. Australia's coral reefs were considered to be vulnerable to temperature-induced bleaching and possibly to sea-level rise and weather change (Intergovernmental Panel on Climate Change, 2001).

WIND REGIME

The synoptic wind patterns in the Coral Bay region are largely controlled by the west to east movement of a belt of anti-cyclonic system which undergoes a seasonal latitude migration resulting in south to south westerly winds in summer and east to south easterly winds in winter (DAL Science and Engineering Pty Ltd, 2002a).

The sea breeze is a local scale phenomenon that is generated by the temperature differential between the land and the ocean (DAL Science and Engineering Pty Ltd, 2002b). Strong southerly sea breezes typically develop during summer afternoons, but on the western coast of the Cape the winds are predominantly from the south-west with velocities ranging from 1-3 m/sec to over 10 m/sec and the sea breeze develops by late morning (DAL Science and Engineering Pty Ltd, 2002a). Cyclonic winds although infrequent may be severe, exceeding speeds of 150 km/hr. Winds during Cyclone Vance (1998) were recorded in excess of 250 km/hr (Marine Parks and Reserves Authority, 2005).



A4 scale: 1:10,000
0 50 100 150 200m

Date: 19/07/2012 Version: 1
Coordinate system: GOA_1994_MGA_Zone_49

Shire of Carnarvon Coral Bay Settlement Structure Plan
Figure 1: Biophysical conditions

2.5 socio-cultural context

Cultural and Heritage Considerations

INDIGENOUS

The area of the Ningaloo Marine Park including Coral Bay has significant Indigenous heritage values associated with historical and current use by indigenous people. While the relationship between Indigenous people and the Commonwealth waters of Ningaloo Marine Park is not known, the indigenous cultural values of the Commonwealth waters are inferred by the long association of Indigenous people with the coastal waters of the area. Archaeological evidence from the Cape Range peninsula indicates that Indigenous people inhabited and used the coastal resources of the Ningaloo coast for over 30,000 years (Department of Environment and Heritage, 2005).

Ningaloo Marine Park and its hinterland were occupied by two groups, the Junigudira and Baiyungu. The Junigudira were located on North West Cape and the Cape Range peninsula to a line between the bottom of Exmouth Gulf and Whaleback Hills. The territory of the Baiyungu extends south from Whaleback Hills to Point Quobba, comprising Coral Bay and Coastal areas of Southern parts of Ningaloo, Cardabia, Warrora Gnaraloo and Quobba Stations. The coastal portions of this area now comprise the southern parts of Ningaloo, Cardabia, Quobba and Warroora Stations. The Indigenous people had sophisticated, coastally focused subsistence strategies and maintained an extensive trading network (Department of Environment and Heritage, 2006).

Indigenous people are variously reported to have left the Cape Range peninsula either prior to Non-indigenous settlement or shortly thereafter, possibly due to the incidence of diseases introduced by whalers or pearlers who operated out of Exmouth Gulf. More recently some of the traditional people have returned to the area. The Baiyungu Aboriginal Corporation has purchased and is managing Cardabia Station, near Coral Bay. The Ningaloo coast is subject to a Native Title Claim by the Gnulli, representing a number of language groups in the Gascoyne, with Yamatji Land and Sea Council being the supporting representative body to the claimants (Department of Environment and Heritage, 2005).

Indigenous Heritage is protected under the Indigenous Heritage Act 1972 and traditional hunting of turtle and dugong is permitted in accordance with the Wildlife Conservation Act (Department of Environment and Heritage, 2006)

Heritage Sites

A number of cave sites in the Cape Range have yielded materials that indicate that both terrestrial and marine resources were exploited for food used and decorative ornaments by indigenous people. These sites represent the oldest dated evidence for exploitation of marine resources in Australia and provide the earliest evidence for human decorative ornaments in Australia (Department of Environment and Heritage, 2005).

Two Indigenous Heritage sites were identified within the study area. The public disclosure of detailed information regarding Indigenous Sites is not permitted under the general licensing agreement for access to the Indigenous Sites Register but an indication of the types of sites they are noted below:

Site ID	Site Name	Site Details*
159	Coral Bay 02	Artefacts/Scatter, Midden/Scatter
6616	Coral Bay Access 2	Artefacts/Scatter, Midden/Scatter

NON-INDIGENOUS SETTLEMENT HERITAGE

The first recorded Non-indigenous contact with North West Cape was a sighting by the crew of the Dutch ship *Zeewolf* in 1618. Later in the same year, the first known landing by a Non-indigenous was made by Captain Jacobz of the ship *Mauritius*.

The area has an extensive maritime history, such as the lighthouses for passing vessel traffic and the whaling trade, with numerous shipwrecks resulting from the number of vessels that plied the coast. American whalers operated in the area as early as the 1790s, some 90 years before the land was utilised by Non-indigenous for grazing. Whaling at this time was a ship-based operation and, while it is likely landings were made to acquire fresh water and possibly fresh meat, no infrastructure was established on land. The whalers are reported to have initially targeted sperm whales and later, in response to a better understanding of whale migrations, humpback whales.

The pastoral industry commenced with the establishment in 1876 of Minilya Station, which originally encompassed the whole of the Cape Range peninsula. This area was progressively subdivided into the present station areas, with Yardie Creek, Ningaloo, Cardabia and Warroora Stations occupying the western coastline. Yardie Creek Station was subsequently acquired by the Western Australian State Government to form part of the Cape Range National Park.

There are no recognised Non-indigenous Heritage sites within the study area; however, there are remains of a whaling factory at Norwegian Bay north of Coral Bay that provides a glimpse of the industry that existed from 1913 till 1957. Shipwrecks are of great interest to many visitors since they provide a tangible link with the history of the reserves in a dynamic environment. Submerged wrecks can also provide dive sites that combine a historical and natural experience due to the array of marine life that accumulates on and around the wrecks (Michael Robinson and Associates, 2002).

There is also a lighthouse at Vlamingh Head, northern tip of Cape Range National Park, which represents one of the area’s most visual human landmarks. The lighthouse was decommissioned in 1967 (Marine Parks and Reserves Authority, 2005).

Open Space Networks

Public open space in Coral Bay is formalised at Baz's Park within the Foreshore Reserve and is currently managed by a combination of DEC staff, primary land owners maintenance staff and the Shire of Carnarvon depending on the management tasks at hand.

The beach areas of Bills Bay and Paradise Beach are the most popular open space recreation areas in the town, and this is what visitors come here to experience. At high tide, these areas are consumed by rising sea water that drives visitors either into the water, into the dune vegetation, to Baz's Park or back to their accommodation.

Irrigation is supplied by the Bayside Resort's bore water supply to the north of town. This water is of a poor quality with high mineral salt and algal content necessitating a high level of application to maintain green turf. The availability of bore water is abundant, however currently all supply facilities under current use are in private ownership.

Pedestrian and Vehicular Circulation

Coral Bay is a tourism town, due to its location and proximity to the Ningaloo Reef. It has a small permanent population, which is augmented by a large transient population in peak seasons by visitors to the region. This has led to a focus on pedestrian circulation, with visitors moving towards recreational areas such the beach, retail and commercial hubs. The existing 'walk-ability' radius is approximately 350m, suggesting low vehicle dependency. However there are no formalised cycle or dual use paths around the settlement of Coral Bay, presenting a significant opportunity to increase mobility around the town.

Access into the town is via Mauds Landing Road, off the Minilya-Exmouth Road. Many visitors to the region fly into Learmonth Airport in Exmouth and drive down to Coral Bay. Access to proposed development will be increased with the extension of Banksia Drive to loop around the existing settlement and hook back in to Robinson Street.

The town centre is focused on Robinson Street, which is the main pedestrian link through town, in addition to providing access to all tourist accommodation providers and community infrastructure such as supermarkets and café's.

French street is being proposed for a re-design as a 'green' pedestrian thoroughfare, allowing for a significant north-south connection through town.

The Baiyungu Trail is a major trail network along the coastline; it has numerous trail heads and interpretation nodes. The Baiyungu Trail is managed by the Baiyungu Aboriginal Corporation



A4 scale: 1:10,000
 0 50 100 150 200m

Date: 19/07/2012 Version: 1
 Coordinate system: GDA_1994_MGA_Zone_48

Shire of Carnarvon Coral Bay Settlement Structure Plan
 Figure 2: Sociocultural conditions

2.6 summary of key landscape values

The biophysical and socio-cultural character mapping for Coral Bay and the immediate surrounds was derived from aerial photography, topographic survey, local knowledge and site reconnaissance. The following key landscape values are the biophysical and socio-cultural features in the landscape that are most highly valued as defined by the research, community consultation and mapping. They form the basis for the establishment of guidelines and strategies which protect the landscape values from the impacts of future development within Coral Bay.

In summary the key landscape values derived from the interrelationship between the landscape perceptions and attitudes and the mapping of biophysical and socio-cultural character are:

- A predominantly low and gently sloping topography
- linear sand dunes running in a north to south alignment
- biodiversity of both marine and terrestrial environments
- expansive views across the settlement and surrounding natural landscape (from Fletchers Hill Lookout)
- existing settlement sits predominantly within swales between the dunes
- emphasis on the ocean as the essence of the town both socially (ocean recreation) and economically (tourism)
- the horizon line remains the dominant landscape feature
- interaction with the coast for recreation
- strong spatial enclosure by a large eastern dune (running north-south), which acts as a gateway to the town

Potential Impacts from Development

The challenge for coastal settlements is to balance a requirement for growth with the necessity to retain the existing character and sense of place. This means any development needs to be thought of within an environmental context; views, access, transport, amenity. Potential issues that may occur if development doesn't consider the key landscape values are:

- development which is inappropriate to the settlements present and future demographic mix
- removing the qualities that give a place its liveability, lifestyle choices and make it a desirable place to live
- degraded pedestrian environments
- privatisation of streets, open space and foreshores, environments which should be public amenity
- locating buildings and infrastructure in areas which are subject to natural hazards (eg. Storm surge)

3.0 management strategies

3.1 built form & public realm

From an understanding of the key landscape values as informed by the site analysis and consultation process, the following character management strategies are illustrated in the following pages.

