

Jurien Bay

GROWTH PLAN



Volume 2 Analysis, Integrated Strategy and Spatial Plans

September 2012



For further information please contact:

Shire of Dandaragan
Jurien Bay Administration Centre
PO Box 676
JURIEN BAY WA 6516
Phone: (08) 9652 0800
Fax: (08) 9652 1310
Email: council@dandaragan.wa.gov.au

Consultant Team

Eaton & Passarelli Town and Regional Planning
JDSi Consulting Engineers
Pracsys
Saleeba Adams Architects
Verso Consulting Pty Ltd
Brian Curtis Pty Ltd
Worrad Associates Pty Ltd
RPS Consulting

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Shire of Dandaragan

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Foreword - Shire President, Shire of Dandaragan



The announcement of the Regional Centres Development Plan (SuperTowns) in July 2011, has presented a unique opportunity to enable towns with demonstrated capacity for growth to assist in accommodating the expected rapid population increase in Perth and

WA. The WA State Government and the Department for Regional Development and Lands are to be commended on their aspirational vision for the future. This program recognises those towns like Jurien Bay that will be a significant part of the State's population growth and development.

The funding that has been applied to SuperTowns is another innovative initiative of the Royalties for Regions Program. Royalties for Regions has already contributed significantly to key assets on the Turquoise Coast such as the Jurien Bay Jetty and foreshore development.

Jurien Bay is recognised in the Central Coast Strategy as the sub regional centre for the towns of Cervantes, Green Head, Leeman, Eneabba, Badgingarra, Dandaragan and Lancelin. Since the early 1980's Jurien Bay has experienced strong population growth and major infrastructure such as the Jurien Marina, Sealed Airstrip, Health Centre, District High School, Community Centre, Family Resource Centre and a new shopping centre have been developed. In 2003 the Shire of Dandaragan completed its new Administration Centre and relocated its operations to Jurien Bay, The Department of Environment and Conservation District Office and other government services have also established in the town.

As part of this growth, substantial investments by property developers produced 500 rural residential lots in the Alta Mare, Jurien Bay Heights, Marine Fields and Hill River Heights sub divisions. A further 600 residential lots have been developed in Lookout Bay and Beachridge Estates. The new Light Industrial Area was developed by Landcorp on Coalseam Drive with further stages planned in the future.

Jurien Bay is a well-planned area with Structure Plans in place for up to 9 000 Lots in the Turquoise Coast Development and a potential 2 100 Lots in the proposed North Head Development.

The opening of Indian Ocean Drive in 2010 is the beginning of an exciting new era for Jurien Bay and the Turquoise Coast. The timing of the SuperTown programme has enabled Jurien Bay to take advantage of the substantial benefits a direct route to Perth provides for travellers and tourists alike.

Jurien Bay has a base of high quality fishing grounds and a hinterland with reliable rainfall, increasing tourism, numerous lifestyle choices and is attractive to retirees. RSL Care WA has recently taken the initiative to capitalise on these attractors and have commenced Stage 1 of its Lifestyle Village comprising of 17 Units. A further 81 units are planned for the development including a Community Centre.

The Jurien Bay Growth Plan aims to harness these advantages and the unspoilt natural environment on the Turquoise Coast to drive the development of Jurien Bay and the surrounding region. This plan sets out a growth path initially capitalising on the opportunity to provide the range of services demanded by the increasing population including visitors, the aged and young families.

The vision of the plan is to create a regional city of 20 000 people on the Turquoise Coast, based on continuously improving the wellness of the community and the economic development of the region, and protecting the unique and diverse natural environment that provides its natural setting.

The document identifies population driven activity to reach early population targets and then recognises the need for economic restructuring to generate greater strategic employment in the Turquoise Coast and hinterland in industry sectors such as food processing, tourism, mining, and clean energy generation. The Growth Plan includes a Feasible Implementation Plan setting out in detail what interventions are required and at which point on our path to growth they will be needed.

The Jurien Bay Growth Plan has been developed in concert with the Strategic Community Plan as part of the recently announced Integrated Planning & Reporting Framework & Guidelines produced by the Department of Local Government. The process also draws upon the recent Jurien Bay City Centre Strategy and Turquoise Coast Structure Plans as well as the Central Coast Strategy.

Developing the Growth Plan would not have been possible without the commitment of those in the Community Reference Group and the SuperTown Project Team. The Wheatbelt Development Commission has also been heavily involved with the planning process and a genuine partnership was established between the Shire of Dandaragan and the Wheatbelt Development Commission. I would like to take this opportunity to thank the community members, the staff and consultants involved with the development of this document.

Cr. Shane Love

President Dandaragan Shire Council



1 Executive Summary

1 Executive Summary

The Jurien Bay Growth Plan has been prepared as part of the Royalties for Regions Regional Centres Development Plan (SuperTowns) initiative.

The Growth Plan unlocks the growth potential of Jurien Bay and the regional hinterland by examining constraints and identifying strategies for growth. The Growth Plan positions Jurien Bay and the region for investment, growth and ongoing whole of government support.

Vision and Goals

A vision and aspirational goals were identified in response to the strategic objectives and key focus areas identified in the SuperTowns Framework.

VISION

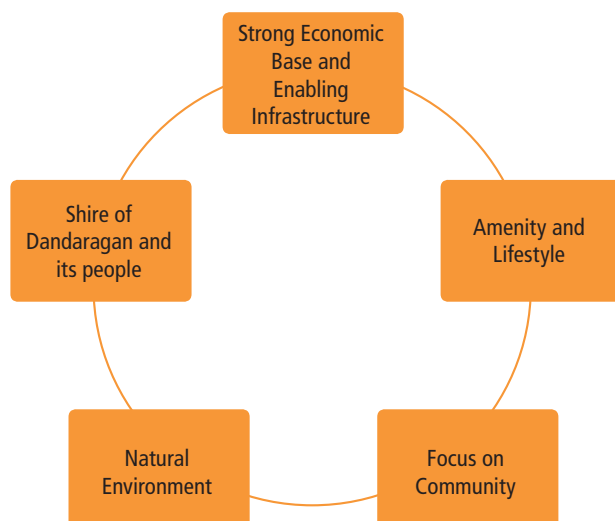
Jurien Bay – a Regional City of 20,000+ on the Turquoise Coast, which is based on continuously improving the wellness of its community and the economic development of the region, and protecting the unique and diverse environment that provides its natural setting.

The process of identifying a vision and goals was aligned with the preparation of the Council's Strategic Community Plan. The Strategic Community Plan process commenced in 2011 and has involved the Shire's four distinct communities; Dandaragan, Badgingarra, Cervantes and Jurien Bay. The Council has ensured that the consultation undertaken as part of developing the Strategic Community Plan informed the preparation of the Growth Plan.

Draft Goals:

Shire of Dandaragan Strategic Community Plan

Source: Shire of Dandaragan, 2011



The Strategic Community Plan provides a blueprint for the investment in the future of the Shire, key development priorities and a partnership approach for working with the communities, the private sector and tiers of government. The 5 draft key goals of the Plan are:

Strong Economic Base and Enabling Infrastructure: To pursue a growth plan that will deliver sustainable and enduring growth that builds a regional community where employment growth matches population growth. The Shire will foster the ongoing economic, social and cultural growth of the region, facilitating and catalysing investment, business and industry growth within a sustainability framework.

Amenity and Lifestyle: To actively build and sustain high quality of life dimensions that define liveability and amenity from the perspective of community, investors, and visitors to the Shire. It will develop a level of amenity and lifestyle that attracts people, businesses and investors to become part of the Shire.

Focus on Community: To support our already strong and committed communities to provide ongoing opportunities for people to be part of a place that has strong community spirit, is connected to nature and is a safe and secure place to live and work. The Shire will build on the distinctive characteristics of each community whilst building an overall shire identity that includes the human, cultural, and historical context of the region.

Natural Environment: A healthy natural environment is a key asset of the Shire of Dandaragan and is a primary asset that will be managed sustainably to achieve balance economic, lifestyle and environmental goals. The intrinsic values of the significant biodiversity (land and marine) and natural ecosystem assets of the Shire will be protected, restored and used sustainably.

Shire of Dandaragan Organisation and its People: The Shire of Dandaragan will be a proactive local government that enables, facilitates, leads and serves connected communities. It will be a dynamic, effective, customer-focussed organisation through a positive work culture that leads, values and supports its people.

The extensive community consultation program undertaken as part of the Strategic Community Plan has provided the basis for identifying key projects to stimulate development in the short term and establish a path for future growth and development.

Locality Plan



A Place to Live, Work and Holiday

There are challenges created by the forecast that WA's population will more than double in the next 40 years to 4.9 million people. However this will create opportunities for Jurien Bay and its catchment area to build on their unique natural and historical economic advantages to realise their full potential.

Jurien Bay is one of few locations within the Wheatbelt with the potential to accommodate major long term population growth in line with the State Government's State Planning Strategy and Directions 2031. Support for increased growth of Jurien Bay is aligned with Federal, State and regional policies and strategies that acknowledge its regional role.

Jurien Bay's location in the Wheatbelt region, within 2.5 hours of Perth and Geraldton makes it accessible to the economic opportunities available in the adjoining regions. Jurien Bay's location and connectivity with Perth means that it can play an important role in decentralising the forecast population growth of the State.

Points of Difference – Competitive Advantage

Analysis undertaken highlighted competitive advantages of Jurien Bay and the regional catchment it serves:

- Jurien Bay's historical economic base provides the community with significant infrastructure, workforce competencies and existing enterprises around which to grow its export economy.
- Indian Ocean Drive has significantly improved access to Jurien Bay and presents enhanced opportunities for the development of tourism in the region.
- The unique environmental setting of marine and terrestrial National Parks, conservation and nature reserves presents significant opportunities for primary production and tourism including the development of indigenous cultural experiences.
- The small population and limited facilities currently available in Jurien Bay presents a significant opportunity to implement an innovative best practice approach to provision of community facilities, particularly the provision of health and aged care services.
- Significant areas have already been approved for future urban development to support a population beyond the aspirational target of 20,000.
- Capacity constraints in relation to both community and service infrastructure can be addressed through targeted strategies to unlock potential growth.

- Crown land provides opportunities for the consolidation of urban form and uses required to support the growth of the Jurien Bay, including for community, industry and infrastructure.

Jurien Bay and the Region

The Growth Plan recognises the complex interrelationships that exist between Jurien Bay and its regional hinterland. Jurien Bay is one of the five sub-regional centres identified in the Wheatbelt region. It will need to develop as a major economic, employment and service centre for the Central Coast with strong relationships with Cervantes, Green Head, Leeman, Badgingarra, Dandaragan, and Lancelin.

Population Projections

The population target of 20,000 set out in the vision is a long term target and as such shorter term population scenarios have been considered for the purposes of both planning, setting targets and monitoring. This is to ensure that ongoing growth is sustainable and that planning and delivery of outcomes is directed to the aspirational growth target. The population scenarios which have been used are for populations of 2,500, 5,000, 10,000 and 20,000.

The SuperTowns program offers an opportunity to implement strategically targeted interventions to reach growth targets in advance. The targets relate to both growth and capacity issues, to determine the progress towards achieving the outcomes sought and to ensure that there will not be impediments to growth continuing. The targets themselves should be the subject of review and refinement over time.

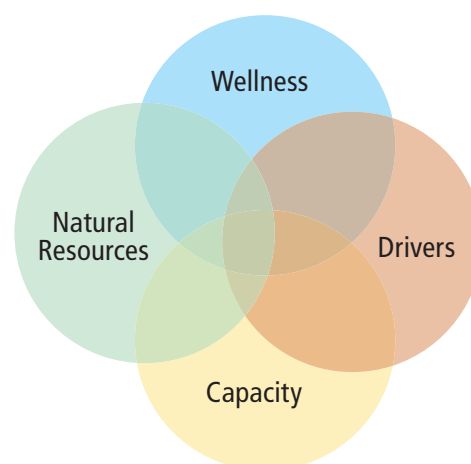
The Integrated Strategy

The Integrated Strategy forms the backbone of the implementation of the Growth Plan and comprises the broad strategies required to transform Jurien Bay from a small coastal settlement to a regional city of 20,000 people.

The Integrated Strategy is effectively an intervention to change from the current natural population growth to a growth trajectory to achieve the aspirational population.

The following figure illustrates the Integrated Strategy and the interrelated nature of the key elements, which, when combined together, form the basis for the implementation of the Growth Plan.

Jurien Bay Integrated Strategy



Wellness

The Jurien Bay SuperTown Growth Plan views the broad concept of wellness as a key theme of community and economic life. This wellness theme is also considered to be a point of difference offering both a comparative and competitive advantage for Jurien Bay.

Wellness will be empowered by the natural features (natural coastal and marine setting) and the opportunity afforded to Jurien Bay by being able to establish structures, programs, infrastructure on a 'clean sheet' without the encumbrances of existing infrastructure. Given the small size of the existing population and limited established infrastructure, there is significant opportunity to adopt an innovative and best practice approach to health and aged care service design to respond to current and predicted service demand.

The marketing of "wellness" will be expressed in family life, education, recreation, community services, aged care and health services. These benefits describe 'Wellness' encapsulated as: Jurien Bay, Australia's Healthiest Coastal Community.

Natural Resources

The context for all strategies, and the principal point of difference of Jurien Bay, is the natural environment that is recognised nationally and internationally for its biodiversity and unique heritage values.

Jurien Bay's future will be intimately connected to the natural resources of the region. This makes it a key component in planning for future population and economic growth for the aspirations of the Growth Plan to be realised.

Drivers

A diversified and resilient local economy will be critical to support sustainable growth. Sustained growth will build on the inherent economic strengths of the region, and its competitive advantages. The economic drivers of the Integrated Strategy will focus on the natural advantages in Jurien Bay and the Central Coast sub-region for food processing and tourism development.

Whilst the structure of food processing and tourism will need to adapt and change to meet the future needs of regional, national and international markets, Jurien Bay's future economic development will likely be highly dependent upon both of these activities.

Capacity

Increasing capacity is essential if the potential of Jurien Bay and the Central Coast sub-region is to be unlocked. The capacity of existing service infrastructure and community infrastructure will need to meet the new demands of a rapidly growing population. Immediate investment in new and upgraded capacity will bring long term benefits such as economic development, technological currency, environmental sustainability, and community development.

Feasible Implementation Program

The Feasible Implementation Program provides the critical path to achieve growth by identifying the delivery pipeline of transformative projects essential to overcoming impediments to growth and promoting expansion.

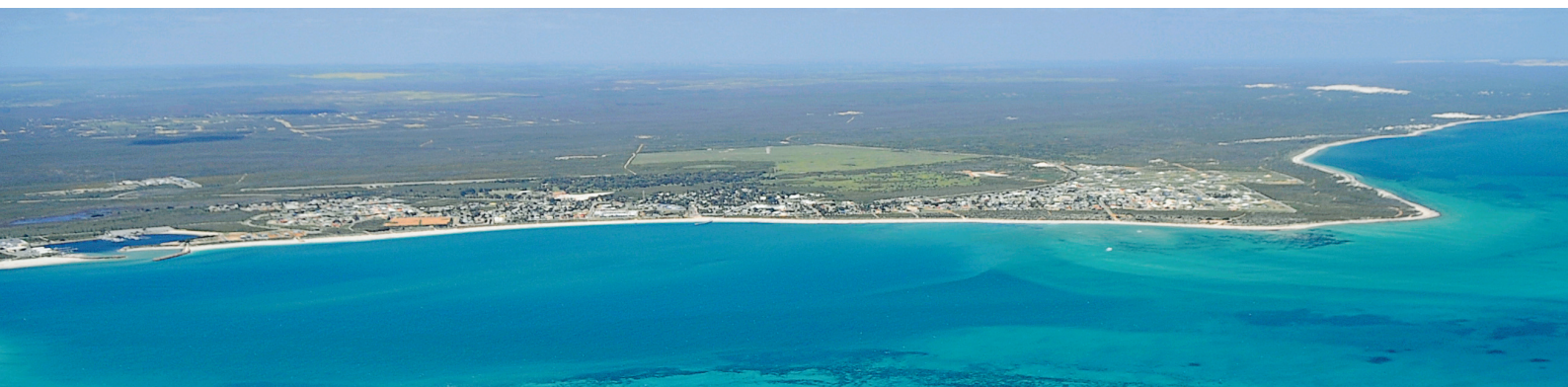
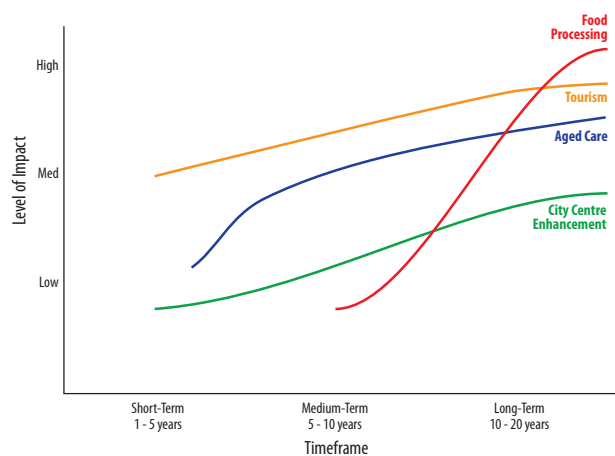
The Feasible Implementation Program sets out the range of strategies required to be implemented over time to achieve growth and the vision for Jurien Bay and the regional community it serves. The strategies and priority projects identify

population driven activity to reach early population targets and then recognise the need for economic restructuring to generate greater strategic employment in industry sectors such as food production, tourism, mining, and clean energy generation. This economic analysis is an important distinction underpinning short, medium and long term direction for population growth and industry attraction.

The following graph indicates that the early impacts will be achieved through strategies focusing on population driven initiatives including aged care and City Centre enhancement. While it is expected that the relative impact of these strategies will be overtaken by strategic industry growth, they will remain an important part of the overall economy.

Two additional strategies providing growth in the medium to long term have also been identified. Tourism will be a driver in the medium term, and food processing is a high-impact, but longer term economic driver. The graph reflects the likely lead times of the projects, and their ability to deliver the job creation and economic activity that will support the vision

Predicted Impacts of Strategies over Time



Priority Projects submitted in March 2012

Priority Project 1 - Aged Care and Health Plan

The Aged Care and Health Plan project is proposed within an area defined as the 'Health Precinct'. The project will be developed in a number of stages. Stage 1 is the subject of a current business case.