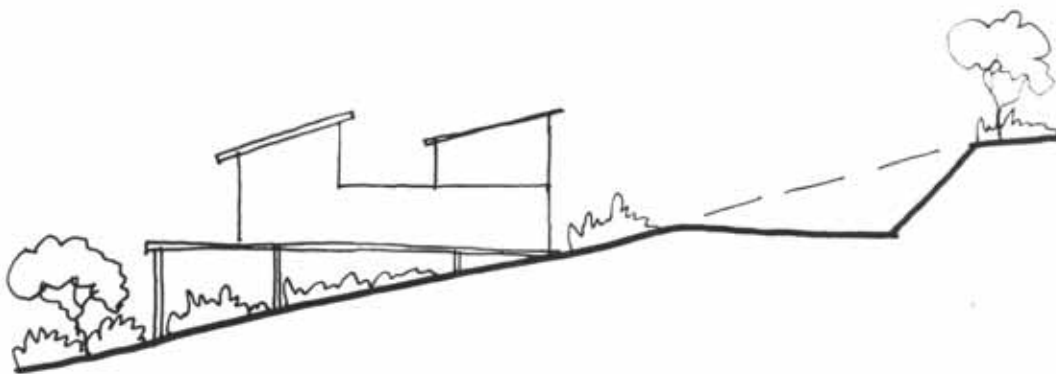


Figure 3: Retain and enhance existing coastal and topography



Figure 4: Model proposed development to assess “skylining” of development. Reconsider development that it out of scale in relation to surrounding built form and landscape features



Figure 5: Building heights are informed by location within the dune, with two story buildings within the swale

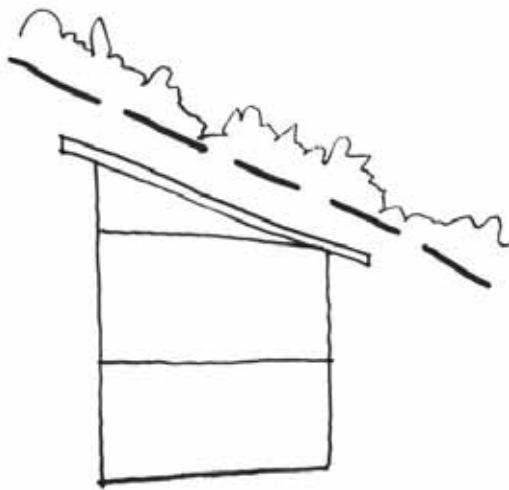


Figure 6: Create roof pitch and orientation to reflect topographical and horizon gradients



Figure 7: Ensure proposed buildings are hidden between dunes, to maintain a "green" horizon line

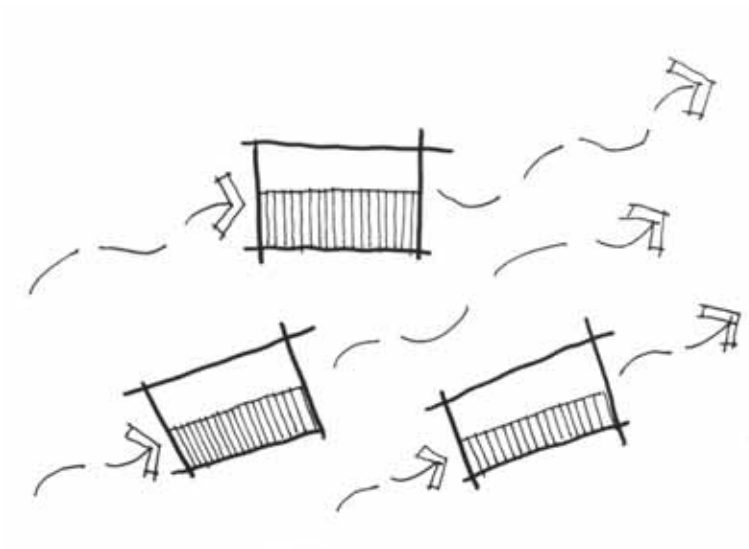


Figure 8: Orient dwellings to maximize passive wind ventilation

Figure 9: Grouped dwellings to encourage a communal atmosphere

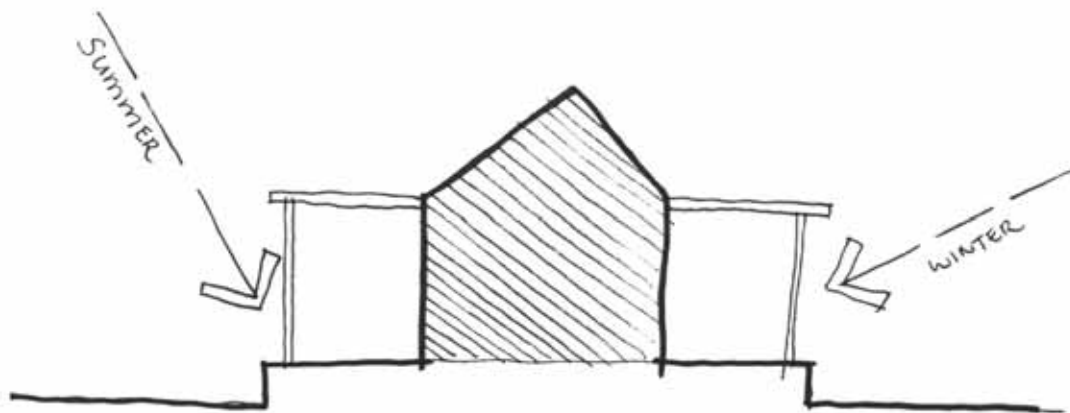
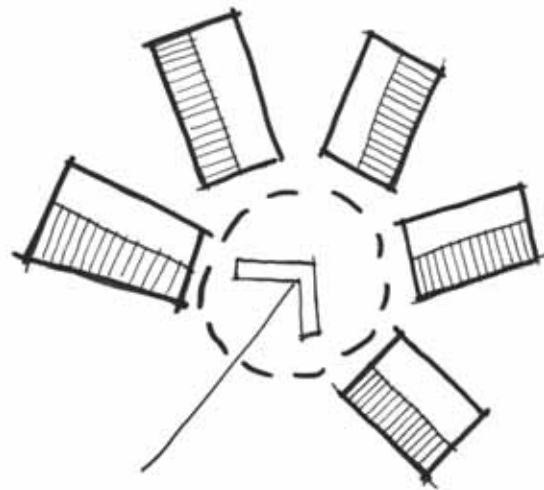


Figure 10: Maintain the local architectural vernacular of verandas and exterior living environments



Figure 11: Avoid structures on top of dunes, so as to reduce any visual impact. They should be retained as lookouts

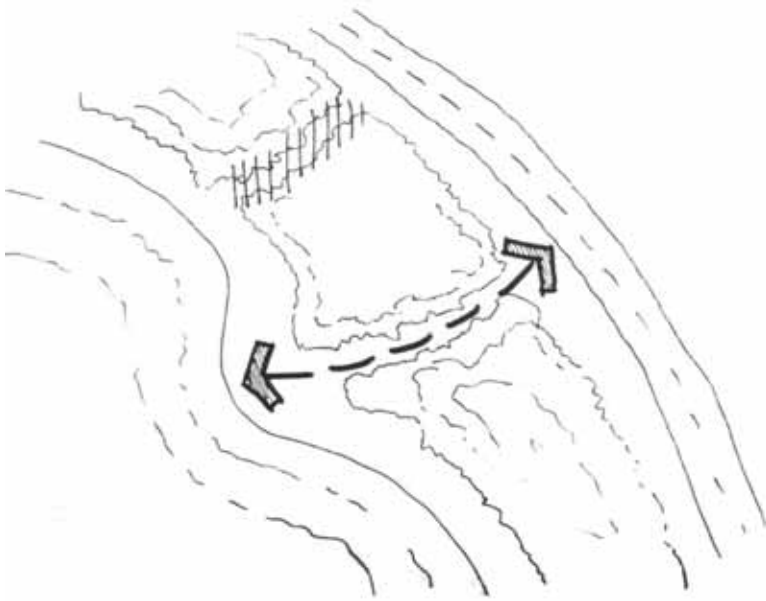


Figure 12: Optimise paths through dunes, rehabilitating degraded areas and old paths

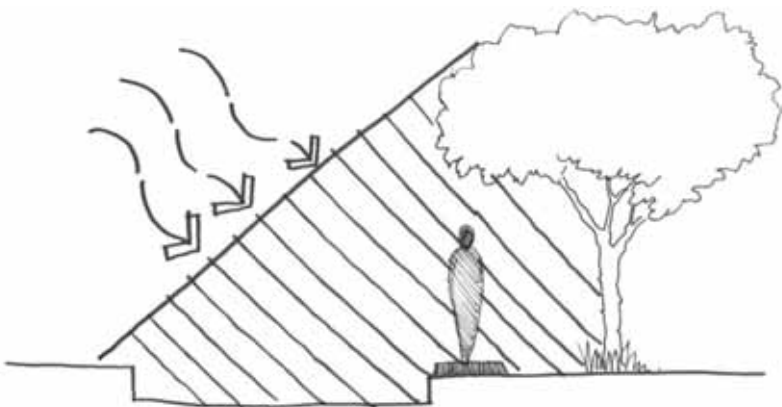


Figure 13: Locate footpaths on north side of east-west roads for shade. Cluster trees and planting to form periodic thickets for shade for pedestrians

Figure 14: Maintain and enhance a green network; allowing a democratic circulation through the town for people and fauna. Avoid use of fences and other ground level barriers