Stage 1: Development approvals and site preparation for a residential Aged Care Facility

Stage 2: (a) Aged Care - Construction of a Residential Aged Care Facility

Stage 2: (b) Integrated Health Plan

- Health Centre Expansion and renovation
- Wellness/Community Health Centre construction

The construction of residential aged care and the completion of the adjacent RSL WA retirement living units and the construction of the aged focused community centre will directly create 9 jobs per million dollars spent and 27 jobs in the broader economy. The aged care and health sector is considered a genuine area of employment growth and training opportunity in the sub-region as well as providing essential services to the community.

Construction cost of an approximate \$35 million (residential care facility, the community centre and the completion of the retirement village) will create 105 direct construction jobs per year of the estimated three years of construction.

The operational activity directly associated with the residential aged care has been benchmarked at 1.08 jobs per bed. At 60 beds this is 65 jobs, and at 80 beds this equates to 86 jobs. These will be new positions, as these services are currently not provided in Jurien Bay.

The development of residential aged care will facilitate ageing in place, family connection, the maintenance of the valued role of the elderly within Jurien Bay and the regional community. It will act as a catalyst to the development of an aged specific community centre (senior citizens, rehab/allied health, social supports).

While this project was not funded as part of the 2012 SuperTowns project round, it remains the priority for the Shire of Dandaragan and its community. Considerable effort will continue to pursue and progress this project.

Priority Project 2 - City Centre Enhancement Project – PART FUNDED BY SUPERTOWNS PROGRAM

The City Centre Enhancement Project has five key components:

- Visitor and Civic Precinct Development Project
- Infill Sewer Project
- City Centre Stormwater Management Strategy
- City Centre Design Guidelines and Public Realm Concept Plans
- Implementation of Public Realm Enhancements

Stage 1 of the Visitor and Civic Precinct Development and Stage 1 of the Infill Sewerage project have been funded as part of the SuperTowns program. This was announced in May 2012.

Visitor and Civic Precinct Development Project

The project will provide an integration of education and community resources, tourist information, office, art and culture and technology spaces within a central location. These resources will effectively service a population of up to 5,000 with capacity to adapt and expand to continue to serve as the civic and learning hub of Jurien Bay.

Many services and resources, including aspects of secondary education and learning, are currently provided on a remote servicing and/or visitation basis. Increased demand has resulted in the need for space and resources to facilitate the provision of these services at more regular intervals in Jurien Bay and ultimately on a permanent basis.

Development of the Visitor and Civic Precinct will contribute to the facilities and amenity of the City Centre and demonstrate an enhancement of important Government and visitor services for the region.

Stage 1 of the Visitor and Civic Precinct Development Project includes the following components:

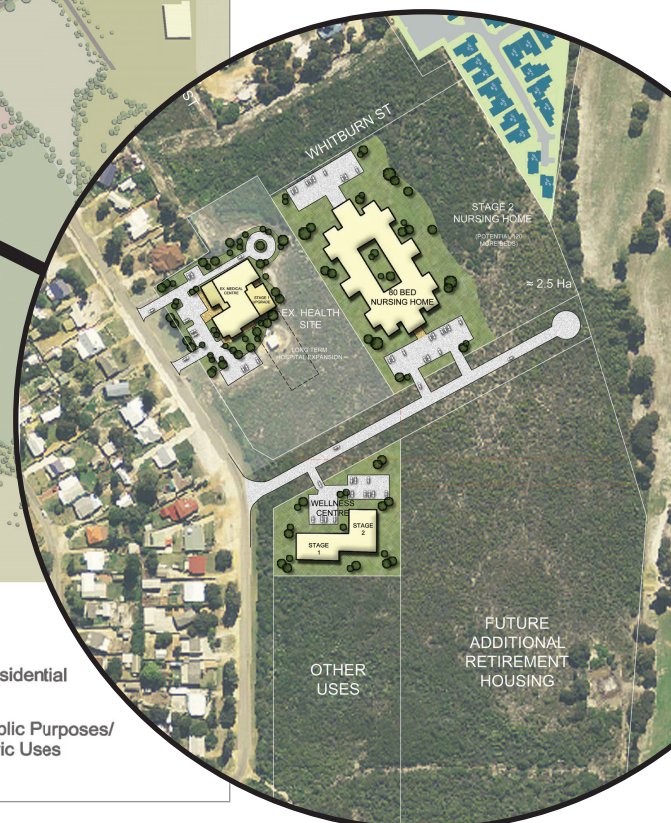
- Information Technology Communication Centre
 - Remote delivery of TEE subjects
 - Training Institute
 - Community Learning
- Community Resource Centre
 - Visitor information
 - Library

- Increased office space for Government departments and visiting agencies and organisations
 - Department of Environment and Conservation
 - Department of Fisheries
 - Wheatbelt Development Commission
 - LandCorp
 - Small Business Development Corporation
 - Community service agencies and non-government organisations
- Arts and Culture
 - Studio
 - Exhibition
- Community Space
 - Parks & Gardens
 - Amphitheatre
 - Conference facilities

Visitor and Civic Precinct



Health Precinct



Infill Sewer Project

Large parts of the future City Centre are not sewered. There is a high water table and development is restricted on unsewered lots. The City Centre Strategy Plan now provides a more comprehensive picture about how the City Centre will be developed in the context of its role as a regional centre. Much of the change and development proposed is contingent on the provision of sewer to enable development to occur.

The project involves:

- Undertaking preliminary design to clearly define catchment boundaries, new pumping station location and potential existing pumping station upgrades (already funded);
- Preparation of detailed design plans required to support construction and installation of pumping station C and selected infill sewerage for the Civic and Health Precincts over a 12 to 18 month timeframe; and
- Staged construction and installation of infill reticulated sewerage infrastructure within remaining area of City Centre over a 2 to 5 year timeframe.

The project will have the following direct benefits:

- Enable new development, design diversity and subdivision opportunities on low density residential lots based on rezoning and more intensive development;
- Enable new development potential for current vacant land due to government requirements to be connected to reticulated sewer; and
- Improve ground water quality, as it will allow existing septic tanks to be removed, which is critical given their close proximity to the coast.

Priority Project 3 - Industry Development Plans

The presence of significant levels of strategic employment within a local economy is critical to the long term prosperity and resilience of the economy. This initiative involves the preparation of two Industry Development Plans for key industries, one for food processing and the other for tourism.

The potential economic impacts for development of a food-processing cluster for Jurien Bay will require an investigation of the market and site opportunities. Based upon national averages, it could be expected that a 300ha net lettable productive area site (similar to that envisaged in the South-West of WA) could potentially yield \$81.3 - \$122million of gross value added output for the region, with an estimated 1,000-1,500 directly created jobs.

Jurien Bay's tourism activities have historically focused on budget, medium-long stay, caravan park and holiday home accommodation. As this type of tourism offer is increasingly scarce in many traditional coastal destinations surrounding Perth, Jurien Bay has the potential to build this market whilst also developing a strong value proposition as a higher-end 2-3 day destination for national and international guests. This will leverage the Pinnacles and the beautiful local natural environment as the icons within the 'Turquoise Coast' brand.

Spatial Growth Plan

The Spatial Growth Plan is a critical component of the overall Growth Plan as it facilitates the spatial requirements for the range and scale of land uses, movement network and both hard and soft infrastructure to ensure that Jurien Bay develops as a regional city, as it moves towards a population of 20,000. It has been prepared to respond to the key issues highlighted in the context and analysis and reflect the key spatial elements of the Integrated Strategy. This includes the 'capacity' requirements set out in the Integrated Strategy related to both hard and soft infrastructure, to ensure that there are no impediments to growth.

The City Centre component of the Spatial Growth Plan has a critical role to play in providing the key government and community services for the City and the wider region, as well as significant retail and commercial uses, tourism accommodation and diversity in housing types. This combination of roles highlights the need for a more intensive development form and a public realm that will provide a high level of function and amenity.

A Living Document

The SuperTown initiative recognises that towns and regions act as complex systems. The Jurien Bay Growth Plan is an important first step in establishing the basis for developing a multi-faceted approach to regional social and economic development.

The Jurien Bay Growth Plan presents a co-ordinated and collaborative approach to transform Jurien Bay from a small coastal settlement to a regional city.

The Growth Plan is a living document that should be adapted over time as new and additional information comes to light and circumstances change.



2 Acknowledgement



The consultant team would like to acknowledge that this planning process relates to the country for which the members and elders of the Yued community and their forebears have been custodians for many centuries, and on which the Yued people have performed age old ceremonies of celebration, initiation and renewal. We acknowledge their living culture and unique role in the life of this region.



3 Introduction

3 Introduction

Jurien Bay has been chosen as a SuperTown by the State Government under the Royalties for Regions Regional Centres Development Plan (SuperTowns) initiative. The SuperTowns initiative aims to enhance and stimulate growth in key regional towns by encouraging regional communities to plan and prepare for what is predicted to be a doubling of the State's population over the next 40 years.

SuperTowns Vision

To have balanced, well-connected regional communities, with lifestyle options and access to services - SuperTowns will have affordable, quality housing and a growing and diverse range of job opportunities. They will offer more choices for people living in the regional areas and an attractive alternative to living in the metropolitan area

Jurien Bay was chosen because of its growth potential and the State Government considers that Jurien Bay can play an important role in decentralising the forecast population growth of the State. SuperTowns recognises the role and importance of regions and towns to the Western Australian economy, and that regional economic development is essential to the growth and functionality of sustainable communities.

Principles

- Strategic alignment, co-ordination and collaboration
- Sustainable development
- Place-making - strong community engagement
- Those communities, including surrounding communities, affected by decisions should be a key part of decision-making processes
- Shared and owned processes and outcomes
- Proactive, implementation focus

Strategic Objectives

- To target sustainable regional economic development and stimulate diverse employment and investment opportunities
- To assist in managing the State's projected population expansion in key regional towns
- To plan and invest in town development and growth within an integrated strategic planning and implementation framework

Key Focus Areas

1. Governance, strategic planning and community engagement
2. Development of healthy, attractive and well-planned communities
3. Sustainable communities
4. Economic activity and employment opportunities
5. Community engagement and more specifically Aboriginal involvement
6. Maximisation of the benefits of technology and innovation
7. Asset and infrastructure management
8. Integrated transport and key infrastructure linkages
9. Marketing and strengthening of identity

Growth Plans require a Feasible Implementation Plan to identify the initiatives that will unlock growth potential, achieve the local vision and drive population growth. This is outlined in Volume 1 of the Jurien Bay Growth Plan.



Why plan for Growth?

Jurien Bay is one of a few locations within the Wheatbelt with the potential to accommodate major long-term population growth in line with the State Government's State Planning Strategy and Directions 2031. Jurien Bay's existing location and connectivity with Perth means that, in the long term Jurien Bay has the potential to develop into a regional city with a population of over 20,000.

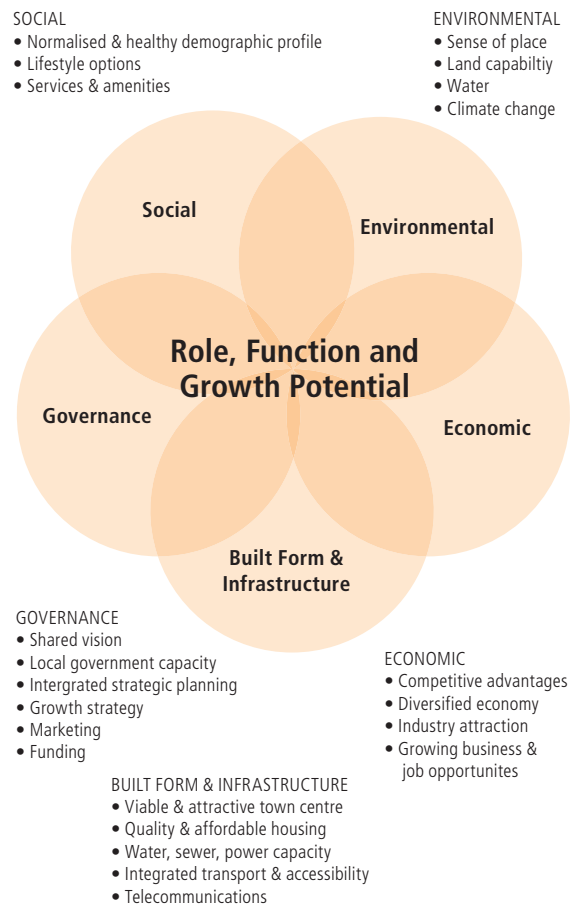
Long term growth planning is critical for the Shire and infrastructure providers, giving confidence to private sector investors. Growth requires careful planning of housing, employment, retail and business enterprise, as well as community services and facilities and service infrastructure.

This Growth Plan has been prepared to address a wide range of inter-related factors that make a sustainable community illustrated in Figure 3.1, to ensure that there is a framework in place to guide longer term strategic planning and develop Jurien Bay as a regional city.

Figure 3.1

Interrelated Factors of a Sustainable SuperTown

Source: RDL, 2011





4 Project Methodology

4 Project Methodology

Structure of Growth Plan Documents

The Jurien Bay Growth Plan comprises two documents:

<p>Volume 1 Feasible Implementation Plan</p> <ul style="list-style-type: none"> • Summary of Key Issues and Outcomes • Program of Strategies for Implementation • Identification of Priority Projects
<p>Volume 2 Analysis, Integrated Strategy, Spatial Plans</p> <ul style="list-style-type: none"> • Context and Analysis • Vision, Goals, Objectives • Integrated Strategy • Spatial Plans for Jurien Bay and City Centre.

Technical papers to support the Growth Plan include:

- Jurien Bay SuperTown: Aged Care and Health Precinct (Verso Consulting 2012)
- Jurien Bay Infill Sewer Planning (Cardno 2012)

Business Cases for priority projects are developed as separate documents.

Governance and Community Engagement

The SuperTowns approach to regional social and economic development requires the support of multiple agencies and activities, illustrated in Figure 4.1.

Figure 4.1
Key Inputs into the SuperTowns Planning Context

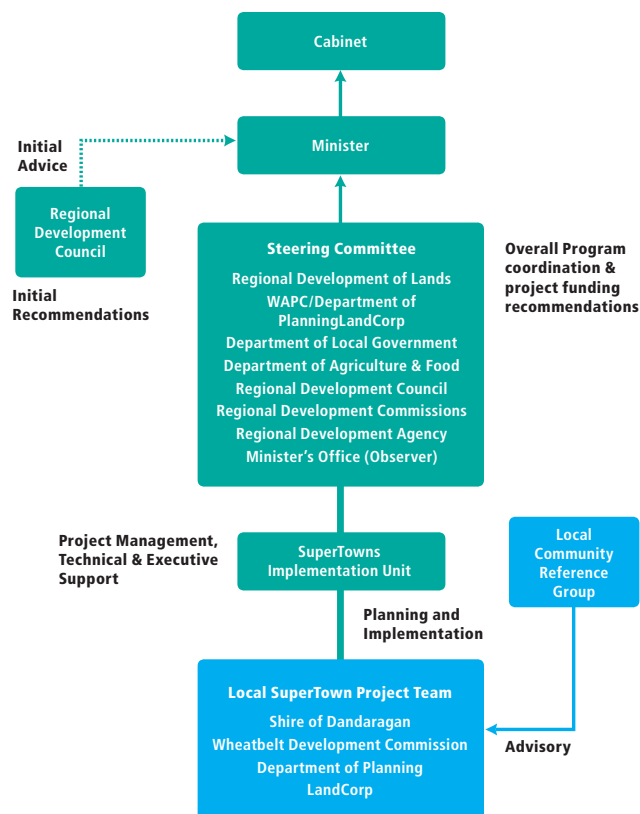
Source: RDL, 2011



The project governance process for the Jurien Bay Growth Plan has followed the process which is summarised in Figure 4.2, based on the Regional Centres Development Plan (SuperTowns) Framework 2011-2012.

Figure 4.2
Jurien Bay Growth Plan Governance Structure

Source: RDL, 2011



Jurien Bay Local SuperTown Project Team

Project Team Name	Project Team Position	Organisation Position	Organisation
Tony Nottle	Chairperson	Chief Executive Officer	Shire of Dandaragan
Janine Hatch	Correspondence	Senior Regional Officer	Wheatbelt Development Commission
Shane Love	Member	President	Shire of Dandaragan
Ian Rennie	Member	Deputy Chief Executive Officer	Shire of Dandaragan
Jerom Hurley	Member	Manager Planning	Shire of Dandaragan
Grant Arthur	Member	Director Regional Services	Wheatbelt Development Commission
David McFerran	Member	Business Manager SuperTowns and Local RDAP	LandCorp
Kylie Coman	Member	Regional Manager (Mid West / Wheatbelt)	LandCorp
Sue Woolhouse	Member	Regional Program Manager	LandCorp
Cath Meaghan	Member	Director - Wheatbelt Region	Department of Planning
Clinton Strugnell	Member	Chairperson	Jurien Bay SuperTowns Community Reference Group
Wally Cox	Member	Director	Ardross Group of Companies
Steve Burgess	Member	Manager – Wheatbelt	State Lands - Department of Regional Development and Lands
Lynette O'Reilly	Member	General Manager - SuperTowns	Department of Regional Development and Lands
Anita Shah-Jenner	Member	Principal Project Officer	Department of Regional Development and Lands
Katie Bawden	Member	Project Officer	Department of Regional Development and Lands

Local Community Reference Group (CRG)

CRG Name	Position	Organisation
Clinton Strugnell	Chairperson of CRG	Jurien Home Timber & Hardware
Steven Buitenhuis	District Operations Officer	Department of Environment & Conservation
Peter Lonnon	President	Jurien Bay Chamber of Commerce
Lester Marston	Member	Jurien Bay Progress Association
Charlie Shaw	Yued Elder & Traditional Owner	Kwelen Mambakort Aboriginal Corporation
Ross Howlett	President	Jurien Bay Community Resource Centre & Central West Coast Senior Citizens Group Inc.
Gloria Litchfield	President	Leeman Ratepayers & Progress Association
Sandra Trenowden	President	Green Head Community Association
Trevlyn Geiles	Principal	Jurien Bay District High School
Sandra Randall	Chairperson	Central Coast Health Advisory Group
Leslee Holmes	President	Cervantes Chamber of Commerce
Hellene McTaggart	Executive Officer	West Midlands Group
Anita Javis	Manageress	Lancelin Holiday Accommodation & Tourist Information
Albert West	President	Badgingarra Community Association

The membership of the Community Reference Group includes representation of the wider region and the Group focussed on identifying and developing priorities from the Shire of Dandaragan Strategic Community Plan process which had been undertaken throughout 2011.

The Strategic Community Plan process involved a number of facilitated workshops with four communities within the Shire as well as with government agencies and the business community. The Community Reference Group developed and made recommendations on four priority projects for consideration as part of the Growth Plan.

Consultant Team

Name	Organisation	Role
Tony Nottle	Shire of Dandaragan	Council representative
Jerom Hurley	Shire of Dandaragan	Council representative & Project Manager
Bob Bower	Shire of Dandaragan	Council representative
Ian Rennie	Shire of Dandaragan	Council representative
Chris Eaton	Eaton & Passarelli	Planning and Growth Plan
Jane Passarelli	Eaton & Passarelli	Planning and Growth Plan
David Hellmuth	JDSi	Infrastructure
Chris Beard	JDSi	Infrastructure
Jason McFarlane	Pracsys	Economics
Trevor Saleeba	Saleeba Adams	Architecture
Doug Faircloth	Verso Consulting	Health planning
Janine Hatch	Wheatbelt Development Commission	Liaison with Government agencies
David Kelly	Wheatbelt Development Commission	Liaison with Government agencies
Rachel Riley	Department of Planning	Document preparation and review
Brian Curtis	Brian Curtis Pty. Ltd. (sub-consultant to Eaton & Passarelli)	Project integration and peer review
Chris Worrad	Worrad Associates Pty. Ltd. (sub-consultant to JDSi)	Technology
Mark Wallace	RPS Consulting	Sub-Regional Economic Analysis

The minutes and notes of meeting of each of the three groups were distributed to ensure that information and ideas were shared through all stages of the process. In addition the Chairperson of the Local Community Reference Group was also a member of the Project Team which provided a direct contact between those two groups. The chairperson of the Project Team was also a member of the Consultant Team which provided a direct link between those two groups.

The Project Team, Consultant Team and Community Reference Group met regularly in developing the Jurien Bay Growth Plan. Opportunity for feedback was also provided to the Shire of Dandaragan Council and Wheatbelt Development Commission Board prior to endorsement of the February 2012 preliminary version of the Growth Plan.

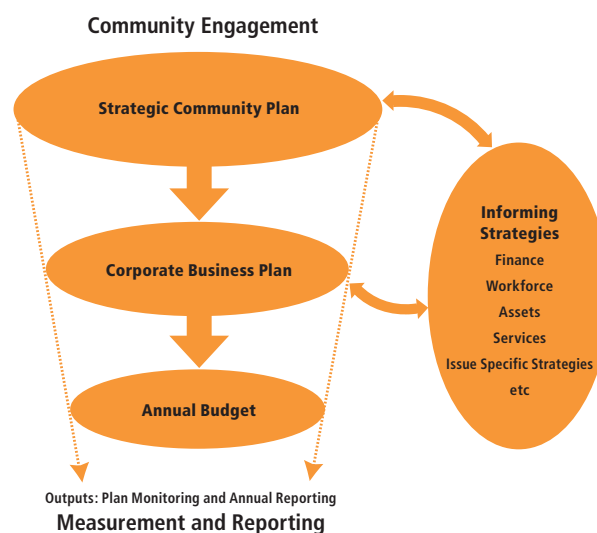
Results from additional research and revision based on feedback from the Department of Regional Development Lands and other government agencies have been included in the September 2012 final version of the Jurien Bay Growth Plan. This report is endorsed by the Project Team, Shire of Dandaragan Council, and Wheatbelt Development Commission Board

Integrated Planning Framework Process

During 2011 the Shire undertook a comprehensive community engagement process to develop the Shire of Dandaragan Strategic Community Plan. This Plan forms part of the Integrated Planning Framework being undertaken by the Shire. The elements of the Integrated Planning Framework are outlined in Figure 4.3.

Figure 4.3
Elements of the Integrated Planning Framework

Source: Department of Local Government, 2011



The information and outcomes provided from the community workshops undertaken as part of the Strategic Community Plan have informed the development of the Growth Plan via the Community Reference Group and directly to the Consultant Team. Each time the community workshops were held, all participants were advised that the input they provided would also inform the Growth Plan.

The Strategic Community Plan will be a key planning document for the Shire and will inform the annual business planning process of Council and is strongly and integrally linked with the Corporate Business Plan. It is a key guide for Councils decision making.

The draft goals developed to date as part of the Strategic Community Plan are as follows:

1. Strong Economic Base and Enabling Infrastructure:

To pursue a growth plan that will deliver sustainable and enduring growth that builds a regional community where employment growth matches population growth. The Shire will foster the ongoing economic, social and cultural growth of the region, facilitating and catalysing investment, business and industry growth within a sustainability framework.

2. Amenity and Lifestyle: To actively build and sustain high quality of life dimensions that define liveability and

amenity from the perspective of community, investors, and visitors to the Shire. It will develop a level of amenity and lifestyle that attracts people, businesses and investors to become part of the Shire.

3. Focus on Community: To support our already strong and committed communities to provide ongoing opportunities for people to be part of a place that has strong community spirit, is connected to nature and is a safe and secure place to live and work. The Shire will build on the distinctive characteristics of each community whilst building an overall shire identity that includes the human, cultural, and historical context of the region.

4. Natural Environment: A healthy natural environment is a key asset of the Shire of Dandaragan and is a primary asset that will be managed sustainably to achieve balance economic, lifestyle and environmental goals. The intrinsic values of the significant biodiversity (land and marine) and natural ecosystem assets of the Shire will be protected, restored and used sustainably.

5. Shire of Dandaragan Organisation and its People:

The Shire of Dandaragan will be a proactive local government that enables, facilitates, leads and serves connected communities. It will be a dynamic, effective, customer-focussed organisation through a positive work culture that leads, values and supports its people.



Summary of Process Undertaken

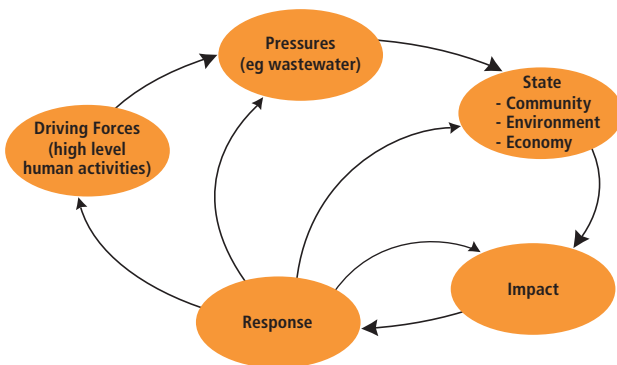
The Jurien Bay Growth Plan provides a co-ordinated approach to transform Jurien Bay from a small coastal settlement to a regional city. The Plan considers the economic, community and environmental elements and implications related to achieving this transformation.

It is based on the delivery of a combination of strategies which are interlinked through an implementation plan and require coordinated action by a range of stakeholders across both the government and private sectors.

The analysis and development of the Growth Plan was undertaken using the Driving Force-Pressure-State-Impact-Response (DPSIR) Framework illustrated in Figure 4.4

Figure 4.4 DPSIR Framework

Source: LandCorp, 2010



The steps in the process are summarised below:

- A vision was developed for Jurien Bay as well as aspirational goals to provide a set of desired inter-related conditions for the elements of economy, community, environment, spatial planning and built form and infrastructure that together define a sustainable future.
- Each element was analysed using the DPSIR approach to define the current situation, the drivers and pressures influencing the existing conditions and the issues in relation to achieving the aspirational goals.
- Project objectives were defined to form the basis of transforming Jurien Bay from its present state to achieving the aspirational goals and to provide a basis for evaluation.
- An integrated strategy was developed comprising the broad strategies required to form the intervention that will meet the project objectives and guide the development of Jurien Bay. These strategies represent the response element of the DPSIR framework.
- A spatial growth plan for Jurien Bay and a city centre strategy plan were prepared to reflect the spatial responses to the project objectives and the integrated strategy.
- A feasible implementation plan was prepared to summarise the outcomes from the process and to include a program of implementation strategies that includes actions, costings and responsibilities.





5 Location and Role of the Central Coast Sub-Region

5 Location and Role of the Central Coast Sub-Region

Figure 5.1 illustrates the relationship of Jurien Bay to Perth, Geraldton and towns and settlements in the Wheatbelt and Midwest regions.

Figure 5.1 Locality Plan



The Central Coast sub-region of the Wheatbelt is in a unique position to benefit greatly from increased accessibility and greater awareness of the attributes the area has to offer. The sub-region is increasingly recognised as a popular tourist, recreation and retirement destination and demand for services and facilities is only likely to grow with an expanding metropolitan area. More than this, the Central Coast sub-region is facing significant changes in key industries which have historically shaped the coastal settlements, namely in the fishing and mining sectors. Such forces have significant bearing on investment and employment opportunities.

For the purposes of this Growth Plan the Central Coast sub-region includes:

- Shire of Dandaragan
- Shire of Gingin
- Shire of Chittering
- Shire of Moora
- Shire of Coorow

Unlike the nearby inland Wheatbelt towns, which were established at the turn off the 20th century on the back of the agricultural industry, the coastal towns existed predominately as temporary fishing villages due to poor and unreliable water supply. They were not surveyed and gazetted until the 1950s and 1960s. Accessibility to this area, in the past, has been difficult due to the configuration of local roads. For many years the towns along the coast were not connected in a north-south alignment and visitors travelling along Brand Highway generally bypassed the region. There has been interest in the region for constructing a road between Dongara and Lancelin since the early 1980s. The negotiations around the alignment of this road were complex and protracted due to the national parks and the Commonwealth Defence Training Area (Pracsys 2003). The "missing link" between Lancelin and Cervantes was opened in September 2010 resulting in a sealed road linking Perth's northern suburbs, coastal towns and tourist destinations up to Cliff Head, just south of Dongara. The Indian Ocean Drive (IOD) will play an important part in increasing the accessibility of the region and advancing development.

Jurien Bay is located on the coast, 220km north of Perth and 195 km south of Geraldton. The continued growth of the Perth metropolitan area along the northern coastline will progressively change the perception of distance between the northern metropolitan areas of Perth and Jurien Bay.

Regional community events and activities along the Central Coast including the Indian Ocean Festival and the Lancelin Ocean Classic highlight the network of interdependence regional communities have upon each other in the sub-region. Events and activities in the region depend on the image of the area being realised as a collective and collaborative region and more importantly a destination. Population growth and community development in the surrounding local government areas including the shires of Gingin, Coorow, Moora and Chittering, will support the aspirational population targets in the Growth Plan.

5.1 Neighbouring Towns and Local Governments

Cervantes, in the Shire of Dandaragan, is located 22km to the south of Jurien Bay and has a strong maritime and commercial fishing history. Cervantes had a population of 461 in 2011. Cervantes is located in close proximity to the Pinnacles, Dessert Discovery Centre and Nambung National Park. The Pinnacles attracts in excess of 225,000 visitors per annum (Macroplan, 2008) highlighting the importance of tourism in this area. Tourism is a significant driving industry not only for Jurien Bay but the entire Central Coast. This requires a collaborative approach to the tourism industry by key stakeholders including Local and State governments and hospitality/retail operators to optimise the benefits. There is significant opportunity to work with the Department of Environment and Conservation to expand nature-based and adventure tourism in strategic locations managed by this agency. This includes opening up caves for visitors for example. There is great opportunity to expand the tourism experience for the Central Coast to be based upon a number of destinations and activities and leverage from the iconic attractor.

Grey and Wedge accommodate approximately 500 recreational squatters shacks located south of Jurien Bay. Grey and Wedge have high recreational values and Grey in particular is suited for recreation development.

The Shire of Dandaragan has a number of small inland towns, including Dandaragan, Badgingarra and Regans Ford, which provide services to the surrounding wider community. Located approximately 100km from Jurien Bay, Dandaragan was formerly the administrative centre of the Shire and had a population of 401 in 2011. Badgingarra is a small rural service centre for agricultural activity and mining in this part of the Shire and provides for the tourist, business, commercial and

other traffic passing the town on the Brand Highway. The town had a population of 333 in 2011.

Situated north east of the metropolitan area, the heart of the Chittering shire is located 80km from the Perth CBD, less than an hours' drive. The estimated residential population of the Chittering Shire is 4,561 people with a lower than average aging population of the other sub-regional areas, sitting at around 12% in 2010 (ABS, 2011). With its close proximity to Perth, the region experiences a large day trip tourist spike, especially around spring with the Wildflower Festival in September. The area is experiencing a large degree of residential and industrial growth due its strategic location outside the metropolitan area but yet within commuting distance. The area can be characterised as a residential base for lifestyle seekers with a growing industrial imperative. Its tourism qualities for its scenic valleys and seasonal wildflower country see the area as an ideal gateway for tourism into the Central Coast and Midlands of Western Australia.

To the north east of Chittering, the neighbouring Shire of Gingin extends from the scarp to the coast and incorporates the coastal localities of Seabird, Guilderton, Ledge and Lancelin. The shire is one of the fastest growing in the Wheatbelt region, with an estimated population of 5,126 people in 2011, it is the largest population group in the Central Coast sub-region. This population is largely serviced by regional services and metropolitan services not within the boundaries of the shire. Non-basic services of a medical and professional extent are generally sought elsewhere in the region, highlighting the interdependence of regional neighbours.

The Lancelin sand dunes, Moore River Estuary in Guilderton, the Ocean Classic and the Gingin Observatory and Gravity Centre provide recognisable destinations for a range of tourists and lifestyle seekers the Shire of Gingin. The increasing demographic in the area is the 65 years and older age bracket, compromising of just over 17% in 2010 (ABS, 2011). There is a large Drive-in/Drive-out (DIDO) and Fly-in/Fly-out (FIFO) workforce residing in the Shire of Gingin with retired farmers characterising a significant proportion of in-migration. Currently the town-site of Gingin is looking at expanding the limits of its commercial, industrial and residential available land to accommodate the current and expected demands of a growing population. The agricultural, horticultural, fisheries, timber and mineral production industries are experiencing growth and provide opportunities for employment in the region.

The inland Shire of Moora is approximately a 190km drive from Perth CBD and is a sub-regional centre service provider for the Central Midlands sub-region. The Shire of Moora has an estimated population of 2,561 (ABS, 2011). Moora is a well equipped town-site which provides a variety of established business, retail, community, education, health and recreational facilities. The community development of the shire is paralleled by the production of detailed forward works plans and strategies to keep pace with the population growth of the region. The shire experiences some degree of in-migration for the purpose of aged care, with a large degree choosing independent living. At present the ageing populations in surrounding regions and sub-regions locate to Moora, growing the current 13% of the population over the age of 65.

Horticulture and livestock industries are vibrant in this area with fluid seasonal job opportunities. The citrus industry is a growing niche for the region already marked by an ever growing seasonal workforce returning each year. Manufacturing is also a growing sector for the shire. The working age population is a large proportion of the demographic at over 67% (ABS, 2010). This figure on average is larger than the neighbouring shires.

North of Jurien Bay is the nearby coastal settlements of Green Head and Leeman in the Shire of Coorow. The relationship between Jurien Bay and these localities extends to business and work, social and community activities, recreation and leisure.

Green Head is located approximately 27 km north of Jurien Bay. Like other towns on this stretch of coast, it is attractive to retirees and holidaymakers. The resident population was 256 people in 2011, with many absentee landowners. A large proportion of houses are holiday homes, mainly occupied during school holidays and summer periods. The seasonal nature of the activities in the town makes it difficult to substantiate business investment in many commercial activities. The town provides limited commercial facilities with a greater range of services provided in Jurien Bay, Geraldton or Perth.

Leeman was established in the early 1960's as a base for fisherman and to provide a holiday centre for local farmers. In the early 1970's the discovery of heavy mineral sands south of Eneabba resulted in the selection of Leeman as a residential centre for employees of the major mining company in the area, then Western Titanium. This provided the major impetus for development of the town. Population in Leeman has fluctuated

with mining volatility. In 2011 the population of Leeman was 356 people.

Geraldton provides a wide range of both commercial and community services and facilities consistent with its status as the regional centre for the Mid West. Currently Jurien Bay relies on key government administrative services being provided either from the regional centres of Geraldton in the Mid West and Northam in the Wheatbelt. Jurien Bay relies on Perth and Geraldton for the provision of extended or specific health requirements and higher education facilities and services.

Eneabba was originally settled in the 1950's under a War Service Land Settlement Scheme. It is situated 28 km inland from the coast on the Brand Highway. The discovery of heavy mineral sands in the area resulted in a rapid increase in population, road usage and pressure for community facilities. Significant development took place in the town in the late 1970s. There is substantial vacant land available in the town for various purposes. Eneabba had a population of 118 in 2011.

5.2 State Impact

As this Growth Plan will further demonstrate the Central Coast has and will continue to play a significant role in Western Australia's development, particularly given the following factors:

- Significant freehold land area in Jurien Bay to accommodate population and development growth in an area dominated by crown land, Class A/nature reserve and national parks
- Links to international markets
 - Food product (horticulture, grain, protein, seafood)
 - Tourism (Pinnacles, Indian Ocean Drive)
- Access to Mid West and North West mining areas
- Alternative energy resources with the ability to link into the Mid West Energy Project (opportunities for wind and solar)
- Significant ground water reserves
 - Essential for WA's growth
 - Opportunity for industry development (e.g. food processing/agri-precinct north of Perth)



6 Policy Framework

6 Policy Framework

The future of Jurien Bay has been considered and discussed in a range of strategic documents prepared by Federal, State and Local government. The strategic framework for the Jurien Bay Growth Plan builds upon the established policy framework. This section identifies the key documents that provide the foundation and future direction for the development of Jurien Bay as a SuperTown.