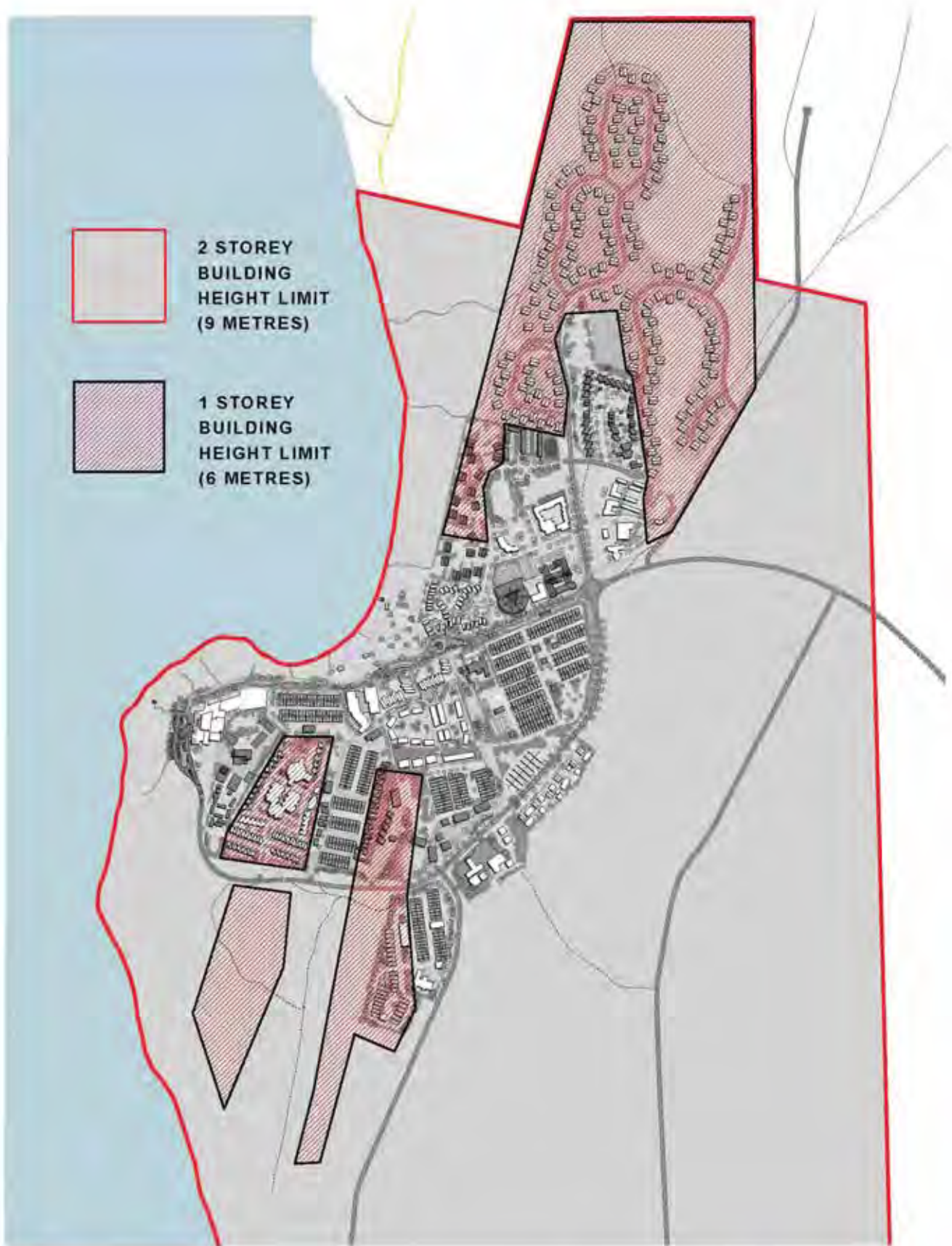


A4 scale: 1:15,000
0 50 100 200m

Date: 13/11/2012 Version: 1
Coordinate system: GDA_1984_MGA_Zone_49

Shire of Carnarvon Coral Bay Settlement Structure Plan
Figure 14: Green Network

Figure 15: Create building height limits to ensure that buildings situated at high points along the ridge line do not negatively impact the surrounding landscape character



A4 scale: 1:15,000
0 50 100 200m

Date: 13/11/2012 Version: 1
Coordinate system: GDA_1994_MGA_Zone_38

Shire of Carnarvon Coral Bay Settlement Structure Plan
Figure 15: Proposed Building Height Limits

3.2 Character Management Objectives

The outcomes of this landscape assessment will inform the design of a more detailed Structure Plan. The following management objectives will preserve the landscape values of the Coral Bay Settlement and its setting:

- Retain and enhance existing topography and coastal vegetation in a natural form
- Assist in assessing development proposals in terms of scale relative to its local context
- Carefully manage building heights to minimise visual impacts from external vantage points
- Encourage site responsive built form and orientation to enhance sustainable development
- Encourage clustered dwelling arrangements to support a social context
- Maintain the local architectural vernacular of verandas and sheltered exterior living environments
- Low key, public lookouts on dune tops to provide equitable visual access to the vast surrounding landscape
- Optimise paths through dunes, rehabilitating degraded areas and old paths and minimise vegetative cover loss and wind-born dust generation
- Preservation and support of both marine and terrestrial biodiversity
- Preservation of the expansive views across the settlement and surrounding natural landscape
- Celebrate the ocean as the essence of the town and its existence
- Facilitate a green network made up clusters of trees and planting to provide shade for pedestrians and habitat links for wildlife

3.3 Conclusion

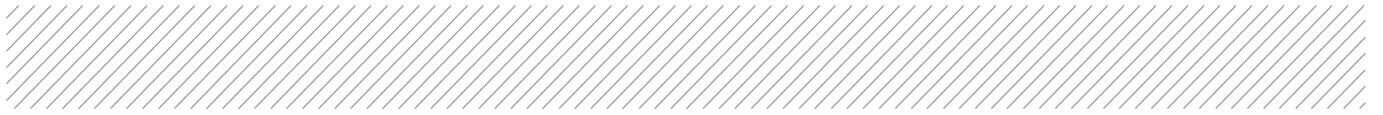
The Coral Bay Settlement holds significant ecological and social value within the context of Western Australia. It is therefore imperative that this value be maintained and enhanced during the next phase of its development as a premier tourist destination. This ecological and social value is translated in to its own set of unique landscape values, which have been outlined in this document. In order to maintain the character of Coral Bay these landscape values must be considered through the implementation of the various proposed character management objectives.

This document is intended as a guideline only and will inform the development assessment process in years to come. The intention is not to be too prescriptive but to generate a set of principles that can be interpreted by both proponents and assessors in achieving outstanding design and development outcomes that will protect and reinforce the current character of Coral Bay.

references

1. Beard, J (1975), 'Pilbara - Vegetation Survey of Western Australia, Sheet 5, 1:1 000 000 Vegetation Series'. University of Western Australia Press, Nedlands, W.A., 1 map.
2. DAL Science and Engineering Pty Ltd (2002a) Public Environmental Review for two proposals for the development of a single boating facility at either Monck Head, or North Bills Bay, near Coral Bay. Department for Planning and Infrastructure.
3. DAL Science and Engineering Pty Ltd (2002b) Public Environmental Review for two proposals for the development of a single boating facility at either Monck Head or North Bills Bay, near Coral Bay: Technical Appendix One-Coral Bay Boating Facility Coastal Geomorphology and processes. Department for Planning and Infrastructure.
4. Department of Environment and Conservation and Marine Parks and Reserves Authority. (2005) Management plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area, 2005-2015. DEC, [Fremantle, W.A.].
5. Department of Conservation and Land Management (1972) Reading the Remote, Landscape Characters of Western Australia. Como, Western Australia.
6. Department of Environment and Heritage (2005) History of the Ningaloo Marine Park (Commonwealth Waters) [Online]. Australian Government From: <http://www.deh.gov.au/coasts/mpa/ningaloo/history.html> [2006,
7. Department of Environment and Heritage (2006) Ningaloo Reef and Cape Range, Learmonth Minilya Rd, Exmouth, WA [Online]. Australian Heritage Database, Place Details From: http://www.deh.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105881 [2006,
8. Ecoscape (2010), Coral Bay Foreshore Management Plan. Department of Environment and Conservation.
9. Intergovernmental Panel on Climate Change (2001) Climate Change 2001: Working Group II: Impacts, Adaptation and Vulnerability. Cambridge University Press.

10. Marine Parks and Reserves Authority (2005) Management Plan for the Ningaloo Park and Muiron Islands Marine Management Area. Department of Environment and Conservation, Perth.
11. Michael Robinson and Associates (2002) Public Environmental Review for two proposals for the development of a single boating facility at either Monck Head or North Bills Bay, near Coral Bay: Technical Appendix 6-Report on Archaeological and Anthropological issues. Department for Planning and Infrastructure.
12. Western Australian Planning Commission (2004) Ningaloo Coast Regional Strategy Carnarvon to Exmouth .Statement of Planning Policy No. 6.3 Ningaloo Coast. Perth, *Western Australia*.



Appendix C

CSIRO InVitro Modelling

InVitro modelling in support of Coral Bay Structure Plan Review

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26 Novemeber 2012

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1 Introduction

The Ningaloo-Exmouth region is a system defined by the importance of extremes of scale - from the finest of reef scale interactions (metres or less) to regional ocean current systems and human use patterns, and onto global influences (e.g. fuel prices, industrial demand and the tourism market). This creates significant modelling challenges, regardless of the kind of model used. The problem is complicated further by the mismatch between jurisdictional boundaries of management authorities and system breakpoints (e.g. marine species assemblages show a clear break west and east of the northern tip of North West Cape). While there is some degree of spatial segregation of human activities (with reef associated industries to one side, extractive activities in the Gulf on the other, and agriculture and other land-based activities in between), this segregation is not immutable. Currently, some aspects of the ecological breakpoint are still reflected in management plans (e.g. the placement of marine reserves), but this is not true of all sectors (e.g. there is increasing oil and gas development within 20-50km of the Ningaloo Reef Marine Park boundaries) and the resident human population considers the region as an integrated whole.

The Ningaloo-InVitro model is a whole of system model for exploring the implications of alternative management and development plans for the northern Gascoyne (Ningaloo-Exmouth region). The model consists of five main sub-models: 1) biophysics, which defines the natural environment, 2) socio-economics, which defines human behaviour, 3) industry, which defines large-scale economic drivers and institutions, 4) management, involving decision making and 5) monitoring and assessment (Figure 1.1). This modular design not only provides flexibility, via providing a choice of alternative representations for each sub-model, but also simulates biophysical, ecological and anthropogenic processes using a mix of analytical equation-based formulations (particularly for system-scale, physics or lower trophic level processes) and algorithmic, individual-based behavioural models (for rare species, top-level predators or human activities occurring at the finest scales). Each sub-model runs at the appropriate time and spatial scale.

The model has an oceanographic and climate sub-model (including rainfall, temperature, salinity, geomorphology, nutrient and contaminant layers); 60 ecological components (e.g. primary producers, benthic habitats, benthic invertebrate communities, pelagic forage fish, main target species of fin-fish and crustaceans, top predators and species of special interest like turtles) that make up the food-web and habitats; and representations of each of the main industries (including commercial and recreational fisheries, tourism, oil and gas, salt production, coastal development, pastoral leases, horticulture, ports, shipping and road transport, regional economics, catchment use, recreation, conservation and infrastructure like roads and pipelines). These industry models are a combination of analytical decision models, response functions, specified rules, historical data and scenarios. Uncertainty is included in each of these options and determines which activity is carried out and its outcome. This aims to capture natural ambiguity in human and animal behaviour, missing or incorrect information and unpredictable and catastrophic events.

There is no simple dataset for parameterising such a large agent-based model so it was based on data from a broad range of sources, primarily data directly collected by members of the Ningaloo research program (which ran 2005-2010), data from government departments (federal and state, including the Western Australian Department of Fisheries,

Department of Environment and Conservation, Department of Transport, Department of Planning, Department of Lands), annual reports by industry members, and from the shires of Carnarvon and Exmouth. Where any gaps remained, data was drawn from neighbouring systems (e.g. the Pilbara) or environments with similar properties or structures (e.g. Great Barrier Reef). It has not been extensively updated since the original project completed in December 2011.

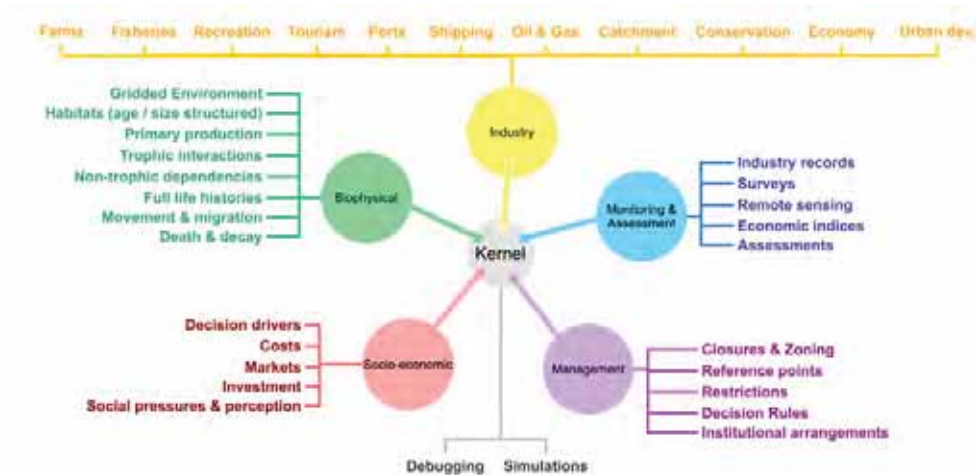


Figure 1.1: Main components of the InVitro modelling framework.