FEDERAL AND STATE

State Planning Strategy (1997)

Directions 2031 and beyond (2010)

Both documents establish a vision for future development in Western Australia through an overview of the challenges currently facing the State and regions in relation to land use planning. Both recognise that the Wheatbelt region will cater for the predicted increase in population as Perth grows, with significant growth expected in the north-west sub-region along the coast and consolidated service centres throughout the region.

The Growth Plan assists the State in meeting the challenge to accommodate future population growth by providing an attractive alternative location outside of the Perth metropolitan region.

Draft Wheatbelt Land Use Planning Strategy and Regional Profile (WAPC, 2011)

Jurien Bay is one of five regional centres identified in the Wheatbelt Region. Regional centres are defined in the strategy as towns which act as the major economic centres in the region, functioning as a service centre, transport hub and contains a high level of services and facilities which provide for the resident community and the region, including tertiary education centres, regional hospitals and a range of government services and also major employment centres. The population estimated for these centres is at least 5,000 people.

While primary production is identified as the principal economic activity for the Wheatbelt, this report also recognises that the tourism industry has significant potential for development. Tourism WA has compiled Destination Development Strategies for the five regions in WA to highlight key requirements for tourism including where tourism infrastructure is required. A summary of the Destination Development Strategies relevant to the Jurien Bay and Cervantes sub region are:

- Seen as having significant scope for development especially accommodation-high end camping
- Significant gaps in power and sewerage facilities limit opportunities for development.
- Indian Ocean Drive expected to increase visitation and stimulus for private investment.

The economic development of the tourism industry relies on the availability or supply of appropriate infrastructure. Whilst private investors invest in some infrastructure, the public sector has a role in providing basic infrastructure and utilities such as road, power, water, sewerage and telecommunications. The limited services available in Jurien Bay are a significant factor affecting the growth of the town centre.

The Growth Plan builds on the proposals contained in the draft Wheatbelt Land Use Planning Strategy and Regional Profile through the consideration of the opportunities presented by the natural environment, the development of concepts for future economic and social development, analysis of infrastructure requirements and consideration of spatial planning implications.

Wheatbelt Region Strategic Framework (Regional Development Australia Wheatbelt WA & Wheatbelt Development Commission, 2011)

The framework was developed collaboratively between the Federal and State regional development agencies in order that stakeholders have a common framework, as a basis for policy direction and implementing initiatives to contribute to the sustainability of the region.

Strategic Focus

Vibrant Economy

A diversified and adaptive economic base building on the regions assets and aligned to state, national and international opportunity

Liveable Communities

Inovative, safe, healthy and resilient communities where services and infrastructure meet residents needs and compliment unique Wheatbelt characteristics.

Valued Natural Amenity

The Wheatbelt's unique natural amenity is valued as an asset for social and economic development for current and future generations

Source: RDA, Wheatbelt WA & WDC, 2011

Critical Success Factors

- Innovative and devolved decision making and resourcing
- Internal and external recognition of the region's comparative advantages
- Development that results in social, environmental and economic benefit
- Strong collaboration that adds value to the Wheatbelt's diversified development
- Targeted strategies to meet unique sub regional context - one size does not fit all

The Growth Plan builds on the strategic direction set by the Wheatbelt Region Strategic Framework by developing proposals to achieve the vision of "A diversified economy, with vibrant communities utilising the regions competitive advantage to accommodate a greater population in a valued environment".

Wheatbelt Development Commission Strategic Plan 2009-2013 (WDC)

Some of the current initiatives identified in the Strategic Plan are:

Education is a key objective to enhance the quality and diversity of life in the region and as a contributor for regional development. Initiatives to consider education and training for the Wheatbelt community include:

- To assess the merits of collaborative behaviour between schools and communities;
- To provide a suitable tertiary education service to the Wheatbelt; and
- To facilitate senior high schools, TAFE and communities to work together on trade training

Health is a key issue as the current infrastructure for the Wheatbelt region is based on an old health model. The current challenge is to deliver health services to meet needs while maintaining contemporary standards. Initiatives include:

- To ensure the state country health system keeps a focus on the Wheatbelt; and
- To facilitate collaborative behaviour between stakeholders

Transport is critical to expansion and development of economic activity. Initiatives include:

- To improve the interurban rail transport between Perth and the Wheatbelt;
- To facilitate improvement of grain transport in the Wheatbelt region; and
- To facilitate aviation companies and operators to provide services

Energy is important for residential and industrial development and promoting the Wheatbelt as a location for renewable energy projects is a priority. Initiatives include:

- To work with Wheatbelt communities and organisations to address current and prevent future localised issues with supply;
- To work with communities and Western Power to develop a model for distributed generation, utilising alternative energy;
- To increase the transmission capacity of the two major lines through the region

Emerging industry and NRM should be based on regional comparative advantage and allow development of a diversified industry base. Efficiencies and technological advances in traditional broadacre agriculture have resulted in population stagnation or decrease for dependent communities. Emerging industries in the region include forestry, aviation and energy generation. Initiatives include:

- To facilitate the development of emerging industries; and
- To build on locations to optimise geographic comparative advantage

Marketing is important to change the perception of the Wheatbelt as a declining agricultural region. Shortage of labour is a major issue and therefore attraction and retention of labour is a key issue. Initiatives related to this area are:

- To market the region; and
- To market the Commission

The Growth Plan builds on the strategic direction set by the Wheatbelt Development Commission Strategic Plan by integrating the initiatives as part of the development of key projects.

Regional Development Australia Wheatbelt Initiatives (November, 2011)

Current initiatives by Regional Development Australia Wheatbelt WA for the Wheatbelt region include:

Telecommunications

- A “Wheatbelt NBN & Digital TV Forum” was jointly hosted by RDA Wheatbelt and the Wheatbelt Development Commission. Presentations were given by representatives from the Department of Commerce WA, NBN Co, the Department of Broadband, Communications and the Digital Economy and the Broadband Today Alliance.
- Ongoing discussions with NBN Co and other stakeholders to optimise opportunities for the region
- “Wheatbelt Digital Action Plan”
- Review of guidelines for self-help retransmission services

Regional Economic Development

- RDA Wheatbelt has been actively promoting the “Regional and Remote Economic Development Training Program” offered by Economic Development Australia to the region. Five of these workshops have already been held in the Wheatbelt and two more are tentatively scheduled for early 2012.
- As a result of these workshops a number of economic development initiatives have been instigated, including a trial project involving three shires in the north of the Wheatbelt, to develop a “Regional Economic Development Strategy”

Skills & Workforce Development

- Working in collaboration with Directions, WBN and Rural Skills Australia to deliver a project addressing the skills and workforce needs of the region. Project involves a Jobs Summit and Regional Steering Committee.

Aged Care

- RDA Wheatbelt and the Wheatbelt Development Commission have committed to jointly hosting a regional aged care forum in 2012.
- RDA Wheatbelt will work with relevant stakeholders to progress the concept of a regional steering committee to focus on identifying a regional solution to aged care provision.

Regional Marketing

RDA Wheatbelt has partnered with Heartlands WA and WDC to deliver a regional marketing initiative with the aim of promoting the Wheatbelt as a great place to live, work, visit and invest. Heartlands WA was launched in February 2012.

The Growth Plan builds on the strategic direction set by Regional Development Australia by integrating the initiatives as part of the development of key projects.

Central Coast Planning Regional Profile (1994) Central Coast Regional Strategy (1996)

The strategy recognised that the Central Coast would experience increasing pressure for change because of its proximity to the Perth metropolitan region. The strategy was prepared to deal with the pressure for change and to protect and manage the environment. The regional profile defined the history, context and challenges for the coastal area from Perth to Geraldton. Much of what was said is still relevant today.

The Growth Plan builds on the regional planning framework identified in the Central Coast Regional Strategy through the consideration of the opportunities presented by the natural environment, the development of concepts for future economic and social development, analysis of infrastructure requirements and consideration of spatial planning implications.

LOCAL

Shire of Dandaragan Strategic Community Plan (2012)

The Shire of Dandaragan Strategic Community Plan was adopted by Council in June 2012. The Strategic Community Plan details the vision of the four unique communities, combining ideas from each community, for the future of their places and economies. It provides a blueprint for the investment in the future of the Shire, key development priorities and a partnership approach for working with the communities, the private sector and tiers of government.

The 5 draft key goals of the plan are:

1. Strong Economic Base and Enabling Infrastructure:

To pursue a growth plan that will deliver sustainable and enduring growth that builds a regional community where employment growth matches population growth. The Shire will foster the ongoing economic, social and cultural growth of the region, facilitating and catalysing investment, business and industry growth within a sustainability framework.

2. Amenity and Lifestyle:

To actively build and sustain high quality of life dimensions that define liveability and amenity from the perspective of community, investors, and visitors to the Shire. It will develop a level of amenity and lifestyle that attracts people, businesses and investors to become part of the Shire.

3. Focus on Community:

To support our already strong and committed communities to provide ongoing opportunities for people to be part of a place that has strong community spirit, is connected to nature and is a safe and secure place to live and work. The Shire will build on the distinctive characteristics of each community whilst building an overall shire identity that includes the human, cultural, and historical context of the region.

4. Natural Environment:

A healthy natural environment is a key asset of the Shire of Dandaragan and is a primary asset that will be managed sustainably to achieve balance economic, lifestyle and environmental goals. The intrinsic values of the significant biodiversity (land and marine) and natural ecosystem assets of the Shire will be protected, restored and used sustainably.

5. Shire of Dandaragan Organisation and its People:

The Shire of Dandaragan will be a proactive local government that enables, facilitates, leads and serves connected communities. It will be a dynamic, effective, customer-focussed organisation through a positive work culture that leads, values and supports its people.

The Growth Plan considers the outcomes of the extensive community consultation program undertaken as part of the Strategic Community Plan in identifying key projects to stimulate development in the short term and establish a path for future growth and development.

6.1 Key Findings

- Existing Federal and State and local policy recognise that the provision of infrastructure, particularly transport, energy and telecommunications are critical to support industry and population growth in the Wheatbelt region. In addition key services such as health and education and training are important to attract and retain population and a skilled labour force required for industry.
- Jurien Bay will need to build upon its distinct competitive advantage in terms of attracting industry and population. Sustainability is a basic foundation for growth, to provide for liveable communities which enjoy the unique natural amenity and build on economic assets to target state, national and international opportunities.
- Jurien Bay is one of few locations within the Wheatbelt with the potential to accommodate major long term population growth in line with the State Government's State Planning Strategy and Directions 2031. Jurien Bay's location and connectivity with Perth means that it can play an important role in decentralizing the forecast population growth of the State.
- Jurien Bay offers choices for people wanting to live in regional areas and provides an attractive alternative to living in the Perth metropolitan area. Federal, State and local policy documents recognise that services and facilities in Jurien Bay will need to be comparable to those typically found in strategic multi-purpose centres providing a mix of retail, commercial, community, residential and employment activities.
- The Shire of Dandaragan Strategic Community Plan provides a blueprint for the investment in the future of the Shire, key development priorities and a partnership approach for working with the communities, the private sector and tiers of government.



7 Central Coast Sub-Regional Economy

7 Central Coast Sub-Regional Economy

For the purpose of this report the Central Coast Sub-Region includes the local government areas of Dandaragan, Coorow, Moora, Gingin, and Chittering. This sub-region is characterised by a unique combination of coastal, agricultural and historical natural and urban environments that underpin a diverse economic base including international and domestic tourist attractions, broad acre agriculture, horticulture and commercial fisheries and non-core mineral mining. This diversity of activity means that the future economic development of the Central Coast economy will be influenced by a wide range of global socio-economic trends.

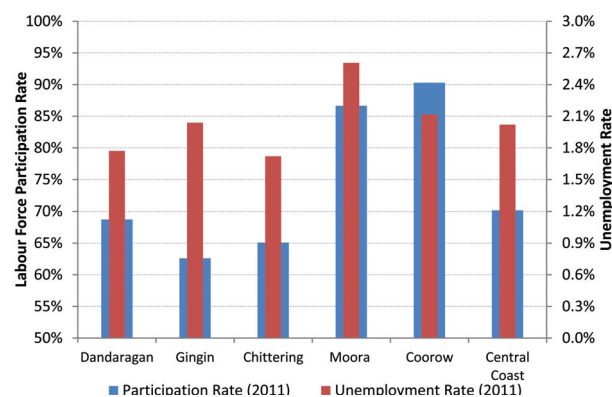
7.1 Profile of the Central Coast

7.1.1 Labour Force and Skills

A significant driver of current and future residential population growth in the Central Coast is the increasingly constrained nature of local labour markets. In 2011, the Central Coast region had an average annual unemployment rate of 2.0%, below the comparative state average of 4.1% (DEEWR, 2012) in the 2011. In fact, all LGAs in the sub-region had an unemployment rate below 2.6% in 2011.

Figure 7.1 Unemployment and Participation Rate, Central Coast Sub-Region LGAs, 2011.

Source: DEEWR 2012



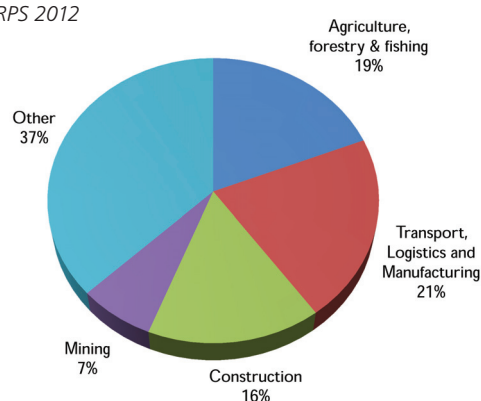
This low unemployment has supported strong labour force participation rates compared to the State average (67.7%). The Moora and Coorow LGAs were significantly higher in 2011 (86.7% and 90.3% respectively), while the LGAs of Dandaragan, Gingin and Chittering have rates more comparable with the State average (68.7%, 62.6% and 65.1% respectively). This reflects the concentration of the sub-region's population and labour force in these areas. With a low unemployment rate and solid participation rate, any major employment growth in the Central Coast sub-region in the future will need to be accommodated by migration.

7.1.2 Employment, Industry and Investment

The Central Coast sub-region had a Gross Regional Product in 2010/11 of approximately \$680m (RPS, 2012). The major drivers of this economic activity are agriculture and fishing activities and associated transport, logistics and manufacturing, which accounts for 40% of industry value-add. Construction and Mining activity accounts for a further quarter. This is illustrated in Figure 7.2.

Figure 7.2 Share of Industry Value Add, Central Coast Sub-Region, 2010/11.

Source: RPS 2012



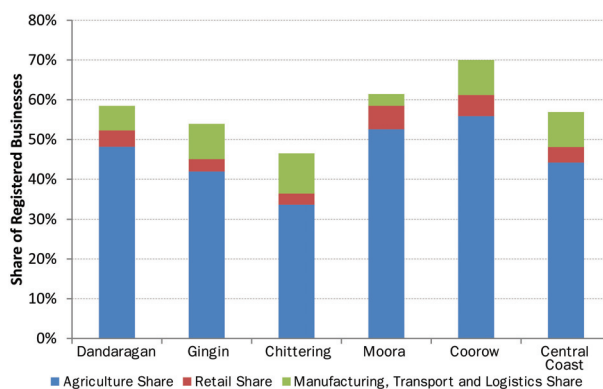
This economic activity has underpinned local employment and business activity. In 2006, there were 5,344 jobs in the Central Coast sub-region, representing an employment self-sufficiency rate (ESS - ratio of local jobs to local workers) of 83% (ABS, 2007). This is a strong ESS rate for a region located directly adjacent the metropolitan Perth area with its associated economic gravity. Employment in the Central Coast is relatively distributed across major centres in the Central Coast, with between 1,000 and 1,450 jobs in each of Chittering, Dandaragan, Gingin and Moora LGAs. Interestingly, this does not mirror the population distribution of the region, reflecting concentrations of older population cohorts (not in the labour force) in the coastal LGAs of Dandaragan and Gingin.



A review of business registrations data for the sub-region reveals a significantly different industry composition than indicated by Gross Regional Product analysis. In 2009, agriculture and fisheries businesses accounted for 44% of locally registered businesses, despite accounting for 19% of industry value add (ABS, 2010). In contrast, the Transport, logistics & manufacturing sector accounts for 8.8% of locally registered businesses but collectively contributes 21% of sub-regional value add. This is illustrated in Figure 7.3.

Figure 7.3 Share of Locally Registered Businesses, Agriculture, Retail and Manufacturing, Transport and Logistics, Central Coast Sub-Region LGAs, 2009.

Source: ABS 2010



This relationship between business registrations and industry value added reflects two main factors:

- Agricultural and fisheries businesses tend to be registered locally, reflecting the predominance of family businesses, while larger manufacturing, transport and retail businesses tend to be registered centrally (in capital cities) with local operations not captured as part of the data;
- Manufacturing and transport businesses tend to be larger and therefore contribute more per business to industry value add; and
- Per worker industry value added varies across industry types. For example, value add per worker in the agricultural and fisheries sector in the Central Coast in 2010/11 was \$66,591 while for manufacturing was \$111,623 (ABS, 2012).

7.1.3 Employment Quality

Population driven employment may be defined as employment resulting from economic activity servicing the needs of a particular population. This activity is oriented to meeting all of the needs of that population including; retail and hospitality, construction and industrial services, civic, healthcare and education, and the business to business supply chains that service these industries. This type of activity will largely occur in the presence of a population, with the overall level of employment resulting dependent upon factors including:

- Macro economic conditions (e.g. GDP growth, CPI levels, interest rates)
- Local unemployment rate
- Local household income
- Constraints on local activity (e.g. availability of land, statutory planning policies, taxation structures)
- Ability of enterprises to capture expenditure

The Shire of Dandaragan has fewer population driven jobs (62%) compared to the WA State average (79%) and other centres in the Midlands statistical division (65%). These jobs relate to employment that services the needs of the population within the Shire, such as retail and hospitality, construction and industrial services, civic, healthcare and education, and the business-to-business supply chains that service these industries.

By contrast, strategic employment results from economic activity focused on the creation and transfer of goods and services to an external market. Employment resulting from this activity may be distinct, in industries where there is little or no local demand (e.g. iron ore mining/wheat farming), or in the same industries as population driven activity but with a different focus (e.g. manufacture of food/wine, higher education, tourism, hospitality activities). Strategic employment does not automatically happen. It results from an enterprise actively seeking to meet the needs of an external market (ranging from other regional communities, to international businesses and consumers), and leveraging a local competitive advantage in meeting these needs. The type of economic development activity suitable to a particular location is likely to be unique-building upon the differentiating characteristics of a particular region rather than meeting generic, commoditisable needs.

Table 7.1 Employment Breakdown by Quality*Source: ABS Census 2006 & Pracsys Analysis 2011*

	Total Employment	Population Driven	Strategic
Dandaragan (S)	1,286	62%	38%
Midlands	19,570	65%	35%
Western Australia	876,882	79%	21%

The Shire of Dandaragan also has more strategic jobs (38%) compared to the WA State average (21%) and other centres in the Midlands statistical division (35%). These jobs relate to employment that is focused on the creation and transfer of goods and services to an external market, such as mining. Employees in strategic jobs in the Shire of Dandaragan are probably more willing to travel further for work due to the close proximity of Perth and other towns, e.g. Geraldton, the proximity to airports and the completion of the Indian Ocean Drive.

When in strategic employment, employees in strategic jobs tend to be willing to travel further for work, and are more inclined to remain in a given industry or sector for longer. The absence of strategic employment in a town or region will mean a lower employment self containment. By contrast the low salary and skill requirements of many population driven jobs makes them more attractive to residents in close proximity to a place.

The percentage of population driven jobs in the Shire of Dandaragan would be expected to increase as both population and employment grow. The challenge will be in ensuring that strategic employment increases at an acceptable rate along with population driven employment.

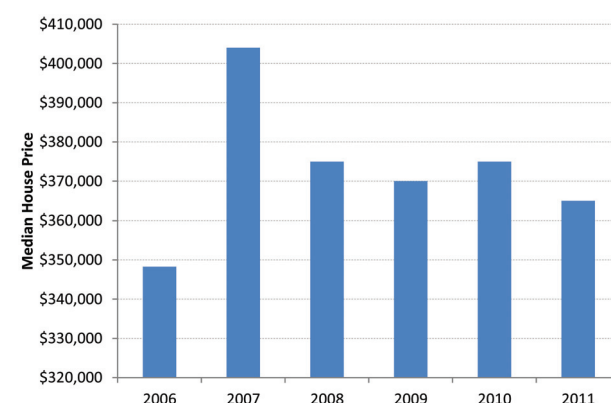
7.1.4 Housing and Affordability

The Central Coast sub-region housing market is comprised of over 9,700 dwellings. However, the defining feature of the sub-region's housing market is the share of unoccupied dwellings, which represent 41.8% of stock in 2011. This is considerably more than the occupied share of dwellings in Western Australia (12.1%), reflecting the predominance of holiday homes and residences in the coastal LGAs of Dandaragan, Gingin and Coorow (ABS, 2012). In contrast, the housing stock in Moora and Chittering LGAs have a more traditional occupancy rate, with only 14.7% and 17.6% unoccupied on Census night respectively.

Over the past five years, the Central Coast Sub-Region and the broader Western Australian housing market has experienced volatile conditions, with prices rising and falling during the

period. This reflects the impact that the Global Financial Crisis (GFC) and subsequent depressed level of consumer confidence has had on housing market activities and therefore prices. House price growth has been slow over the past five years, growing only 5% since 2006. This is below Perth and WA growth levels (16% and 15% respectively) (RPData, 2012). This reflects a combination of cyclical and spatial drivers.

Firstly, the entirety of price growth in the sub-region since 2006 was experienced in 2007 and was mostly reversed in 2008. Since then, prices have been broadly flat. This is illustrated in the Figure 7.4.

Figure 7.4 Median House Prices, Central Coast Sub-Region, 2006 and 2011.*Source: ABS 2012*

Secondly, price levels and movements have varied across the LGAs that comprise the Central Coast. Price points are generally higher and have experienced greater levels of volatility in the coastal LGAs of Gingin and Dandaragan, and to a lesser extent in Coorow. Prices have fallen in Gingin LGA (12% between 2006 and 2010); while prices have increased by Moora LGA by 46% over the same period (though off a price base less than a quarter of that of Dandaragan and Gingin LGAs). These spatial variations in movement are outlined in Table 7.2.

Table 7.2 House Prices and Growth, Central Coast Sub-Region, 2006 and 2011. Source: RPData 2012

Indicators	Dandaragan	Gingin	Chittering	Moora	Coorow	Central Coast	Perth	WA
2006	\$382,500	\$430,000	\$380,000	\$86,500	\$327,500	\$348,250	\$406,000	\$382,000
2011	\$420,000	\$380,000	\$505,000	\$126,250	\$335,000	\$365,000	\$469,000	\$440,000
Growth	\$37,500	-\$50,000	\$125,000	\$39,750	\$7,500	\$16,750	\$63,000	\$58,000
Growth (%)	10%	-12%	33%	46%	2%	5%	16%	15%

This combination of cyclical and spatial variations highlights the fact that the Central Coast housing markets generally, and the coastal towns of Lancelin, Cervantes, Jurien Bay and Green Head, have strong exposures to national trends in holiday homes, second homes and holiday rentals. House markets with such exposure – usually in high amenity coastal locations – experienced robust price growth during the mid 2000's on the back of increased debt availability and the attractiveness of such locations to "emptynester" (older couple without children households) and Baby Boomers (people born 1946 to 1964) as overnight leisure destination. However, with the onset of the GFC and the retirement of the early parts of the Baby Boomer generation, such holiday/leisure nodes have experienced decreased housing demand and flat or even negative price growth.

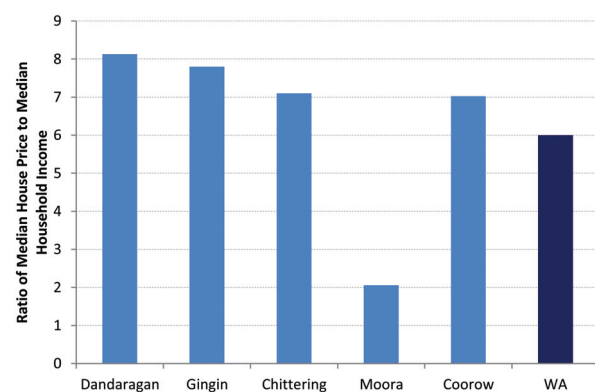
Moderate price growth is generally regarded as positive as it contributes to the wealth and affluence of a region. However, for the Central Coast sub-region, with its relative proximity to Perth, offering affordable housing options is critical to underpinning employment and lifestyle based migration required to increase local population critical mass.

A simple and effective measure of whole-of-market affordability is the Median Multiple – the ratio of median house prices to median household income (Demographia, 2012). In other words, the Median Multiple illustrates the number of years of household income required to equal current prices. This approach is effective in that it allows for differences in local income levels within a region – like the Central Coast – to be considered, ensuring that variations in purchasing power and relative affordability are determined.

RPS calculated the Median Multiple for each LGA in the Central Sub-Region and found that, with the exception of Moora LGA, all shires have Median Multiple ratios well above the WA average of 6.0. These markets are regarded as some of the most severely unaffordable in the State, in spite of moderately high incomes compared to other locations in the Wheatbelt. Interestingly, Chittering has only a slightly lower ratio than Gingin and Dandaragan, despite having a substantially higher income. Moora LGA on the other hand is regarded as highly affordable, with low house prices and the highest household incomes in the region supporting a Median Multiple ratio of 2.1.

Figure 7.5 Median Multiples, Central Coast Sub-Region, 2011.

Source: RPS 2012



7.1.5 Additional Employment Needs

One key issue relating to population growth is the creation of the employment levels required to drive desired population growth, and in turn support the desired population. Based on the Shire's current employment distribution there is an expected need for an additional 1,576 new jobs to sustain a population of 5,000 residents and an additional 3,635 new jobs for 10,000 residents. This will require major targeted investment, innovation and risk management to ensure the conditions are created to facilitate such growth.

As the percentage of population driven jobs in Jurien Bay is expected to increase as both population and employment grow, the benchmark employment distribution demonstrates how Jurien Bay's workforce may look in the future. Table 7.3 outlines two scenarios of employment. The high scenario describes a continuation of the current Shire of Dandaragan employment quality breakdown (a situation requiring major export industries to be locally dominant). The second scenario

relates to a more normalised economy (based upon Busselton's current breakdown). A 41% labour force participation rate (low by state averages but a continuation of current Shire of Dandaragan trends) was assumed.

7.1.6 Floorspace demand

One implication of population growth in Jurien Bay will be the demand for population driven functions like entertainment, retail and commercial services. The demand for floor space will be driven by the pool of available expenditure that occurs in the town and by the relative productivity of different types of floor space. The assumed floor space productivities based upon industry standards are shown in Table 7.4.

The resulting breakdown of floor space is outlined in Table 7.5. It is clear from this analysis that significant additional floor space will need to be planned for (a 17 fold increase in retail floor space alone).

Table 7.3 Breakdown of additional jobs needed to sustain a population of 5,000 and 10,000 residents

Source: Pracsys Analysis 2011

		Labour Force Participation Rate Local 41%		Labour Force Participation Rate WA 45%	
		Population Driven 62% Strategic 38%	Population Driven 65% Strategic 35%	Population Driven 62% Strategic 38%	Population Driven 65% Strategic 35%
Population of 5,000	Total Current Jobs	483	483	483	483
	Additional Future Jobs	1,576	1,576	1,789	1,789
	Additional Population Driven Jobs	978	1,031	1,111	1,169
	Additional Strategic Jobs	597	545	678	620
Population of 10,000	Total Current Jobs	483	483	483	483
	Additional Future Jobs	3,635	3,635	4,062	4,062
	Additional Population Driven Jobs	2,257	2,362	2,522	2,639
	Additional Strategic Jobs	1,378	1,272	1,540	1,423

Table 7.4 Assumed Floor space Productivity (per square metre)

Source: Pracsys Analysis 2011

Convenience	\$6,000
Comparison	\$5,000
Office	\$7,500

Table 7.5 Projected Population Driven Demand for Floor Space (sqm/net lettable area)

Source: HHES 2009/2010 and Pracsys Analysis, 2011

Population	1,173	2,500	5,000	10,000	20,000
Convenience Retail	833	1,782	3,580	7,192	14,448
Comparison Retail	1,370	2,932	5,889	11,830	23,766
Population-Driven Office	565	1,210	2,431	4,883	9,810

7.1.7 Availability of appropriate infrastructure

The ability of local infrastructure to service Jurien Bay's growing population and its visitors is proving to be a significant inhibiting factor for economic growth. In particular anecdotal reporting during consultations with local enterprises highlighted that the need to often pre-fund works on deep sewerage infrastructure for projects in the City Centre (currently unserved by sewerage in parts) has had impacts on the ultimate viability of developments. The result is that the residential, retail, commercial and tourist development required to accommodate growth within the town may not be able to proceed as necessary if marginal business cases are adversely affected by this issue.

The adequate government provision of telecommunications, water and power infrastructure is vital for industry and population growth and increased investment in infrastructure and development projects will create employment and also provide economic stimulus (Hatch et al, 2011).

Quality telecommunications, including phone coverage and internet broadband, is essential to promote industry innovation, generate new commercial opportunities and promote participation in the knowledge industry. Such infrastructure is also beneficial for distance education, e-health, staff retention and attraction, and the innovation of business processes (Hatch et al, 2011).

7.1.8 Economic Development

The population growth envisaged within the Jurien Bay SuperTowns vision will require a major restructure in the local economy to provide the economic activity and employment opportunities to support the growing local workforce. Without access to jobs population growth will be limited to those not in the workforce, those who have the ability to access quality employment elsewhere, and those who are involved in jobs that will naturally occur to support the existing population (this population-driven activity typically equates to approximately one third to half of the required employment).

With current labour shortages and trends of fly-in-fly-out worker arrangements it is common for regional communities to seek to export their requirement for jobs to major resource projects elsewhere in the State. Whilst there is an undoubted opportunity to service this component of the present-day labour market, it is critical to recognise that sustainable, resilient regional economies and communities are built on local enterprises exporting goods and/or services to external markets. These are the fundamental activities that will act as drivers for economic development and strategic employment growth as:

- There is no 'saturation point' to economic development (whereas there is only so much population-driven activity that a particular population needs/can afford)
- A diverse range of economic activity servicing external markets diversifies the risk associated with downturns in a single market
- Local jobs are potentially less vulnerable to fluctuations in the costs of travel (including potential peak oil shortages and carbon pricing)
- Economic development activity tends to include higher 'value-add' activities that are more likely to result in greater flow-on benefits to the local economy
- Economic development activity tends to result in high wage-productivity for employees and significant business opportunities for small to medium enterprises
- Local quality employment means that choice in place of residence is less substitutable (i.e. if you want local quality jobs, you need to live locally). By contrast quality jobs a long way from a regional population may mean that the workforce can substitute a particular community for another (e.g. FIFO jobs now being offered to residents in Bali provides an alternative lifestyle for workers)

It should also be recognised that factors such as the automation of mine sites over the next 10-20 years may lead to a decrease in FIFO workforce requirements of up to 50% on present-day levels for many projects. (University of Queensland & Pracsys 2012). This means that whilst construction jobs for new projects may continue to be required, the longer-term operational jobs for resource projects may actually decrease in demand from present-day levels.

7.2 Key Economic Opportunities

RPS has identified a series of key economic themes, which will define the future economic growth and dynamism of the Central Coast sub-region. These themes represent areas where the Central Coast has a distinct competitive advantage or where socio-demographic, investment or infrastructure-based drivers underpin current and future demand.

The key themes identified for the Central Coast Sub-Regional Economic Strategy include:

- Aquaculture, Horticulture & Food Processing;
- Renewable Energy;
- Retirement & Lifestyle;
- Mining, Construction & Light Industry; and
- Tourism.

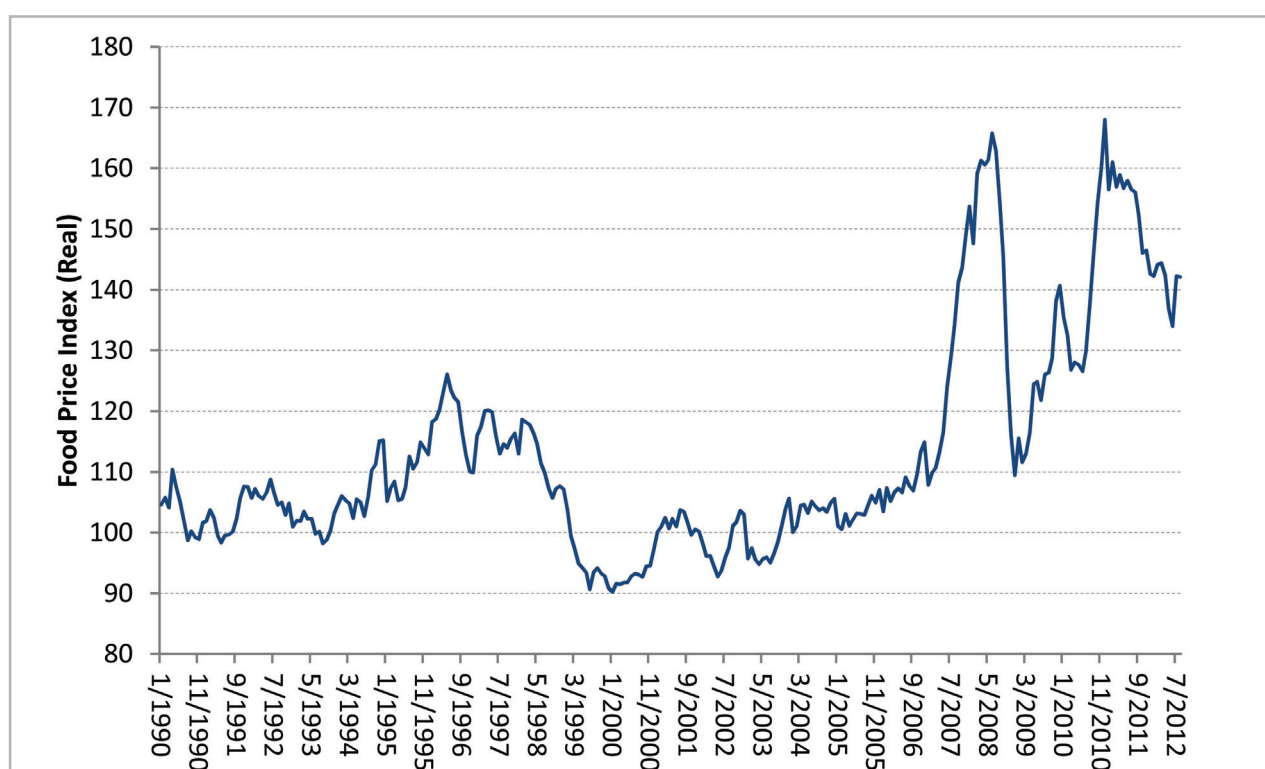
7.2.1 Aquaculture, Agriculture, Horticulture and Food Consumption

The Central Coast Sub-Region produces a wide range of base and premium food products from local and global markets. It possesses unique natural coastal/oceanographic and land characteristics that have the potential to support significant increases in local production. Global food production will need to increase by 60% by 2050 to meet projected demand levels (FAO, 2012). At the same time, global food production is projected to grow at only 1.7% per annum over the next 10 years, as a combination of increased resource competition from biofuel sectors and increased environmental protections constrain production.

Demand is already outpacing supply in international markets, with food price volatility increasing dramatically since 2006 and prices trending upwards from 2000 lows, after decades of real food price declines resulting from increased productivity. This is illustrated in Figure 7.6.

Net food exporters like Australia are therefore uniquely positioned to meet the needs of domestic and international markets, through continued and increased production of agriculture, horticulture and aquaculture products.

Figure 7.6 Food Price Index, Real, 1990 to 2012. Source: FAO 2012



Currently the Central Coast region is most recognised for its crayfish capture sector, which exports its product to USA, Japan, China and other markets. The coastal environment has also been recognised as a highly attractive environment for fish farming and other forms of intensive aquaculture. Fish and seafood is a major component of global food consumption and is particularly favoured in many emerging Asian economies.