Uncertainty is dealt with by including handling of uncertainty for each part of the system - via alternative parameterisations of the most uncertain biological, environmental, social and economic components; with all parameterisations based on the data sources outlined above. Inclusion of uncertainty in this way helps to determine whether management and development decisions are robust in terms of stated objectives for the system, while also allowing for an understanding of potential risks associated with activities that maybe carried out in the region. It as in the role of exploring potential impacts of alternative development plans that the simulations discussed here were done. Over a hundred scenarios (defined by people interested in the system) have previously been explored for the region and are reported in Fulton et al (2011).

2 Method

There were four scenarios run in this current exercise (Table 2.1). The first two of these represent reference simulations: the Regional Strategy in place in 2011 (including allocations proposed by landowners under Outline Development Plans), a large development scenario (as reference, which includes a large tourism development in the area as well as the completion of a deep-water port in Carnarvon, all phases of the marina and causeway developments in Exmouth and all current and planned industrial and resource sector developments in the Gascoyne and Pilbara). In addition there were two new growth proposals (i) with an additional 800 holiday homes above those specified for the Regional Strategy, but all else the same; and (ii) 500 additional holiday homes and 300 extra beds at the caravan park. The later two scenarios included all current and approved resource sector developments in the Gascoyne and Pilbara (as that best reflects the level of development that is actually happening in the region and may effect use of Coral Bay) as well as the modification of the schedule of major building developments for the simulated Coral Bay to allow for the construction of the extra beds (obviously the form and extent of construction differed depending on the type of bed being added). The modifications were initiated in 2015 as the 2013 injection point was judged too soon for a significant step up in construction and the 2017 was considered an unreasonable (or at least unnecessary) delay - based on expert advice from the WA building industry. The beds did not all come on line immediately, but at the pace dictated by the construction industry module of the Coral Bay "urban sub-model". This saw them phased in over a few years (1-6 depending on the type of construction needed, stochasticity effected logistics and in-model storm events).

Apart from the development strategies all other aspects of the system remained as they were for the base case. In particular, there were no modifications to any regulations or management strategies (i.e. all fishing regulations, zoning etc remained as it was in 2010).

The InVitro model produces prodigious amounts of output and close to 100 regularly used reporting indices. This amount of information can however be overwhelming and a smaller set – which covers social, ecological and economic system components – is more useful for summarising the system. This set was used for the majority of the reporting in Fulton et al (2011) and is used here to facilitate ease of comparison. Note that the model has stochastic components and so must be run multiple times to get a sense of how variable or uncertain the outcome is under any one parameterisation. This is variation is reflected in the plot of results by giving the mean result (coloured bar) with 95% confidence intervals (error bars).

Table 2.1: List of Coral Bay accommodation capacities in the different scenarios explored. The name used for the scenarios in the results plots are provided in ().

Bed Type	Existing (as of 2011/ 2012)	Regional Strategy (Base case)	Large Developments	Growth Scenario 1	Growth Scenario 2
Permanent resident/ worker (including family)	264 (2011 Census)	400	550	400	400
Backpackers	120	220	500	220	220
Caravan/ camping	1296	1428	1428	1428	1728
Resort/ chalet/ serviced apartment	431	1744	4012	1744	1744
Holiday home	180	208	710	1008	708
Day visitors	500	500	500	500	500
Total	2527	4500	7700	5300	5300

3 Results

The results of the simulations are summarised in Figure 3.1, which contains a comparison of indicators for the local Coral Bay area (e.g. visitation, unemployment, demographics, use of utilities and the ecological status) as well as more general indicators of the entire region (Gross economy, road transport and broadly distributed ecological groups like turtles). The large development case is overwhelming in terms of both its regional wide economic returns, but also its ecological costs and the large increase in demand for utilities. As such it is presented in the figure for reference, but will not be discussed in detail. Instead the results will focus on comparing the two proposed growth scenarios (based on holiday home and caravan park developments) in comparison to the regional strategy (base case).

3.1 Coral Bay Area

Tourism visitation and expenditure in Coral Bay is higher than for the base case scenario under both of the growth scenarios, although nowhere near as high as if there were a major resort built at the node. Under a mixed development scenario (i.e. caravan park and holiday homes) there is a 50% increase in visitation compared to the almost stagnant growth under the base case – although in absolute terms this growth effect of the development is only a small potential increase from 2010 figures, up from 2% to 3-4%. If the development is focused more on holiday homes then the increase is much higher at 25% above that in 2010. Tourism expenditure reflects this change in visitation, rising by only 11% for the mixed development case; this is a 30% increase above that of the base case, but is small compared to the 50% increase in expenditure in the case of the holiday home focused development (this represents a six-fold increase in expenditure compared to the base case). These changes in spending reflect the change in visitor mix in the region under the different scenarios (Table 3.1). In the base case the visitor mix largely remains stable through the 30 years of the simulation, but the outcome is more complicated for the growth scenarios. With additional caravan capacity nature lovers of all origins drop away, as do international budget travellers, though Australian travellers (whether from Western Australia or interstate) remain fairly constant and the numbers of visiting recreational fishers increases substantially. In the case where development focuses on additional holiday homes the Australian nature lovers, budget travellers and general vacationers all remain fairly constant, while the recreational fishers double, or more, and the international visitors of all types halve.

The increased economic activity in coral bay is focused around tourism and other urban activities and services - Agriculture in the immediate region of Coral Bay is largely unaffected by any of the forms of development. The increased activity does attract more labour, with resident population growing by 35-45%. This increased population and economic activity does not however lead to a significant decrease in the unemployment rate. This is in part because of travelling itinerant workers who stay for months to enjoy the life style, supplementing income off occasional employment or by living with residents. The other component of unemployment reflects many more spouses performing home duties as the family rather than just the worker moves to the area given the expanded resident accommodation and kind of employment available (this is reflected in the lower increase in

Table 3.1: Changes in the composition of the visitor mix in Coral Bay from 2010 to 2040 under the Regional Strategy and alternative Growth scenarios. An entry of “no change” indicates little change (i.e. % composition varies year to year but holds with a few % of 2010 values). NL stands for nature lovers (short term visitors targeting an interaction with the natural environment, but with little interest in fishing and an aversion to crowding and signs of environmental degradation), while travellers represent general, budget and “comfortable camper” classes of tourist, but not those visiting with intent to mainly go recreational fishing.

Visitor Type	Regional Strategy (Base case)	Growth Scenario 1	Growth Scenario 2
Overseas traveller	No change	50% decrease	30% decrease
Overseas NL	No change	50% decrease	50% decrease
Interstate traveller	No change	No change	No change
Interstate NL	No change	No change	30% decrease
Interstate recfisher	No change	180% increase	170% increase
WA traveller	No change	No change	No change
WA NL	No change	No change	5% decrease
WA recfisher	No change	65% increase	95% increase

the proportion of the population that is working age, with more children joining the community). While competition for housing remains high with the development, housing availability does improve for both growth scenarios, but only if the tourism operators have the capacity to reserve a small proportion of the extra holiday houses as workers accommodation should the resident accommodation be exhausted.

The extra resident and visitor population is associated with increased demand for infrastructure and utilities. While there are marginal increases in infrastructure investment above the base case (which saw almost no extra investment in infrastructure) for the mixed development there was a 6% increase if holiday homes formed the bulk of the new development. This investment helped deal with the extra load. In the case of the mixed development water use rose 25%, energy use 26% and waste production 41% in comparison with 2010. This was only a slight increase in water demand above the base case but represented a doubling or more for energy and waste. The increases were even more pronounced for the growth scenario that focused on holiday home construction. In that case the consumption of utilities in 2040 had risen by 44% above 2010 levels for water, 31% for energy and 50% for waste; representing a 2-4x increase above the demand in the base case.

This pressure on utilities, along with an increased sense of crowding and a decline in perceived ecosystem state (see below) negated the positive influence of increased economic outlook for Coral Bay and the social perception remain poor. Though in all scenarios it was highly variable across the population depending on personal circumstance and worldview (attitudes and preferences).

The increased use of the immediate Coral Bay area by the visitors and residents did have some effect on the coral habitats, primarily immediately off the main beach and around the most commonly visited dive/snorkel locations and fishing sites. However the decline is fairly minimal (<5-7% for the area). The increased recreational fishing pressure has a much larger impact on the fish stocks. The fishing pressure roughly doubles the increase seen under the base case for both growth scenarios. This sees a slightly larger drop in fish stocks: prime target species dropping by roughly 16-18% in the immediate Coral Bay area; the frequency of landing of larger bodied trophy fish drops by 20-23%; and Coral Bay catch rates dropping by 25-33%.

3.2 Gascoyne Region

In terms of the overall economy the extra beds have, perhaps a surprisingly, noticeable flow-on effect through the region. When the beds are primarily added through additional holiday homes then this allows for 15% greater growth across the region (in comparison to the base case), due to extra flow in the economy (e.g. extra employment, higher wages etc). If the caravan park is expanded in addition to some additional homes then growth is only 5% higher in the long term. This is because of the expenditure patterns of those who more regularly use caravan parks, which do not contribute as much to the local economy while in the region so there are fewer flow on effects. The clearest reflection of this is in the size of wage rates in the two cases versus the base case – with wages on average 8% higher than the base case with a development based primarily on holiday homes, but only 2% higher with the larger caravan park capacity in Coral Bay. These effects on regional economic growth and wages are in part due to direct expenditure in Coral Bay, the employment that generates and then the expenditure of those employees etc, but also via the (smaller but not insignificant) expenditure of those travelling through Exmouth and Carnarvon to Coral Bay.

Interestingly, the expansion of caravan parks in Coral Bay has an effect on visitation to Carnarvon, with more Australians choosing to go to Coral Bay than remain in Carnarvon for as long. This does not lead to an overall decrease in Carnarvon's tourism economy however as higher numbers of international budget travellers moving through Carnarvon more than compensates for losses due to a drop in the Australian market share.

As indicated above the extra accommodation is associated with some ecological impacts, but also additional logistical and infrastructure needs. In terms of regional-scale road transport this led to a 15% higher throughput (i.e. trucks or trips required to supply the extra capacity) in comparison to the base case if the development was only in the form of additional holiday homes, but only 6% if the development was a mixed with an expansion of the caravan park capacity.

Environmentally, the results for turtles at a regional level are no different to those found in Fulton et al (2011). They are vulnerable to many pressures in the region (chiefly mortality due to foxes and the effects of rising sea level and nest site flooding) and need on-going management to reduce the pressure on the population if they are to be given a significant chance of long-term survival. While the two growth scenarios do not lead to a significantly worse off turtle population, though do not intrinsically provide for the recovery of the group either. This is true of many of the charismatic (unfished) ecological groups – the two growth scenarios do not put much extra pressure on groups not effected by fishing, but they do not ease pressure either. Some groups, like sharks continue to show a strong mix of direct and indirect effects of fishing, both in terms of accidental capture but also avoidance of high use areas, the extent of which expand with increased visitation.

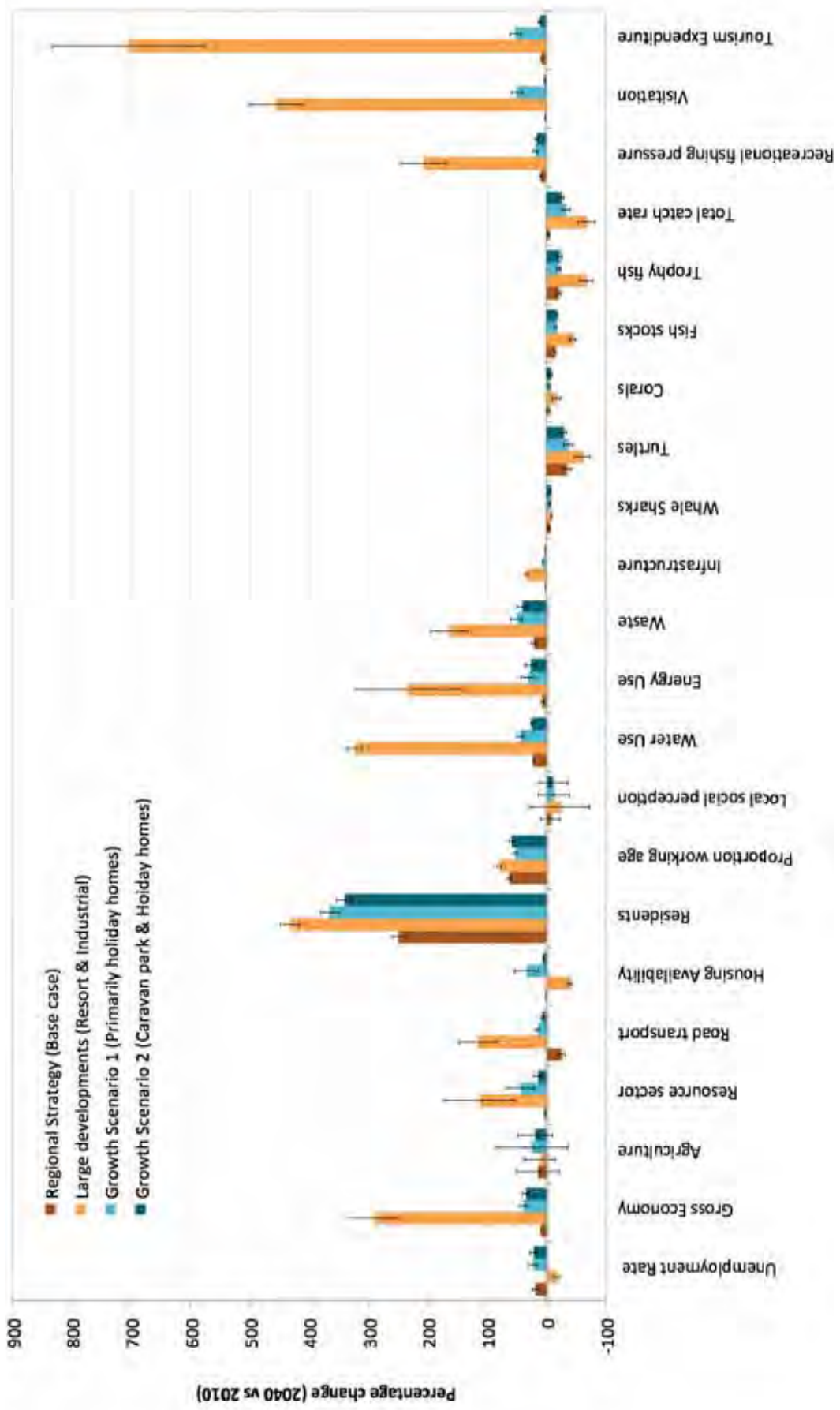


Figure 3.1: Results of the simulation runs focusing on the outcomes in the immediate Coral Bay area.

References

Fulton, E.A., Gray, R., Sporcic, M., Scott, R., Little, R., Hepburn, M., Gorton, B., Hatfield, B., Fuller, M., Jones, T., De la Mare, W., Boschetti, F., Chapman, K., Dzidic, P., Syme, G., Dambacher, J. and McDonald, D. (2011). *Ningaloo Collaboration Cluster: Adaptive Futures for Ningaloo*. Ningaloo Collaboration Cluster Final Report No. 5.3

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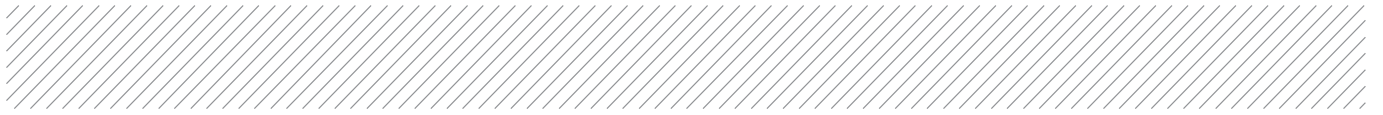
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Appendix D

Ningaloo Collaboration Cluster Destination Modelling

Simulations of options for the Coral Bay Structure Plan using the Ningaloo Destination Model

At the request of Aurecon, Dr Tod Jones ran three options for the Coral Bay Structure Plan through the Ningaloo Destination Model (NDM). The NDM is a scenario planning tool for tourism development on the Ningaloo Coast, developed between 2007 and 2011 as part of the CSIRO and Sustainable Tourism Cooperative Research Centre's (STCRC) Ningaloo Collaboration Cluster. The tool was developed in consultation with local and state-based stakeholders, and makes use of original data (including over 1500 visitor surveys) and secondary data (including information from Horizon Power and the Department of Water). It estimates economic, environmental, and social outcomes for different tourism planning scenarios.¹

The NDM is not a predictive tool—the vagaries of tourism and international economics regularly defy expert predictions. However, it does provide a means of comparing outcomes between tourism scenarios, flagging risks, and considering impacts beyond those generally considered in planning methods, and it uses the best data available at its time of creation. It should be one of many inputs to a scenario planning process.²

The following scenarios were simulated through the NDM:

Bed Type	Existing	Regional Strategy (including allocations proposed by landowners)	Growth Scenario 1	Growth Scenario 2
Permanent resident/ worker (including family)	264 (2011 Census)	400	400	400
Backpackers	120	220	220	220
Caravan/ camping	1296	1428	1428	1728
Resort/ chalet/ serviced apartment	431	1744	1744	1744
Holiday home	180	208	1008	708
Day visitors	500	500	500	500
Total	2527	4500	5300	5300

¹ For more information, our final report (with the title *Cluster Project 3: Socio-economics of Tourism*) is available from: <http://ningaloo.org.au/www/en/NingalooResearchProgram/Publications/Cluster-finalreports.html>, or contact Tod Jones (T.Jones@curtin.edu.au) for more information.

² NDM does not predict the exact impacts of visitors or their spending patterns in the future. It merely shows you some plausible outcomes. On this basis, use of the NDM is at your discretion and risk and you will be solely responsible for any resulting loss or damage that you may incur or sustain from the use or reliance upon the data.

The information below compares the existing infrastructure with the three other scenarios: the regional strategy, growth scenario 1 and growth scenario 2. All three scenarios are presented together and compared.

A number of assumptions are made when running the NDM.

- The major assumption is that visitors will respond to the new accommodation and it will be full during the peak season. Essentially this is assuming that the new accommodation will be very successful. Hence the results indicate the potential impacts, which will not reach this range if tourists do not choose to visit Coral Bay in large numbers.
- Hence there is an assumption of high tourism growth (of over 100 percent in the case of growth scenarios 1 and 2). It would also require a significant shift in accommodation preferences, particularly towards holiday homes in some scenarios, but also hotel accommodation.
- The effects of workforce shortages were effectively ignored. Accommodation for 400 people would house a workforce that would support annual visitation of approximately 500,000 visitor nights (100 000 people). This is below the numbers that are presented in the scenarios below.
- It also assumes that there will be no outside impacts on Coral Bay. Hence it assumes that visitor patterns are only impacted by the shifting accommodation options.
- As the Coral Bay visitor data that we collected for the NDM had a small sample size for holiday rental accommodation, an assumption was made that the mix of visitors in this accommodation would be similar to Exmouth.

Comparison of Growth Scenarios for Coral Bay

Table 1: Annual NDM visitor nights and expenditure data

	Existing Capacity	Regional Strategy	Scenario 1	Scenario 2
Visitor Nights	386,476	843,607	1,077,888	1,061,099
Expenditure (\$ million)	25	57	74	73

Rather than predicting growth, visitor nights and expenditure should be read as the limits of capacity for the region (see Table 1). While the regional strategy would allow growth of 18%, scenario 1 and scenario 2 would have the capacity to grow visitor numbers by 79% and 75% respectively. The similarity in capacities indicates that other comparisons (such as resource use, activities, social impacts) are due to the resources required by different types of land use planning (for instance, a hotel uses more electricity than a caravan park). Expenditure would be slightly more for scenario 1 than scenario 2, reflecting the difference in visitor nights rather than a different visitor mix.³

³ Coral Bay has a variety of visitors staying in a variety of accommodation types. It is less likely to attract long-term visitors who come to fish as they prefer the station camping experience, but it does attract a range of other international and domestic visitors.

Table 2: Annual activity levels in Coral Bay

	Existing	Regional Strategy	Scenario 1	Scenario 2
Going to the Beach	369,813	769,842	952,258	945,889
Fishing from Shore	66,194	98,754	113,687	112,675
Fishing from Boat	98,318	158,863	183,680	180,612
Snorkelling	215,365	474,819	600,167	596,051
Eating Out	90,480	172,360	214,109	210,323
Sightseeing	76,867	132,043	164,085	160,656
Shopping	46,341	73,557	86,757	85,306

The primary message from the estimated activity levels is that there will be substantially smaller activity levels under the regional strategy than the other scenarios. The largest increases will be in the non-extractive activities (going to the beach and snorkelling in particular), while there are also increases of over 50% in both fishing from the shore and fishing from a boat. Scenario 1 has a higher level of fishing, but also of eating out and shopping. The results also indicate that more holiday homes (scenario 2) is likely to encourage slightly higher levels of eating out, sightseeing, and fishing, while more caravan park spaces is likely to encourage more beach activities and snorkelling. To a degree this reflects a greater use of holiday homes by domestic visitors, and the presence of international backpackers in caravan parks.