The increased need for protein in developing countries, driven by increases in both population and income levels, has underpinned this growth and is expected to support a 15% growth in seafood consumption over the next 10 years (FAO, 2012). However, aquaculture production is expected to grow by 33% over the period, with aquaculture now projected to surpass capture fisheries as the primary source of fish for human consumption by 2018 (FAO, 2012). This transition is being supported by stronger price rises in aquaculture products than capture fisheries products, reflecting greater certainties of product supply and quality.

The proximity of Western Australia to key markets provides the State with a distinct competitive advantage over other parts of Australia and the existence of world-recognised fisheries management, licensing and quality control regimes reinforces Australia's position as a high quality aquaculture supplier.

However, non-coastal areas in Gingin, Dandaragan, Chittering, Moora and Coorow produce a wide mixture of products including broad acre grains, animal husbandry (including horses, sheep and cattle all on pasture), fruits crops and boutique horticulture. Currently, broad acre grains are experiencing considerable price growth on international markets as seasonal volatility in major producers (such as the USA and Australia) and continued declines in stock-to-use ratios (illustrated in the following diagram). This is expected to continue in the medium term, despite the emergence of new production regions in Russia, Ukraine and central Asia.

Figure 7.7 Wheat Stock-to-Use Ratio, 2002/2003 to 2012/12.

Source: FAO 2012



Comparatively strong water supply security in the Central Coast's agricultural areas is a key advantage of the region. This presents opportunities, not only for increased base agricultural production, but also water intensive processing value adding, drawing on production across the entire Wheatbelt region.

These water supply, climatic and environmental characteristics underpinned the Central Coast region's comparative advantage in agriculture and horticulture production. These advantages include:

- Higher rain fall supports higher grain yields and pasture growth rates in central and southern parts of the North Eastern Agricultural Region compared to other parts of the greater Wheatbelt, supporting both broad acre agriculture (particularly non-wheat cereal grains) and animal husbandry (sheep, cattle and horses) (DAFWA, 2012);
- Dandaragan and adjacent LGAs are located within the southern hemisphere olive growing band (equidistant from the equator to southern Europe and the middle east), which has supported increased production and investment (Shire of Dandaragan, 2012);



- Soil quality, water availability and temperate climatic conditions support increased fruit-based horticulture. This includes base citrus fruits and vegetables, though potential also exists for production of some sub-tropical fruits and greenhouse-based tomatoes (Shire of Dandaragan, 2012). Major current and potential projects will confirm the Central Coast as one of the major fruit producing regions of Western Australia, catering to both domestic and international markets.

7.2.2 Mining, Construction & Light Industry

The growth of the population and economy projected for the Jurien Bay SuperTown will underpin demand for construction related activity. Construction activity resulting from demand and supply of land for residential and industrial purposes is a major input into supporting expansion of the local economy and population. Land development and construction is a significant employer in many regional towns experiencing growth.

Leveraging this demand further can depend on developing local workforce skills and enterprises to provide the trades, equipment and materials to deliver houses, commercial buildings and infrastructure.

Additionally, the Central Coast region possesses a range of non-ferrous mineral resource deposits and extraction activities that supply to local and overseas markets.

Mineral extraction in the Wheatbelt region is a significant contributor to the Western Australian State's value of gypsum and heavy mineral sands in particular. Oil and gas deposits have also been found, both on and off shore, but investment and development will depend on international market conditions.

Both construction and mining activities, along with existing and emerging agriculture and horticulture production and processing, will support demand for light industry activity in the State.

7.2.3 Retirement & Lifestyle

The population of Australia is projected to age over the next several decades, with the share of residents aged 65+ to increase from one in eight in 2010 to one in five in 2040 (Treasury, 2010). The ageing of the population presents economic opportunities in the health, retirement and lifestyle services. Health recently overtook retail as the largest employing sector in the WA economy, generating tertiary qualified and knowledge intensive employment opportunities in primary, general and acute health care and social service delivery.

In 2011, people aged 65+ accounted for 15.9% of the Central Coast population (ABS, 2012). This is above the average in metropolitan Perth (11.9%) and Western Australia (12.1%), highlighting the older population profile of the region. This ageing is in line with trends in the western world, reflecting the impending retirement of the Baby Boomer generation (1946 to 1964). The local impacts of this global trend are already starting to reveal themselves. Employment in the health care and social assistance recently overtook retail as the largest employment sector in the WA economy.

There exists a strong correlation between population ageing and health services demand. For example, in 2010/11 there was an average hospital separation rate in Western Australia of 431 per 1,000 residents. However, the hospitalisation rate of people aged 65-74 is almost 250% that of the average, while people aged 75-84 have a hospitalisation rate 350% of the average. This is illustrated in Table 7.6.

In addition to general and acute hospitalisation, population ageing also increases the intensity of local demand for pharmacy, radiation oncology, cardiology, pathology and other primary and ancillary support services. There is also a requirement for both care and lifestyle based accommodation options, with aged care facilities and retirement and lifestyle village demand expected to increase with population ageing.

Table 7.6 Hospital Separations and Population, Western Australia, 2010/11.

Source: ABS 2012

Age	Separations	Population	Separations per 1,000 Pop
0-4	38,315	151,262	253
5-14	27,918	288,810	97
15-24	66,318	307,219	216
25-34	94,056	324,098	290
35-44	107,573	328,257	328
45-54	130,301	310,224	420
55-64	164,159	254,423	645
65-74	157,804	152,541	1,035
75-84	129,606	88,115	1,471
85+	49,982	34,221	1,461
Total	966,032	2,239,170	431

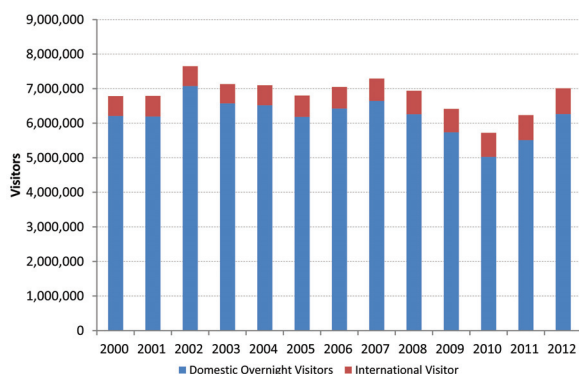
7.2.4 Tourism

Long recognised as the Wheatbelt's "Coastal Playground", the Central Coast region has a wide variety of domestic day-trip, overnight and international tourism destinations that underpin local tourism activity. Tourism has experienced a challenging decade, with domestic overnight visitation depressed by increased attractiveness of outbound overseas travel (due to higher Australian Dollar and increased outbound flights) and recent domestic and global economic uncertainty and associated consumer caution (Tourism Australia, 2011). Additionally, difficulties nationally, and in particular in Western Australian markets, regarding the feasibility of tourism establishment development and operation are constraining potential diversification and growth of overnight visitor numbers.

As illustrated in Figure 7.8, domestic overnight visitation in WA declined considerably between 2007 and 2010, though has recently rebounded from GFC lows. However, despite global uncertainty and volatility, international visitation to WA grew rapidly, albeit off a smaller base.

Figure 7.8 Overnight Visitor, by Source, June 2000 to June 2012.

Source: TRA 2012



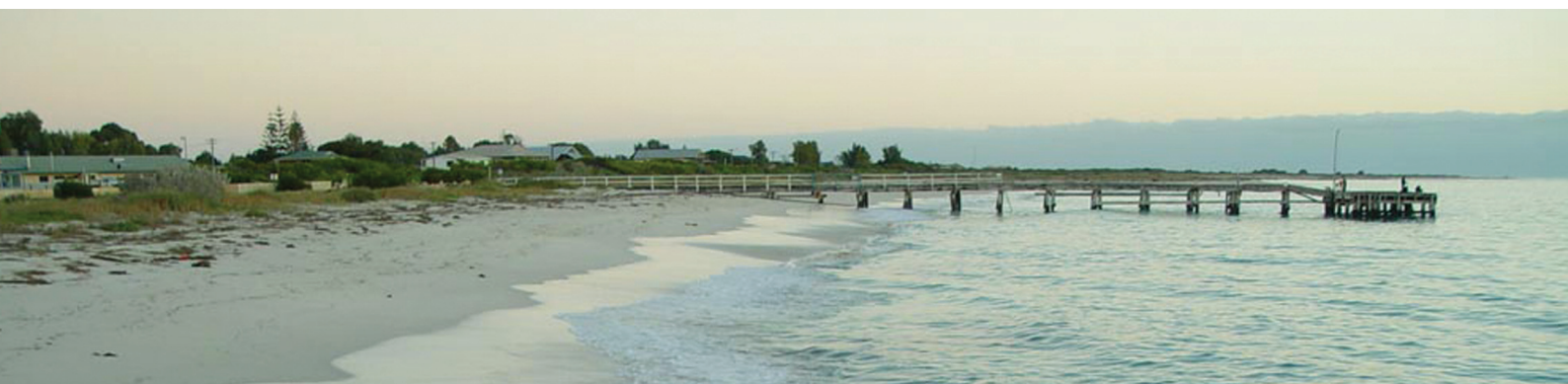
The emergence of middle classes in major emerging and developing countries, particularly in greater Asia, more than offset declines in visitor number from existing, now economically depressed markets of Europe and the US.

The tourism sector can have a positive multiplier effect by:

- Providing employment opportunities, both skilled and unskilled being a labour intensive industry;
- Increasing local income and creates increased gross national product;
- Growth in this sector requires the development of new infrastructure that will also help to stimulate local commerce and industry;
- Creating new facilities that can be used by the local population also;
- Justifying environmental protection and improvement due to the rise of nature-based tourism

The Central Coast region is a diverse tourism market. Locations such as Gingin and Chittering townships, with their peri-urban location and agrarian/natural amenities are major destinations for day-trip visitors from metropolitan Perth. Conversely, coastal nodes of Cervantes, Jurien Bay and surrounding areas have very high concentrations of holiday and second homes, acting as peak period holiday destinations for intra-and inter-state visitors. This reflects the combination of both coastal and natural amenities.

The region also contains a major international tourism attraction in the form of the Pinnacles rock formation. This does not however, appear to underpin strong international overnight visitation to the region, with its relative accessibility from metropolitan Perth and a lack of high quality, internationally oriented tourism accommodation constraining overseas visitor capture.



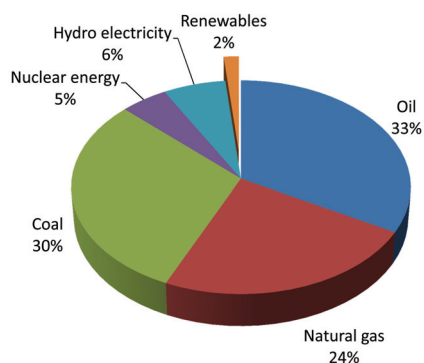
7.2.5 Renewable Energy

Australia has one of the highest rates greenhouse gas emissions per capita in the world (AGO, 2012). This reflects a combination of the countries high standard of living and the fossil fuel dominance of our base load electricity generation mix.

Renewable energy production is increasing globally, in response to both climate change and energy security concerns. While per capita energy production in OECD countries has declined in recent years, due to depressed economic activity and enhancements in energy efficiency, this has been more than offset by rapid increases in energy usage in developing regions including the Middle East, China, South East Asia, Central Europe and Latin America (BP, 2012). Like Australia, global energy consumption is dominated by fossil fuels, with a market share in 2011 of 87%. This includes both base load power and transport fuel energy use. In contrast, renewable energy contribution is at 2%, or some 194.8 of 12,274.4 million tonnes of oil equivalent. This increases to 8% when hydroelectricity is included, as illustrated in Figure 7.9.

Figure 7.9 Global Energy Usage Mix, 2011.

Source: BP 2012



The adoption and incorporation of renewable energy resources into energy mixes varies dramatically across the world. Countries such as Germany, Spain, China, India, Brazil and the US have and continue to invest heavily in renewable energy resources, which is reflected in above average shares of renewable energy in North American, European and Central Asian markets (BP, 2012). Even within renewable energy, there are regional variations the US, this is primarily in the form of Wind power and biofuels, while Germany's production is dominated by solar energy. Global growth in renewable energy is not only assisting to diversify energy supplies and address the carbon intensity of economic and population growth, but is also generating knowledge intensive employment opportunities.

Research and development activity in wind power in the USA and solar/photovoltaic energy in Germany has established both countries as international leaders in renewable energy technology and expertise.

In contrast, Australia's share of global renewable energy markets is only 1.1%, despite having a wide range of latent natural renewable energy resources. The Central Coast sub-region has been recognised as major potential producers of renewable energy in Australia, with its coastal orientation underpinning wind power generation capacity. Emu Downs Wind Farm opened in the Shire of Dandaragan in 2006 as a joint venture between Stanwell and Griffin energy. The success of the project and associated demonstration of the local resource's consistency and alignment with peak power usage periods has underpinned plans for three further wind farms in the area (Shire of Dandaragan, 2012). Recent research into potential areas to generate concentrated solar power identifies a number of sites along the coastline as being highly suitable given their proximity to transmission and transportation infrastructure, limited agricultural production potential and high levels of incoming solar radiation (Clifton & Boruff, 2010).

While local employment opportunities from renewable energy is limited – due to the passive nature of most renewable energy production facilities – there is an opportunity to leverage increased local renewable investment to enhance the national and international economic profile of the Central Coast. The capacity of coastal areas of the sub-region to further expand capacity to provide renewable power options is significant and will assist in supporting a critical mass of renewable power generation necessary to increase local research, technology and employment opportunities in the sector.



7.3 Key Findings

Capacity for Growth

“Capacity for Growth” refers to the required infrastructure, services, systems and activities to support the desired population growth in the town. From an economic perspective this includes examination of barriers for investment in Jurien Bay.

- It is predicted that there is a significant shortfall in floor space within Jurien Bay dedicated to activities meeting the needs of a growing population. This equates to an approximate doubling of floor space to support a population of 2,500 (to 5,924 sqm nla), with an over fourfold increase to 11,900 sqm nla to support a population of 5,000 residents. This floor space includes comparison and convenience retail, as well as commercial office space dedicated to population-driven needs.
- The ability of the City Centre to attract and retain visitors needs to be addressed, with disparate uses and aged infrastructure rejuvenated and reconfigured to encourage multiple purpose trips by residents, travellers passing through town, and tourists. This includes the current stock of retail in Jurien Bay being redeveloped to allow for growth, integration of non-retail uses, and activation of the Jurien Bay City Centre to facilitate multi-transaction visits by all users.
- The capacity for infrastructure to attract or hinder investment will be critical to delivery of the housing, holiday accommodation, commercial floor space and industrial land required for Jurien Bay’s population aspirations to be supported. In particular the impact of infrastructure on the business cases of major and minor projects should be considered by state and local government agencies when allocating resources and priorities.

Drivers for Growth

“Drivers for Growth” refers to the actual reasons for economic development and subsequent population-growth in the town. This includes factors such as the potential value proposition, supply chains, workforce characteristics and projects that will be the impetus for the desired population-growth in the town.

- Building on existing activities - Jurien Bay has developed due to demand for fish and crustaceans, and as a service centre for surrounding food production activities. This base of economic activity potentially provides the community with significant infrastructure (e.g. the marina), workforce competencies and existing enterprises around which to grow its export economy. This can occur through:
 - Expansion of existing activities (opportunities potentially exist in food production and tourism to expand to accommodate new markets, new products or take advantage of economies of scale); and

- Supply chain augmentation - developing growth opportunities through attraction of new suppliers, customers or collaborators, or through the utilisation of the same assets to produce a new product or service (potential exists in activities including aquaculture, research and development activities within the marina, or the development of high intensity food processing activities)

- Major project attraction - The development of new export economies in the short-medium term may potentially be based upon the development of one or more competitive advantages for firms in strategic industries locating in the north-west sub-region. This will typically result from infrastructure or a major project that provides the drivers for one of three factors:

- Availability of specific skilled and specialised labour
- Availability of specialised/essential inputs at a more competitive value due to economies of scale
- Increased efficiency in knowledge transfer/technology spillovers/ collaborations and partnerships due to proximity of partners

Infrastructure may relate to hard and soft assets that provide a sustainable, unique advantage for firms that utilise it. Major projects typically seek to attract ‘anchor’ enterprises around which other firms may be attracted. Unless the reason for attraction of these enterprises is a sustainable competitive advantage (e.g. often a natural resource or piece of infrastructure) these firms will often elicit the benefits offered to entice them (e.g. tax breaks, free land etc) and then move on when a better offer comes along. This is often referred to as ‘smokestack chasing’.

Within Jurien Bay the obvious natural asset is the coastal, marine and hinterland environment (including the Jurien Bay Marine Park). This manifests in the predominance of tourism and food production strategic activities, with major projects supporting the expansion and development of these industries a potential major driver for the scale of growth outlined in the Growth Plan’s vision. The recent investment by State Government for the upgrade of foreshore and jetty may be an asset which could attract complementary projects. Alternatively the Central Coast Strategic Tourism Planning Study outlines the need for tourism assets (both in attractions and accommodation) (Macroplan 2007). The development of a detailed business case for the development of tourism infrastructure related to encouraging multiple-day visitation to the town and surrounds is one such area where major projects may have a significant impact.

- Internal growth structures - In the longer term, a sustainable competitive advantage may arise from endogenous growth within an activity centre or sub-region (local firms/entrepreneurs growing and filling a niche). Economic development, focused on the development of endogenous growth, focuses on the facilitation of innovation, entrepreneurship, development of networks, unlocking of capital, and removal of government barriers. It therefore requires ongoing engagement within the economy with a view to long-term, incremental development. Development of education and business support assets focused on strategic export industries will be critical in bringing about the potential for long term endogenous growth in Jurien Bay. This includes support for small and micro-business enterprises focused on delivering tourist product to regional, national and international visitors.

Jurien Bay and its surrounding catchment will need to continue to develop multiple areas of competitive advantage that meet needs of regional, national and international markets.