Table 3: Annual resource use

	Existing	Regional Strategy	Scenario 1	Scenario 2
Water (kL)	173,951	357,317	458,986	442,327
Electricity (kWH)	17,538,394	50,604,416	61,015,904	57,236,488
Annual Landfill (m3)	8,493	14,051	16,001	15,866

As expected from additional tourists and demonstrated by Table 3, scenarios 1 and 2 will lead to greater demand for water and electricity, and will produce more waste. Water and electricity will be greater under scenario 1 with more holiday homes (164% for water, and 248% for electricity), than scenario 2 with more caravan parks (154% for water and 226% for electricity).

Table 4: Social impacts

	Existing	Regional Strategy	Scenario 1	Scenario 2
Internationals per 100 Australian Visitors	19	19	22	23
Showcasing the Region	6	10	10	10
Average visitors per night (peak season)	1,943	4,027	4,683	4,527

Some of the social variables have been excluded as they relate to resident accommodation capacity, which is artificially set by the accommodation cap. However, it is worth noting that the resident to visitor ratio is particularly high, raising the issue of workers returning to tourist accommodation (in particular cheaper options like caravan parks). The average nightly visitor is set to substantially increase under all options. However, Coral Bay is unique in the region as it has a high tolerance of tourists and is very positively disposed to them (although this would be another level again). Scenario 2 attracts a more diverse set of visitors than scenario 1 because of the international preference for caravan parks over holiday homes. The level of visitation for all three scenarios would increase community pride due to the greater profile.

Table 5: Environmental Impacts

	NCRS	Strategy 1	Strategy 2
Spangled Emperor	-22%	-27%	-28%
Corals	-3%	-4%	-4%
Whale Sharks	-3%	-4%	-4%

While the other tables indicate growth due to visitor numbers, Table 5 indicates declines due to higher levels of visitor activities. Due to the modelling method used (Ecopath with Ecosim), the results show the environmental impacts for the entire region. However, as these simulations isolate growth to only Coral Bay, the declines are focussed on this part of the coast. Hence the decline in fish stocks is substantial as it is isolated to the Coral Bay area. Similarly, the coral damage would be focussed on Coral Bay in the popular snorkelling locations (Bill's Bay). The decline in whale sharks is less disturbing, but also potentially problematic as only a portion of whale sharks are available to whale shark tours. A decline of 10% would double the chances of not seeing a whale shark.

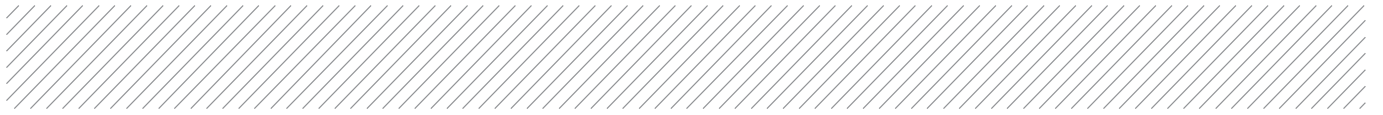
Summary

The additional numbers of strategies 1 and 2 will generate larger impacts than the NCRS, both positive (expenditure) and negative (resource use, crowding, environmental impacts). Strategies 1 and 2 will potentially require that staff are housed in visitor accommodation as the 400 bed staff accommodation may not be sufficient. When comparing Strategy 1 with Strategy 2, the similar visitor mix (although there are slightly less internationals in strategy 1) causes the activity patterns and expenditure patterns to be similar. The major difference is the amount of resources that holiday homes require in comparison to a caravan park, in particular water and electricity.

Bed Type	Existing	Regional Strategy (including allocations proposed by landowners)	Growth Scenario 1	Growth Scenario 2
Backpackers	120	220	220	220
Caravan/ camping	1296	1428	1428	1728
Resort/ chalet/ serviced apartment	431	1744	1744	1744
Holiday home	180	208	1008	708
Day visitors	500	500	500	500
Tourism worker Requirements		312	347	352
With families and other workers		385	429	435

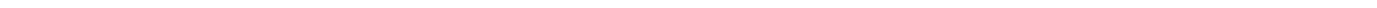
Requirement for Workers in Coral Bay

Assumes 90% of workers in Coral Bay work in tourism and 10.1% of the population are children (2011 Census) .



Appendix E

Online Survey Results



Online Public Survey

From 30 July to 11 September a public survey was undertaken to gauge people's aspirations for the future development of the townsite. The intention of the survey was to identify development wishes including scale and type, desirable services and infrastructure for a period up to 25 years. A series of development scenarios and options were provided including services and infrastructure generally associated with regional, normalised towns. Respondents were provided the opportunity to submit multiple answers to some questions.

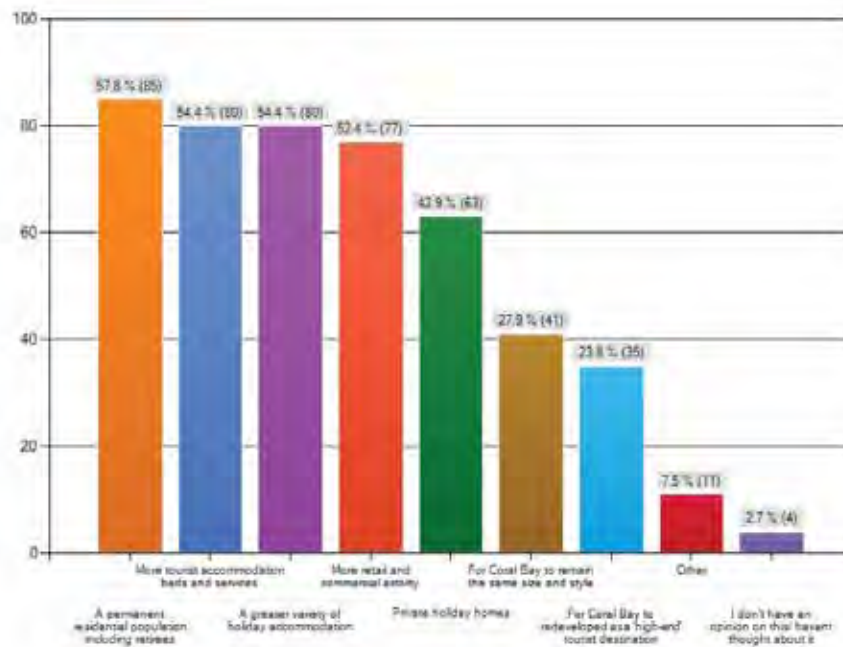
The survey was created online by SurveyMonkey and distributed electronically and in hard copy format to local residents, business owners, visitors and the managers of Warrora and Cardabia Stations. Advertisements providing the online link to the survey were also placed in the *Northern Guardian* and *Pilbara News* on 8 and 22 August. A total of 147 surveys were commenced with 132 being completed in full (89.8%).

It should also be noted that the key objective of the survey was to gain a snapshot of public perception of how Coral Bay should evolve over time. The results should not be considered exhaustive in determining future development outcomes or scenarios yet are aimed at guiding the project team in considering development options. When appraising these survey results it is important to consider that of 147 respondents only 14 considered themselves as 'permanent residents' of Coral Bay. The remaining people were all visitors.

The following questions were asked and responses represented:

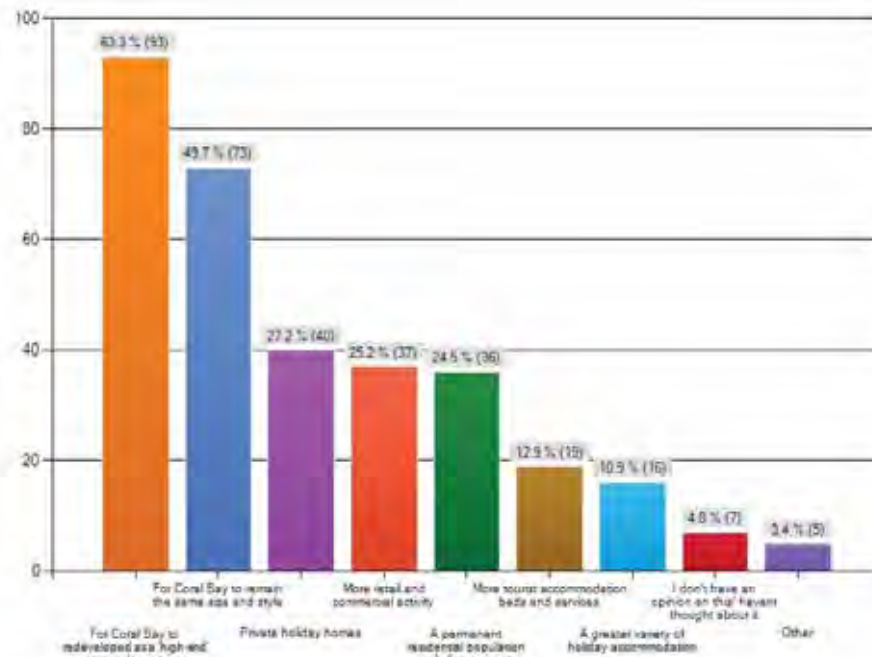
1. What would you like to see happen in Coral Bay in the next 10 to 25 years?

(147 responses received)



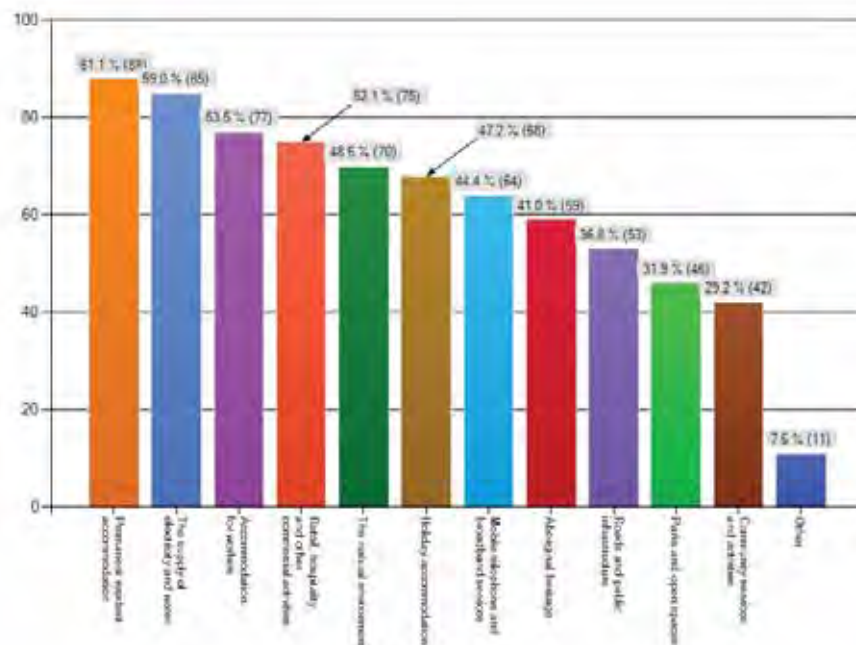
2. What do you NOT want to see happen in Coral Bay in the next 10 to 25 years?

(147 responses received)




3. What parts of Coral Bay and surrounds need improving or protecting?

(144 responses received)




4. In regard to the previous question (3), would you like to make any additional comments or recommendations?



(This question was optional. 55 responses were received and are listed below grouped by subject area).

Environmental

1. Development should occur in the Coral Bay hub, and the 'bush' should be left for Australians to enjoy now and in the future.
 2. The size and scope of the current settlement is more than adequate. The environment, particularly the coral formations in the bay would be threatened by large scale development.
 3. Greater protection of the reef and less boats. Boats can be in the water all over WA, no need to be around the fragile reef environment.
 4. Please educate visitors with visual displays about why we need to protect our environments and cohabit within these same unique environments.
 5. With the new boat ramp has come a large increase in recreational fishing. The damage caused by this increase is visible when looking at fish assemblage numbers both in and outside sanctuary zones. Implementation of education for tourists who want to fish (such as fish for the future campaigns) as well as increased policing and enforcement of bag limits and no-fishing areas is important to protect the pristineness of what is a fragile ecosystem.
 6. Support and expansion of the existing research station and support for research into the local marine environment, as this is the basis of the tourism industry in Coral Bay.
 7. Through the Ningaloo Coast Regional Strategy, Coral Bay was planned to be developed to a level that was thought to be sustainable for the surrounding natural environment. I would not like to see development deviate greatly from what was planned for in the Strategy because I believe it would be detrimental to the environment, so that a few individuals might profit without regard for the environment or altering the experience of visiting this unique part of the coast.
 8. It goes without saying that the ultimate goal for any development of the Coral Bay area should always be to protect and preserve the pristine environment.
I would hope that we would be able to develop the town so we are able to access the beaches and ocean without having too much infrastructure impacting on the natural environment as this is what is special about Coral Bay.
 9. The natural environment definitely needs more protection.
 10. Coral Bay should be protected and kept from the grasp of developers.
 11. Protect the environment whatever the cost.
 12. Save and protect the reef.
 13. The most important consideration for developing Coral Bay on whatever level or direction that is chosen is to remember that without protecting this amazing environment there is no future and therefore no point to develop it at all. That without question is the most important factor.
 14. Care about the environment and its animals should take precedence further commercial development and allowing "locals" to not be beholden to live in caravan park or govt. accommodation.
-


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15. Contingence measures for oil spills or ground water/soil contamination be available and/or in place.
 16. It is important to protect the elements of the natural environment, keeping in mind that in order for some innovative and quality development in Coral Bay which may involve some interference with parcels of land etc. abutting natural landscape features/ocean etc.

Services and Facilities:

1. Should be a free water supply
2. Water free for visitors.
3. Water free to tourists.
4. Prices for food and services are far too high.
5. More beach parking for cars, vans and buses.
6. Chemist, doctors, vet for small animals.
7. Needs a doctor's surgery, vet, chemist, schools.
8. More grocery outlets, water for travellers.
9. Parks and playgrounds for children, open lawn areas and shades for tourists, no room for tourists on beach at high tide. Fresh Water available for travellers.
10. Would love to see a fantastic kid's public playground - perhaps water park.
11. Improved roads, power, water, marine environment protection, Indigenous heritage information.
12. Dentist visiting occasionally.
13. Look after the employees a little better, and maybe an upgrade in dining facilities.
14. A better fish and chip shop.
15. Freehold commercial premises MUST be made available to Coral Bay commercial operators. Existing tenancy arrangements are flagrantly anti-competitive in nature.
16. Improve footpaths and cycle ways to make the townsite more pedestrian friendly.

Accommodation:

1. Cheaper holiday accommodation and prices.
 2. Not enough caravan accommodation. People are being turned away.
 3. Local residents need proper housing to live in, not caravans. Backpackers and seasonal staff are happy to stay in caravans for short term as they would prefer not to have to pay a fortune for accommodation.
-

- 
4. I think to keep good quality, experienced staff to provide high quality tourism you need better accommodation and communications for those that live there year round.
 5. Need accommodation for business owners and permanent staff, long term, not seasonal.
 6. Coral Bay is special; it should be available for all Western Australians and other visitors. There should be no residential accommodation on Ningaloo Reef. Minimise the impact on this fragile area.

Other:

1. Leave the camping at Warroora as it is. This is alternative accommodation.
 2. Leave Warroora 'as is' as an alternative destination.
 3. Leave Warroora as it is.
 4. Warroora should remain as it is.
 5. Keep the 'mellow' feel.
 6. Protect the beach area so everyone can enjoy and feel safe, keep coral bay kid friendly
 7. Coral Bay's charm is due to its small, coastal, holiday feel and limited infrastructure and resources. Those that are interested in high end getaways travel to Exmouth or other locations.
 8. Redevelopment of any kind will ruin this awesome tourist spot. From 6720.
 9. Efforts should be made to establish traineeships for young Baiyungu people in Carnarvon to ensure that this unique history is delivered by the right people. Funds should be freed up to enable this to happen as soon as possible.
 10. Rather than considering developing Coral Bay to a larger resort or residential town consideration should be made to develop similar small scale localities along the coast. This would have the advantage of providing tourists or travellers alternative destinations. Another advantage would be although other areas in the region would be developed the overall environmental impact would most probably be less than that resulting from full scale development of Coral Bay and associated infrastructure that this would require.
 11. The thing we love about Coral Bay is it is quiet and small and that's what we go to Coral Bay for.
 12. Coral Bay is unique in its environment and location. That should be the primary underlying factor in any development. Recent visit has revealed commercial interests are overtaking public interests and needs.
 13. Some of the aforementioned improvements are either planned or proposed, however, to be implemented are reliant on the availability of capital funding. Obviously, funding of private development is dependent upon prevailing financial markets which in recent times have been affected by the global financial downturn. For public funding this is dependent upon financial commitments and priorities of all spheres of government.
-



14. Greater contribution from current landowners to support the improvements needed. Greater effort from the Shire of Carnarvon to take responsibility for and interest in the settlement.
 15. The simplicity and natural beauty of the town is one of its major draw cards and to change that would change the town for the worse.
 16. Not just seasonal, most workers are there full year.
 17. Standard of living for locals is terrible - almost third world - bore water access, some don't have fresh water at all, communal shower and toilet blocks, some caravans don't even have cooking facilities and it's beyond the financial means of these people to rectify these problems. Business owners are too tight to pay to rectify these problems and have the attitude "if you want to live and work in paradise and swim with whale sharks then you just put up with it as you are replaceable". Also the minimum wage of all residents must be addressed at a governmental level.
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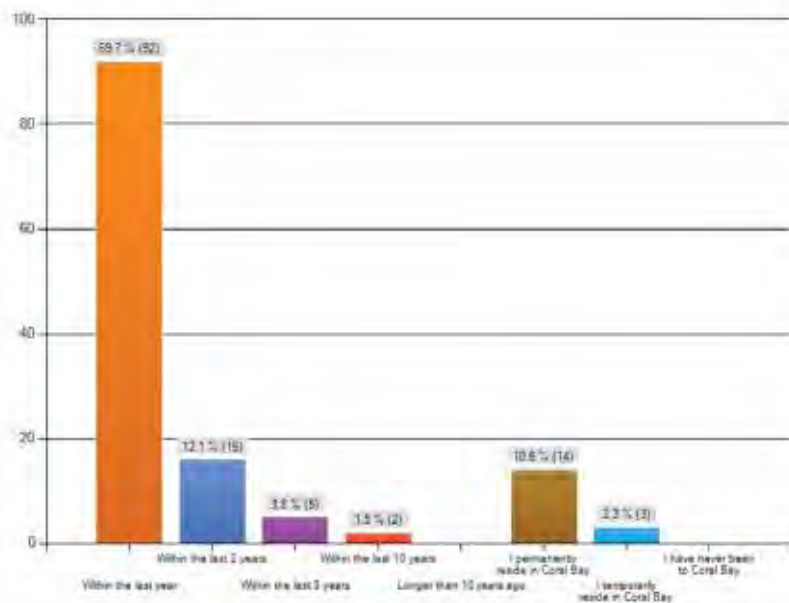
5. Please rank from 1 (most important) to 5 (less important) a maximum of 5 facilities or services you would like to see introduced or upgraded in Coral Bay?

(138 responses received. The results below are ranked by the number of responses followed by the average response total where a lower average response indicates a higher preference)

Rank	Answer Options	Response Average	Response Count
1	Doctors Surgery	2.18	98
2	Retail and Commercial Including Restaurants, Shops and Offices	3.41	64
3	Tourist Centre	3.14	57
4	Primary School	3.30	56
5	New Caravan Park	2.38	45
6	DPaW/ Fisheries Office	2.68	44
7	Airport	3.36	42
8	Police Station	3.27	41
9	Broadband/ Mobile Telephone Communications	3.28	39
10	Playground/ Parklands	3.00	39
11	Petrol Station	2.91	33
12	Eco-Tourist Lodge	3.16	32
13	Hospital	3.75	16
14	Secondary School	3.00	14
15	Sports Ground & Facilities/ Club Rooms	3.92	13
16	Fuelling Jetty	2.92	12
17	5 Star Resort	2.83	12
18	Conference/ Reception Centre	4.11	9
19	Marina	2.63	8
20	Shire Administration Office	2.86	7
21	Library	4.00	5
22	Town Hall	2.75	4
	answered question		138
	skipped question		9

6. When was your last visit to Coral Bay?

(132 responses received)

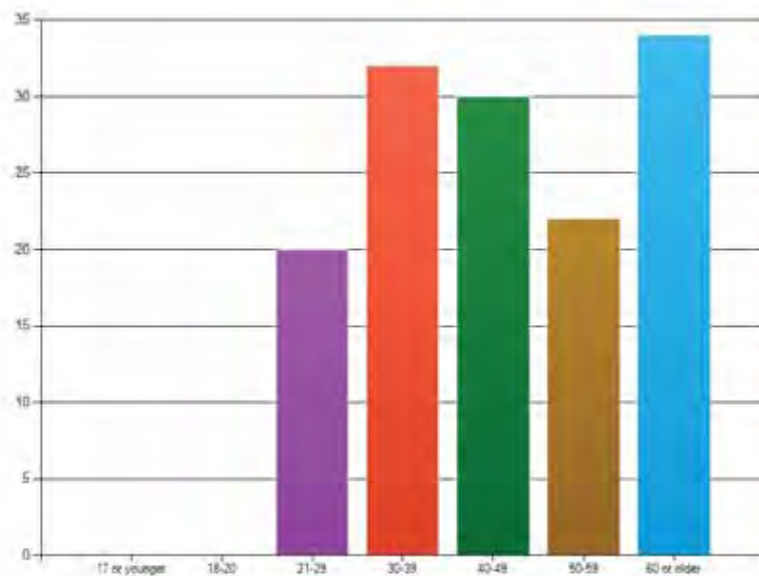


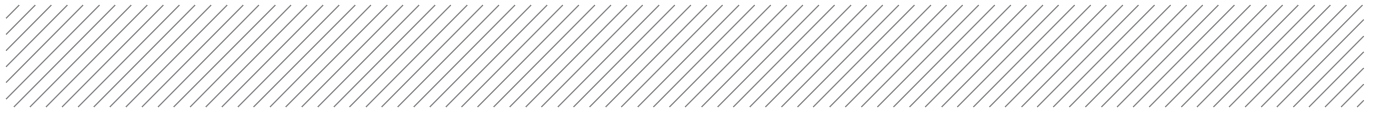
7. Where do you normally live?