Sub-Regional Economic Drivers and Opportunities

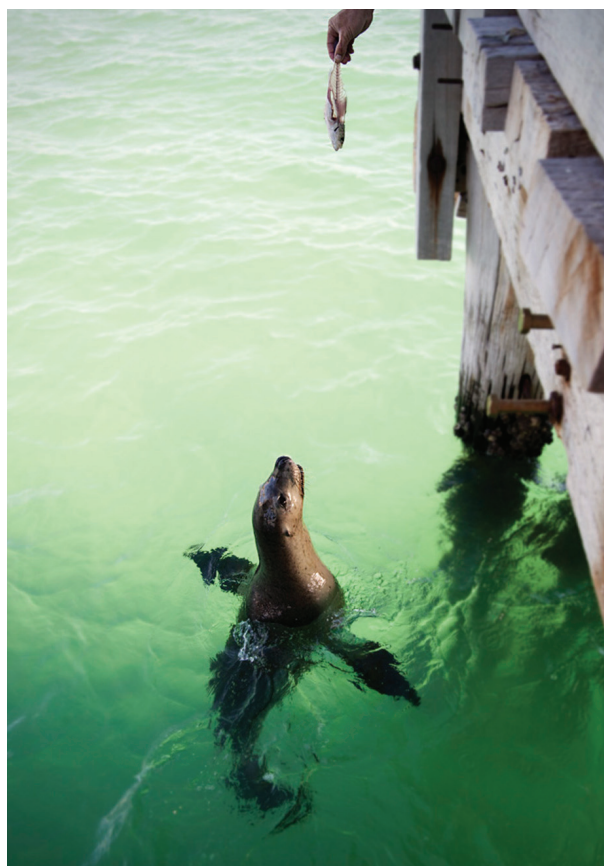
- Aquaculture, Animal Husbandry, Horticulture and Food Processing
 - Core competitive advantages strongly supported by strong long-term global drivers
 - Highly diversified offering
 - Major opportunity for large scale investment tapping into south east and southern Asian investors
- Renewable energy production – limited employment but significant national and international economic profiling opportunity
- Retirement, aged care and lifestyle – leverage current demographics and lifestyle opportunities
- Mining and construction – existing mining related activity and strong link to the construction sector
- Tourism
 - Directly target international tourist
 - Diversify away from volatile domestic overnight market
 - “Grey nomad” stop opportunity

Attraction and Retention of a Skilled Labour Force

- In a growing regional economy, one of the most important strategic issues for Jurien Bay is securing a labour supply. Jurien Bay services a catchment of communities within a radius of 120km. However it is currently limited in the quantity and quality of job opportunities that are available due to population base, the plateauing of traditional strategic industry growth, and the relatively immature nature of the urban economy in meeting the needs of its users. Addressing this is a ‘chicken and egg’ activity. Development of the skills of the existing workforce to meet the needs of regional strategic economies, and industries experience labour-force related capacity constraints is possible with appropriate targeted investment.

However for the job base of Jurien Bay to be expanded this has to occur with expansion of local job opportunities related to these industries. Careful planning therefore needs to occur in matching labour force characteristics to the industries that are sought to be developed as drivers for the population-growth envisaged in this Growth Plan.

- An inadequate supply of labour has the potential to undermine the capacity of public and private sector organisations to operate effectively, constrain economic growth and business performance, and reduce the quality of service provision (Hatch et al, 2011). Importantly, labour supply is not just about how much labour, but ensuring the workforce is suitably matched to the economic and service needs of Jurien Bay (Hatch et al, 2011).





8 Community

8 Community

HERITAGE

Indigenous Heritage

Stretching from Geraldton to Esperance, the Noongar people were the first inhabitants of the southwest of the state. In the south and east the Noongar people lived off the resources of the Karri and Jarrah forests. In the southern coastal area around Albany the Noongar people built fish traps and hunted turtle. To the north and east Noongar people lived in the semi arid regions of what is now the Wheatbelt. Collectively known as Noongar, there are several dialects which make up the regional language, distinct amongst differing clans. The Anangu and Yued clans are two distinct groups that are believed to have occupied the Jurien Bay region for more than 30,000 years.

There is evidence that Nyungars occupied limestone caves in the Jurien Bay region, with stone artifacts being found in some caves. The coastal dunes in the Jurien Bay region were used as burial sites and human skeletal remains have been exposed by dune blowouts. The Nyungars also collected yams from these area and these yam grounds are still evident at Cockleshell Gully. The coastal area between Green Head and Jurien Bay has the largest number of midden deposits in the south-west of Western Australia. Most of these small middens consist of marine shells, including limpet, turban, whelk, abalone and chiton shells, plus some fish remains, particularly wrasses and leatherjackets. These sites are significant as they provide evidence that marine molluscs and fish were an important food source in the traditional Aboriginal diet. Source: CALM, 2005

The Department of Indigenous Affairs Aboriginal Sites Database identifies 74 sites within the Shire of Dandaragan comprising of 16 'Registered Sites' and 58 'Other Heritage Places'.

Maritime Heritage

The name of Jurien Bay was initially assigned from the French explorer Captain Baudin in 1801 in honour of Charles Marie Vicomte Jurien, the Naval Administrator in the French Government at that time. As early as the late 1850's the Governor was petitioned to develop a port along

the Dandaragan coastline and in 1865 James Harding, the Fremantle Harbourmaster was commissioned to survey both Cockleshell Gully and Jurien Bay for their suitability as a port facility. He in turn recommended the latter because of its deeper water and protected anchorage. A 100 foot jetty was finally constructed in 1885. Source: Department of Planning and Urban Development, 1994.

There are four known historical shipwrecks in the vicinity of Jurien Bay;

- 'Cervantes' - wrecked off Cervantes Island in 1844
- 'Maid of Lincoln' - wrecked off Jurien Bay in 1891
- 'Europa' - wrecked offshore of the Hill River mouth in 1897
- 'Lubra' - a steamship wrecked immediately offshore of the Jurien Bay townsite in 1898

Source: Marine Parks and Reserves Authority, 2000

Settlement Heritage

Historically farmers and other rural residents spent their holidays on this section of the coast. Since World War II, increasing numbers of holiday makers and recreational and semi professional fisherman from Perth visited the area. Farming and crayfishing proved to be compatible activities in that their respective seasons tended to complement one another and a number of farmers began to work as both crayfishermen and farmers. Boatsheds and fisherman's shacks were erected on the beach when the rock lobster export market started to develop in the 1950's and 1960's. Processing plants were established in the 1960's. The first beach house is believed to have been constructed in 1951. The townsite of Jurien Bay was first gazetted in 1956. (Shire of Dandaragan, 2011)

The Shire of Dandaragan Municipal Inventory identifies fourteen heritage places within Jurien Bay including Wolba Cottage, the Noondel Homestead, Dalguring house, Glen Lark cottage, Yathroo Homestead and outbuildings, the former Post and Telegraph Office and Quarters Moora, and St Anne's Church.



8.1 Key Drivers and Pressures

8.1.1 Demographic Characteristics

The Shire of Dandaragan has a total estimated population of 3,321. This figure is based on 'place of usual residence' from the ABS Census data, 2011. Jurien Bay is a town that has recently experienced population growth and development. The population had a positive growth rate of 3.5% between 2001 and 2011. See table 8.1

Population Structure

In comparison to the WA State Jurien Bay has a:

- Slightly higher proportion of young people aged 5-14 years;
- Lower proportion of people aged between 15-24 years (only 6.1% compared to a State average of 13.7%);

- Lower proportion of people in the 24-54 age group (38.6% compared to a State average of 43%);

- Higher proportion of people in the 65 and over age group (18.3% compared to a State average of 12.3%).

The Age Structure of Jurien Bay indicates:

- the 5-14 age group increased from 47 persons in 2001 to 205 persons in 2011;
- the 55-64 age group grew from 64 persons in 2001 to 229 persons in 2011;
- the 65 and over age group within Jurien Bay increased from 78 persons in 2001 to 278 persons in 2011.

Table 8.2 indicates changes between the 2001 and 2011 Census periods.

Table 8.1 Total Population Change by UCL/SSC and SLA

Source: Australian Bureau of Statistics, 1996, 2001a, 2006a & 2011

		Total Population				Population Change 2001 and 2011		Population Change 2006 and 2011	
		1996 (UCL)	2001 (UCL)	2006 (SSC)	2011 (SSC)	Actual	%	Actual	%
UCL / SSC	Leeman	531	539	396	356	-183	-34	-40	-10.1
	Green Head	245	244	249	256	12	4.9	7	2.8
	Jurien Bay	636	1,153	1,343	1,507	354	30.7	164	12.2
	Cervantes	480	622	503	461	-161	-25.9	-42	-8.3
	Lancelin	597	678	666	606	-72	-10.6	-60	-9.0
	Total for UCLs	2,786	3,236	3,157	3,186	-50	-1.5	29	0.9
SLA	Coorow	1,395	1,341	1,199	1,067	-274	-20.4	-132	-11.0
	Dandaragan	2,607	3,078	2,884	3,185	107	3.5	301	10.4
	Gingin	3,189	3,848	4,318	4,685	837	21.8	367	8.5
	Total for SLAs	7,191	8,267	8,401	8,937	670	8.1	536	6.4
State	Western Australia	1,726,095	1,851,252	1,986,247	2,239,170	387,918	21.0	252,923	12.7

Table 8.2 2001, 2006 & 2011 ABS Census Community Profiles

Source: Australian Bureau of Statistics, 2001a, 2006a & 2011

2001 Census			2006 Census			2011 Census		
Age	Jurien Bay (UCL)	WA	Age	Jurien Bay (SSC)	WA	Age	Jurien Bay (SSC)	WA
0-4 years	9%	6%	0-4 years	6%	6%	0-4 years	7.9%	6.8%
5-14 years	13%	14%	5-14 years	14%	13%	5-14 years	13.5%	12.9%
15-24 years	8%	15%	15-24 years	8%	15%	15-24 years	6.1%	13.7%
25-54 years	38%	44%	25-54 years	39%	43%	25-54 years	38.6%	43%
55-64 years	14%	9%	55-64 years	12%	11%	55-64 years	15.3%	11.4%
65 years & over	17%	11%	65 years & over	21%	12%	65 years & over	18.3%	12.3%
Total Population	1,153	1,851,252	Total Population	1,343	1,986,247	Total Population	1,507	2,239,170

Ethnicity and birthplace

The percentage of persons living in Jurien Bay who were born overseas (12.6% in 2011) is much lower than the State average (30.7%).

Age Projections for the Shire of Dandaragan

Based on the Department of Health and Ageing Statistical Local Area projections, the Shire of Dandaragan Aged Care Strategy illustrated that in 2025 Seniors (aged 50 and over) will account for 34.9% of WA's entire population and 42.9% of the adult population (aged 15 and over). Seniors aged 70 and over will comprise 12% of the entire population, and 14.8% of the adult population (aged 15 and over).

By 2025, the Shire of Dandaragan's Seniors (aged 50 and over) are expected to increase from 1,276 in 2010 to 1,824 by 2025, comprising 47% of the Shire's entire population, and an astounding 56.8% of the adult population (aged 15 and over). The number of Seniors aged 70 and over is expected to comprise 16.9% of the entire population, and 20.1% of the adult population. These projections are illustrated in Table 8.3.

Household Structure

Current demographic data for Jurien Bay is illustrated in Table 8.5 & 8.6 and reveals that:

- 50.1% of the population comprises couples without children (empty nesters/retired couples), compared to the State average of 38.8%;
- Only 38% of the population comprises couple families with children, compared to the State average of 44.6%;
- Household composition is similar to that of the remainder of the State.

Dwellings and Occupancy

Jurien Bay is characterised particularly by large fluctuations in population associated with peaks and troughs in visitor numbers. A significant proportion of residences are unoccupied for the majority of the year, which tends to distort the real picture of demand for commercial goods and services, and social infrastructure and services (Pracsys Analysis, 2011).

Income

The 2011 ABS Census statistics indicate:

- the median individual income in Jurien Bay is \$568.00 compared to the WA State average of \$662.00;
- the median family income is \$1,293.00; compared to the WA State average of \$1,722.00; and
- the median household income is \$1,003.00; compared to WA State average of \$1,415.00

Table 8.3 Shire of Dandaragan Aged Population Projections and Proportions of Population

Source: ZKC Consulting, 2010

Year	Forecast Population (Total)	Adult Population (aged 15 & over)	Seniors (aged 50 and over)			Seniors (aged 70 and over)		
			Total Seniors (aged 50 & over)	Proportion of Entire Population (%)	Proportion of Adult Population (%)	Seniors (aged 70 & over)	Proportion of Entire Population (%)	Proportion of Adult Population (%)
2010	3253	2621	1276	39.2%	48.6%	335	10.2%	12.7%
2015	3455	2851	1477	42.7%	51.8%	408	11.8%	14.3%
2020	3646	3031	1646	45.1%	54.3%	522	14.3%	17.2%
2025	3822	3212	1824	47.7%	56.8%	647	16.9%	20.1%

Table 8.4 2001, 2006 & 2011 ABS Census Statistical Information

Source: Australian Bureau of Statistics, 2001a, 2006a & 2011

2001 Census			2006 Census			2011 Census		
Selected characteristics	Jurien Bay (UCL)	WA	Selected characteristics	Jurien Bay (UCL)	WA	Selected characteristics	Jurien Bay (SSC)	WA
Australian citizenship	90%	86%	Australian citizenship	86%	83%	Australian citizenship	86.3%	80.7%
Persons born overseas	11%	32%	Persons born overseas	13%	31%	Persons born overseas	12.6%	30.7%

Table 8.5 Family Characteristics

Source: Australian Bureau of Statistics, 2001, 2006 & 2011

2001 Census			2006 Census			2011 Census		
Family characteristics	Jurien Bay (UCL)	WA	Family characteristics	Jurien Bay (UCL)	WA	Family characteristics	Jurien Bay (SSC)	WA
Couple families with children	35%	47%	Couple families with children	34%	46%	Couple families with children	38%	44.9%
Couple families without children	52%	35%	Couple families without children	52%	37%	Couple families without children	50.1%	38.8%
One parent families	12%	16%	One parent families	14%	15%	One parent families	10.5%	14.5%
Other families	2%	2%	Other families	1%	2%	Other families	1.3%	1.8%
Total families	311	355,156	Total families	308	381,643	Total families	389	585,310

Table 8.6 Household Composition

Source: Australian Bureau of Statistics, 2001, 2006 & 2011

2001 Census			2006 Census			2011 Census		
Household composition	Jurien Bay (UCL)	WA	Household composition	Jurien Bay (UCL)	WA	Household composition	Jurien Bay (SSC)	WA
Family household	62%	69%	Family household	60%	67%	Family household	68.4%	72.2%
Lone person household	22%	24%	Lone person household	25%	24%	Lone person household	29.7%	23.8%
Group household	3%	4%	Group household	3%	4%	Group household	1.9%	4%

Table 8.7 Dwelling Characteristics

Source: 2001, 2006 & 2011 ABS Census

2001 Census			2006 Census			2011 Census		
Dwelling characteristics	Jurien Bay (UCL)	WA	Dwelling characteristics	Jurien Bay (UCL)	WA	Dwelling characteristics	Jurien Bay (SSC)	WA
Average household size	NA*	NA*	Average household size	2.30	2.50	Average household size	2.4	2.6
Tenure Type			Tenure Type			Tenure Type		
Fully owned	44%	36%	Fully owned	38%	30%	Fully owned	37.3%	29.5%
Being purchased	19%	34%	Being purchased	18%	38%	Being purchased	27.6%	37.8%
Rented	28%	24%	Rented (includes rent-free)	35%	25%	Rented (includes rent-free)	32.9%	29.2%



Population Projections

The growth of Jurien Bay is in keeping with a trend of population growth in many peri and non-metropolitan coastal areas of Australia, particularly those located within a 2 hour drive of a capital city (Gurran et al, 2007).

Two population projections are available for Jurien Bay, WA Tomorrow (WAPC) and the ABS Departments of Health and Aging illustrated in Tables 8.8 and 8.9 respectively. The WAPC population projections indicate that the Wheatbelt region is

expected to grow at a rate slightly slower than that of the State in the next 20 years. The growth rate is predicted to be highest in the period 2011 and 2016 and whilst it is still forecast to grow between 2016 and 2026, the growth rate is predicted to be much steadier over that 10 year period.

WAPC population projections also predict a significant rise in the number of people in the 0-14 age groups and an increase in the number of people in the 25-39 age groups by 2026. Catering for services and facilities for this population is essential for the growth of Jurien Bay.

Figure 8.1 Population Projection Statistics for the Shire of Dandaragan and Jurien Bay Urban Locality

Source: Australian Bureau of Statistics/WA Tomorrow (WAPC)

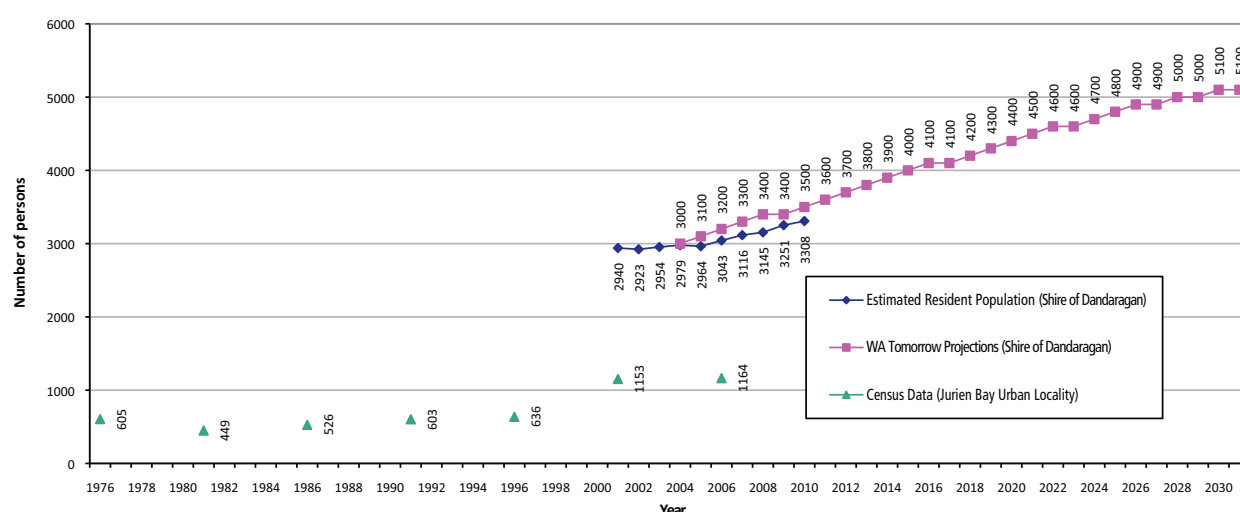


Table 8.8 Population Projections for the Shire of Dandaragan and Wheatbelt Planning Region

Source: WA Tomorrow Department of Planning WA, 2011

	2001	2016	2021	2026	2027
Shire of Dandaragan	3,600	4,100	4,500	4,900	4,900
Growth rate		13.9%	9.8%	8.9%	0.0%
Wheatbelt Planning Region	74,500	79,100	83,600	87,300	87,900
Growth		6.2%	5.7%	4.4%	0.7%

Table 8.9 Population Projections for the Shire of Dandaragan

Source: ABS Department of Health and Aging (2008)

	2001	2016	2021	2026	2027
Shire of Dandaragan	3,294	3,493	3,683	3,855	3,885
Growth rate		6.0%	5.4%	4.7%	0.8%

8.1.2 Community Facilities and Services

In coastal communities, impacts of strong population and visitor growth will be felt in different ways by various population segments. For the elderly (current and future residents), the provision of health, housing and leisure services will determine their choice of location in retirement and beyond. For young families, choice of housing, job opportunities, education and health services are all strong influences on where they live. (Pracsys, 2003)

A survey of Jurien Bay residents in 2007 benchmarked Jurien Bay against 18 coastal communities related to the Western Rock Lobster Industry (Huddleston et al, 2007).