The responses to this question could not be graphically represented however of the 138 responses, 14 people stated they live in Coral Bay and all respondents except 1 (NSW), living in Western Australia. No international visitors completed the survey.

8. Which category below includes your age?

(138 responses received)





Appendix F

Draft Provisions for 'Holiday Home' precinct

Draft Provisions for Holiday Home Precinct

Holiday Home Precinct

Goal: To provide for the development of short stay holiday home accommodation in keeping with the character and natural features of Coral Bay.

Specific Provisions

- (1) Subdivision or development for permanent residential occupation shall not be permitted.
- (2) Subdivision within the holiday home precinct shall be in accordance with a Local Structure Plan adopted by the Local Government and endorsed by the Western Australian Planning Commission.
- (3) Development of land shall only be approved if it is in accordance with a Local Structure Plan endorsed by the Western Australian Planning Commission.
- (4) The following Use Classes apply within the precinct:
 - Holiday Homes AA
 - Chalets AA
 - Public Utility P

All other uses are x 'not permitted'.

- (5) The following minimum lot size applies within the precinct for any subdivision in freehold title (fee simple):
 - 4.1 Holiday Homes: minimum lot size of 4000m².
 - 4.2 Chalets: minimum lot size of 4000m².
 - 4.3 In relation to 4.1 and 4.2, minor variations may only be considered where the Council and the Western Australian Planning Commission are satisfied that the goal and specific provisions of the precinct will not be compromised.
- (6) The holiday home precinct at Lot 308 is limited to a maximum of 520 beds.
- 7) At any stage of subdivision, section 70A notifications under the *Transfer of Land Act 1893* shall ensure future interest holders are made aware of the provisions that apply to this precinct.
- 8) Development within the holiday home precinct is to be carried out in accordance with section 3.5.1 'General Provisions' of the Scheme (Note: To be expanded/refined to Council's satisfaction).

- 9) Holiday homes requires management plans to be submitted to the Local Government for approval prior to occupation and should address the following:
 - 9.1 Nomination of a management agent and details of management approach/protocol shall form a legally binding agreement with the Local Government;
 - 9.2 Car parking and signage provision; and
 - 9.3 The maintenance of a booking register.
- 10) Strata subdivision under the *Strata Titles Act* 1985 shall only be considered once the Local Government has granted Planning Consent under Part IV of the Scheme.
- 11) Strata subdivision will be subject to restriction(s) in accordance with Section 6 of the *Strata Titles Act* 1985 as provided for in the provisions of the Scheme.
- 12) A Management Statement shall be required as part of any Strata subdivision in accordance with Section 5C of the *Strata Titles Act* 1985 to include the following additions to the by-laws contained in Schedules 1 and 2 of the *Strata Titles Act* :
 - 12.1 Development or redevelopment on the strata lots must comply with an existing development approval issued by the Shire of Carnarvon, or such alternative development approval as the Council may grant, which complies with the requirements of the Shire of Carnarvon Town Planning Scheme;
 - 12.2 Controls to ensure the overall management of the short-stay accommodation;
 - 12.3 Provisions stipulating that the proposed short-stay accommodation cannot be used for permanent residential purposes at any time and occupation by any individual shall not exceed 3 months in any 12 month period;
 - 12.4 Provisions that the owners of the proposed short-stay accommodation may allow their property to be rented out for short-stay accommodation purposes;
 - 12.5 Provisions requiring all common property, including the communal open space areas, to be landscaped and maintained by the Strata Company/Managing Authority;
 - 12.6 Amendment to or repeal of the provisions cannot be effected without the approval of the Western Australian Planning Commission.
- 13) Any Local Structure Plan required by the Council shall have regard for adjacent lands and such plan shall show, in a comprehensive manner, how the land is to be developed including:
 - 13.1 adequate data identifying the physical and environmental characteristics of the land;

- 13.2 the proposed allocation of land uses, lot sizes and density;
 - 13.3 any proposed principal roads and other transport and movement systems;
 - 13.4 the provision of public utilities and services;
 - 13.5 proposed staging;
 - 13.6 relationship to the 'Workers' Accommodation' Precinct;
 - 13.7 such other information as, in the circumstances of the case, the Council considers appropriate.
14. Following receipt of a Local Structure Plan, the Council may require the plan to be advertised for a period of not less than 21 days in accordance with the provisions of Clause 8.2.3.
 15. The Council shall consider the Local Structure Plan and any submissions made and shall make a recommendation to the Western Australian Planning Commission to either adopt, with or without modification and subject to such conditions as it considers appropriate, or refuse the Local Structure Plan.
 16. The Council shall forward the Local Structure Plan and its recommendation to the Western Australian Planning Commission, together with any comments the Council may wish to make on the plan, within three months of receiving the plan or within such further time as may be agreed in writing between the applicant and the Council.
 17. The Western Australian Planning Commission shall consider the Local Structure Plan and the recommendation and comments of the Council and shall make a decision to either adopt, with or without modification and subject to such conditions as it considers appropriate, or refuse the Local Structure Plan so forwarded by the Council.
 18. The subdivision or development of land in the holiday home precinct the subject of a Local Structure Plan shall be generally in accordance with the endorsed Local Structure Plan for the land, the provisions of the Scheme, Local Planning Policies made under the Scheme and any other provisions applying to the land as specified by the endorsed Local Structure Plan.
 19. A Local Structure Plan endorsed by the Western Australian Planning Commission may be modified and any proposed modification to an endorsed Local Structure Plan shall, for the purposes of Clauses 13 to 18 inclusive, be considered a Local Structure Plan.
 20. Notwithstanding Clause 17, the Council may, where it so chooses to advertise the proposed modification, reduce the advertising period required under Clause 14 to not less than 14 days.
 21. Nothing in the Scheme shall prevent the Council or the Western Australian Planning Commission from approving subdivision or

development of land in accordance with the provisions of a Local Structure Plan endorsed pursuant to this Clause.

22. Notwithstanding the foregoing, the Council may, with the consent of the Western Australian Planning Commission, approve any development within the holiday home precinct without requiring a Local Structure Plan where, in the opinion of the Council and the Commission, such development is of a minor nature and will not adversely affect the future subdivision or development of land within the Precinct.
23. A copy of the endorsed Local Structure Plan shall be kept at the offices of the Council and shall be made available for inspection by any member of the public during normal office hours.

Definitions

Holiday Home: means a single house for short stay accommodation for no more than six people and that no person is to stay for more than 3 months in any 12 month period.

Chalets: means a detached holiday accommodation unit for short stay accommodation including cooking facilities which may be fully self-contained or not, and which is generally of single storey or split level construction and that no person is to stay for more than 3 months in any 12 month period.

Local Structure Plan: means a local structure plan that has come into effect in accordance with Clause 5.3.2 of the Scheme.

Short Stay Accommodation: means a building, or group of buildings forming a complex, designed for holiday accommodation of short stay guests and which provides on-site facilities for the convenience of guests and for management of the development, where occupation by any person is limited to a maximum of 3 months in any 12 month period.

Note:

These draft provisions refer to the Shire of Carnarvon DZS 11 and is for information and guidance only and to demonstrate the expectations for this precinct. Final provisions may be drafted as part of a scheme review or amendments when the 'Holiday Home' precinct is created.



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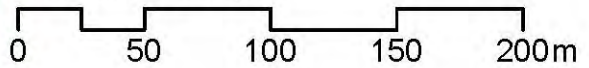
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A4 scale: 1:10,000



Date: 19/07/2012 Version: 1 Job No: 2815-12















Coordinate system: MGA Zone 49

Shire of Carnarvon Coral Bay Settlement Structure Plan

Figure 6: Biophysical conditions



OPPORTUNITIES

-  Infill Robinson Street with commercial and civic amenity. Opportunity to enhance streetscape between settlement and beach to provide a more pedestrian friendly environment.
-  Existing water treatment plant and power station may compliment a possible development of light industrial area to service local business and industry needs.
-  Upgrade Baz's Park for social activities. Provide usable space for beach-goers when high tide consumes most of the beach.
-  Amend land tenure from UCL to Foreshore Reserve under DEC's management to ensure consistent future management efforts.
-  Regenerate and reconstruct natural dune vegetation around areas of high/medium use to prevent dune mobilisation.
-  Opportunity to orient development builtform to capture cooling breezes.
-  Retain existing trees where possible for shade.
-  Develop civic hub as a town arrival experience.
-  Upgrade Fletchers Hill Lookout to take advantage of significant views and manage access.
-  Potential for expansion of urban footprint.
-  Utilize Baiyungu Track as the main north-south trail and connect secondary perpendicular paths providing access to the beach from town areas.
-  Provide directional and management signage to designated beach access including emergency or special condition access requirements.
-  Provide public toilet facilities.
-  Relocate fish cleaning facility from Baz's Park.

CONSTRAINTS

-  Steep slopes may limit development and access.
-  Area identified as highly visible from:
Approach to town
Fletchers Hill Lookout
Offshore in Bills Bay
Robinson Street
Skeleton Bay Lookout
-  Area most affected by direct wave action and maximum run-up in a 2100 sea-level / Cat 5 cyclone scenario. Waves may overtop the highest local topography in this zone and run into lower levels causing erosion.
-  Strong prevailing winds may cause coastal erosion particularly to dune access paths. Increase need for dust control and management to new developments.

ROAD NETWORK OPTIONS

Note: All options include the construction of Banksia Drive to Fletchers Hill

OPTION A
Robinson Street one way and treated to provide shared pedestrian thoroughfare.
Close French Street as pedestrian thoroughfare.
Parking area provided at end of Banksia Drive



OPTION B
Close Robinson Street as pedestrian thoroughfare.
Cul-de-sac and parking at ends of French Street and Banksia Drive



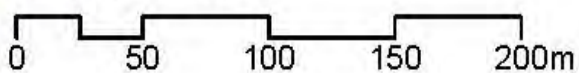
OPTION C
Close Robinson Street at French Street.
Connect French Street to Banksia Drive.
Parking areas provided at ends of Banksia Drive and French Street.



OPTION D (2004 SETTLEMENT PLAN)
Close Robinson Street and French Street as pedestrian thoroughfares.
Parking area provided at end of Banksia Drive.



A4 scale: 1:10,000





A4 scale: 1:15,000
 0 50 100 200m

Date: 13/11/2012 Version: 1
 Coordinate system: MGA Zone 49