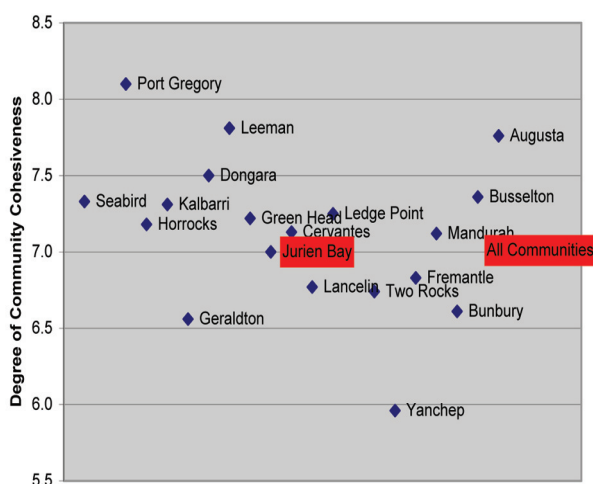
The findings are illustrated in Figures 8.2 and 8.3 and revealed:

- that the main reasons that people chose to live in Jurien Bay were lifestyle (63.9% of respondents), the beach, ocean, environment (47.5%) and work (26.7%);
- that the reasons that people move out of Jurien Bay were that "schooling past year 10 could be a major factor" and "medical reasons also play a role" while others referred to the "lack of social activities and amenities e.g. no movie houses etc";

** A cohesive community is one where there is a common vision and a sense of belonging, where the diversity of people's backgrounds and circumstances is appreciated and positively valued, where those from different backgrounds have similar life opportunities, and where strong and positive relationships are being developed (Source: Local Government Association, 2004)*

Figure 8.2 Community Cohesiveness Scores across 19 Selected Communities

Source: Huddleston et al, 2007



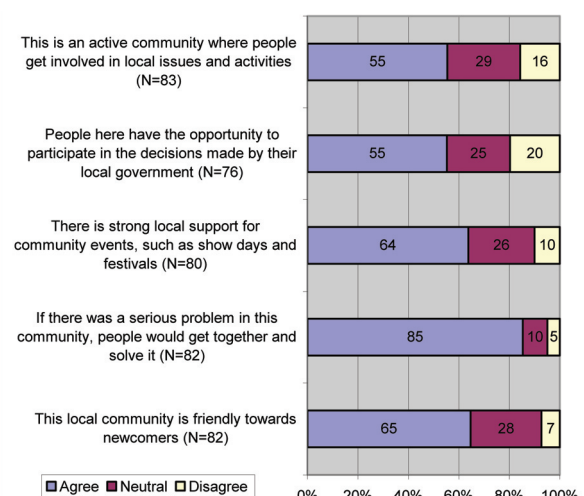
- people reported that 'knowing their neighbours' and running into people they know when shopping as attractive aspects of living in the town;
- half of the survey group stated that they attended local community events at least three times per year;
- residents perceived that the community is cohesive and this was rated against other coastal communities.

A community workshop undertaken in Jurien Bay in 2011 as part of the Shire's Strategic Community Plan process identified the following priorities in relation to community facilities and services:

- Health services
- Education
- Aged care (developed as industry)
- Young people (investment in education)
- Combined museum, tourism, heritage, art facility

Figure 8.3 Perceptions of Community Cohesiveness, Jurien Bay

Source: Huddleston et al, 2007



Education

The Jurien Bay District High School (JBDHS) caters for students from Jurien Bay, Leeman, Green Head, Cervantes, Badgingarra and the surrounding farming districts. The school provides pre-primary, primary and secondary schooling. Currently the secondary school program (year 11 and 12) is undertaken in collaboration with the Durack Institute School of Isolated and Distant Education (SIDE) and CY O'Conner TAFE. Secondary school students are able to complete Certificate I and II Courses in a range of industry areas, with year 10 students having access to complete Certificate I courses. JBDHS had an estimated enrolment of 287 students for the 2012 school year. Enrolment numbers in the Central Coast sub-region have remained either stable or experienced gradual increase since 2006 (see table 8.10).

One of the major considerations of residential location for both families and young people in is the availability and perceived quality of education and training facilities. Particular issues faced in Jurien Bay and the Central Coast sub-region are:

- Limited local education options after Year 10 (resulting in movement of students to travel to other towns e.g. Geraldton or Perth)
- Limited options for tertiary study

It is critical that the education system within the Central Coast is capable of educating, training and re-training its population and fostering lifelong learning. Although, it is unreasonable to expect that everything would be available in the region that is available in Perth, it would be beneficial to make education and training courses accessible that will help provide the skills critical to the region's economy. The Shire of Dandaragan has already identified land adjacent to JBDHS as a site for a TAFE facility and JBDHS are tailoring its vocational courses at the school for a coastal industry base and providing new courses. Opportunities in future development to consolidate education and training funding, utilise improving technology and extend relevant courses to a wide demographic will ensure that Jurien Bay and the region are in the best position to meet industry and labour force needs (Hatch et al, 2011).

Table 8.10 Student Enrolment Figures for Government Schools in the Jurien Bay region (Semester 1)

Source: Department of Education, 2010 & 2012

School	Education District	Enrolments					
		2006	2007	2008	2009	2010	2011
Leeman Primary School	Mid West	58	64	52	47	55	53
Jurien Bay District High School	Mid West	269	278	292	279	288	298
Cervantes Primary School	Mid West	43	43	49	48	43	52
Lancelin Primary School	West Coast	127	128	130	129	126	141



Health

The Moora Multi Purpose Service (MPS) is the model used for delivering health services in Jurien Bay and is a joint initiative of Western Australia Country Health Service (WACHS) and the Commonwealth to flexibly deliver aged, community and health services. At the time the MPS was established (1991) it was considered that the district could not sustain separate services. The design of the Multi Purpose Service (MPS) program allows rural communities to pool Commonwealth and State health and aged care funds within a designated geographical area, creating opportunities to coordinate and appropriately target community health and aged care needs.

Currently the Moora MPS provides 18 residential care beds within the Lodge (low care) and Moora hospital (high care). These beds are located in Moora. WA Country Health reported that about 200 clients are supported in the community on packages or Home and Community Care (HACC) services.

The Moora MPS service is located 121km (1 hr 34 min) from Jurien Bay. Other health services are available at:

- Joondalup Health Campus - located 199km (2 hrs 18 min)
- Geraldton Hospital located - located 195 km (2hrs 15 min)

The local health and aged care services in Jurien Bay are delivered by the Jurien Bay health service and include:

- Jurien Bay Community Health Centre
- Jurien Bay General Practice
- Jurien Bay HACC
- Child Health Clinic
- Jurien Bay Physiotherapy Clinic
- Jurien Bay Dental Clinic
- Accident and Emergency
- Minor Day procedures (facility)
- 2 Observation beds (non commissioned)
- RSL WA retirement housing
- RSL WA Extended Aged Care in the Home Packages, EACH (pending notification January February 2012)
- Central West Coast Senior Citizens Group
- St John's Ambulance (Volunteer service)
- Country Women's Associations - Jurien Bay
- Pharmaceutical services - Jurien Pharmacy

Regional or Sub Regional services supporting Jurien Bay include:

- Aged Care Assessment Team (ACAT) Wheatbelt Northam
- Commonwealth Respite and Carelink Centre Wheatbelt WA (delivered from Osborne Park, Perth)

The role and lead function of Moora based services and administration of the MPS has implications for the way aged and health services are delivered. This change may have implications for both Jurien Bay and Moora. For Moora this may challenge some current and future plans for service design and delivery. If a shift of services or a more highly developed range of services are established in Jurien Bay it is possible that there may be a retraction in some services and little if any growth in the MPS for Moora. For Jurien Bay there will be the opportunity to reconsider the MPS model altogether with impacts on health and aged care. This planning process may trigger opportunity to address current and the immediate future unmet needs and service gaps in both health and aged care services in Jurien Bay.

The lack of residential care and appropriately structured and accessible community care will and is impacting on the rate of development of retirement living. Conversely access to residential care and community aged care will increase the interest of retirees in settling in Jurien Bay.

Similar to the provision of education and training, expanding health care services relevant to Jurien Bay's demographics will not only serve to meet demand but will foster a growing area of employment, particularly for skilled positions. Addressing the time lag between immediate demand and government investment and provision will be fundamental (*Hatch et al, 2011*).

The Shire's Aged Care Strategy (adopted May 2011) has the following recommendations for aged care services within Jurien Bay:

- With increased demand on aged care services the Shire, State and Federal governments need to work together to provide suitable facilities and services to address those needs;
- The Shire needs to pursue access to land (including servicing requirements e.g. power, water and telecommunications) for the purposes of establishing a facility to cater for residential aged care, which includes provision for low and high care beds, day and residential respite, dementia care

and supporting services in addition to land to expand the Health Centre;

- The Shire needs to advocate and direct resources where possible, to promote planning, service delivery and infrastructure provision to support its communities to effectively compete with other retirement communities in coastal areas north and south of the Perth metropolitan area.

The issues/constraints with the existing health service in Jurien Bay include:

- People are moving away from Jurien Bay due to gaps and limited services - when the frail aged move out of town for residential care, it often means the extended family move as well, as they need to move to Moora, Geraldton or metropolitan Perth for accommodation.
- There are some older persons who are at risk of homelessness - there is a need for affordable accommodation in the region.
- Some older people in the district are socially isolated. Social isolation negatively impacts on the health and wellbeing of older persons, therefore the impact of social isolation and activities and programs that reduce social isolation need to be considered in the planning process. The number of older persons (70+) living alone in Dandaragan is significantly below the Western Australian average. This data supports the consultations that indicate that older persons are moving out of the area when they require higher levels of care. It could be expected that if the benchmarked services levels and services types were available in Jurien Bay that a greater number of older persons would remain in the community. The data suggests that based on WA norms there would be an additional 71 persons living in Jurien Bay in 2006 if required services were available.
- Carers support is currently inadequate.
- Community Aged Care programs are not being provided at the required levels.
- Disability rates and aged related conditions will require increasing levels of care and diverse service types such as dementia care.
- The broad array of policies, planning frameworks and cycles, compliance frameworks, population and/or dependency driven benchmarks (for service level), service catchment policies, governance arrangements and funding streams (capital and operational).

The opportunities in health planning include:

- The rapid advances being made in the use of technology, medicine and pharmaceuticals.
- Evidence that health promotion and other key interventions are effective in increasing population health and wellbeing.
- Possible expectations from the community that hospital beds will serve the communities health needs - with evidence that this may not be the optimum use of money and human resources.
- Workforce shortages (affecting aged care and health).
- The changing population structure. Age structure of the community needs to be considered in relation to provision of health services due to the higher usage rates of health services as the community ages. This is particularly important given the popularity of Jurien Bay as a retirement living destination.

Law, Safety and Emergency

Jurien Bay and Cervantes has the following services:

- Volunteer Fire and Rescue Station;
- Jurien Bay District Police Station (includes overnight lock up facility) - 7 police officers based at the station. The designated Courthouse is located in Moora although Courthouse sessions are held in Jurien Bay;
- Volunteer Fire Brigade;
- Volunteer Bush Fire Brigade (Canover-Alta Mare subdivision);
- Volunteer Sea Rescue Group; and
- St John's Ambulance.

State Government Agencies

There are currently a limited number of State Government agencies which provide services from offices in Jurien Bay. Government service delivery is generally provided via branch and head offices in a range of locations. The Department of Environment and Conservation is currently leasing the former Shire office in Jurien Bay and the Department of Fisheries currently lease space at the marina. Other agencies tend to service Jurien on a visiting basis - such agencies include the Wheatbelt Development Commission and the Small Business Development Commission. These services are currently accommodated in a 'hot' office provided in the Shire offices.

The consolidation of these government services into a central and convenient office has considerable attraction and potential synergies and savings. Many of these agencies do occasionally alter their service boundaries. As Jurien Bay is on the fringe of these boundaries, it has at times resulted in changes to staffing and resources.

The provision of some existing services for these agencies within Jurien Bay is currently constrained due to inadequate accommodation. Expansion of State and local government services will require additional accommodation to meet the growing needs of the community.

Social Services

Social services in Jurien Bay are generally offered on a mobile basis, Northam being the centre of service distribution. This includes for example youth, drug and alcohol, family assistance, counselling, mental health, meals on wheels, women's refuge, and emergency relief. Whilst the services are provided through a demand based system, they are often infrequent and rarely made aware of. In a community service profile of the Wheatbelt, service providers were consulted as to the requirements for a tangible service presence in Jurien Bay and the needs of a growing and ageing population. Some of their primary considerations were infrastructure, collaboration, decreased drive time, and perceived service need.

A primary consideration that all community service providers expressed is the need for a tangible site to work from if Jurien Bay is to play a sub-regional service centre role. All have expressed the need for a multipurpose building which incorporates a wide range of services and agencies/groups, being both commercial and community based. Other factors include consideration of security needs for staff and clients (e.g. internal space and entry/exit points), quality telecommunications (e.g. video conferencing), and the potential for a common reception.

Each organisation has reiterated the fact that the industry is sustained through the knowledge sharing and collaboration with other providers within the industry. The advent of multi-agency collaboration is helped by increased proximity to each other. Without a legacy or existing presence, there is scope in Jurien Bay for creativity in designing a community services pace to not only meet the needs of the community, but do so in a subtle non-offensive manner. The initial service will provide the pathway for further entities to bridge the gap and meet the need. Proactive planning will reduce the backlog and subsequent

catch-up period that community service organisations can face in underserved communities.

An aspirational population that perceives a growing of the retirement base will have to make considerations for the service needs which accompany this demographic (e.g. community legal service associated with issues around estates and wills). Youth organisations and other specialised services dealing with common issues such as drug and alcohol problems, women's services and the like will also be required to service a growing population and changing socio-economic profile.

No matter the demographic, socio-economic standing and size of a population, there are members that will and do need the services provided by this industry. A gradual and discrete introduction of services through community engagement programs is one approach used by organisations in this sector. Each organisation when prompted has suggested that there is no operational problem with being on the ground for an extended period of time before their services are made aware of.



Local Government

The Shire of Dandaragan has two offices, the Administration Centre located in Jurien Bay which is the main service centre for administration, finance, health, building, planning and ranger services. The previous Shire office in Dandaragan has been renovated into a fully functional Community Resource Centre (CRC), where the Shire contracts the Dandaragan CRC Inc. to provide basic administration and library services for the eastern portion of the Shire.

Community Facilities and Services

The Jurien Bay Community Resource Centre (CRC) is a not for profit community based organisation. It is run by a management committee, volunteers and paid staff who provide access to computers, high speed internet, video conferencing, education and training as well as Government information and referral services which include:

- Centrelink Agency
- Westnet Agency
- Country Arts, ICAN Community Arts Group coordination
- Government Information and Referral Service
- TAFE Enquiries

The CRC is also a de facto tourist centre although this service is not best placed or resourced with this organisation under current circumstances.

The CRC is located in a small building with limited space, which severely limits the delivery of existing services and potential for expanded services. The services provided by the CRC are extremely important in a central location which can provide a range of services that are not viable as standalone operations. Provision of adequate accommodation to allow for expanded CRC services will be addressed in the Visitor and Civic Precinct project – Stage 1 which was funded as part of the SuperTowns program.

The facilities funded as part of the Visitor and Civic Precinct project will also cater for the relocation of the public library. This is currently temporarily being housed in the Shire's Administration Centre. This provides the opportunity to provide a centralised and expanded library facility and community resource which can also cater for electronic media. It could also be managed by the CRC as their role evolves in the future.

The Family Resource Centre is a facility that has a day care centre (at capacity), two offices, a multi-purpose meeting facility and kitchen that can be hired.

Sport and Recreation

Jurien Bay has a Shire Community Centre that provides for sporting and cultural activities, located on Bashford Street.

Various parks are located throughout the town for community use as well as a Bowling Club, Golf Club and Tennis Club. Other clubs based in Jurien Bay include:

- Basketball
- Netball
- Football
- Junior Cricket
- Horse Riding
- Karts

In addition the boat harbour and jetty accommodate the needs of recreational fishing.

The Shire Sport and Recreation Strategic Plan established the following principles to guide Council's decision making in relation to sports and recreation facilities and services;

- Community independence and interdependence;
- Community wellbeing and choice;
- Economic useful life of facilities and their management;
- Community partnerships and sharing;
- Economic useful life of infrastructure; and
- Initiatives should be sufficiently flexible to cater for particular circumstances and the needs of individual communities.



Childcare

Community members have raised a lack of child care providers/facilities as a current issue that needs to be considered. The number of childcare providers and the costs associated with childcare add to the residential location for both families and young people.

The Wheatbelt Organisation for Children's Services [WOCS] and Child Inclusive Learning and Development Australia Inc (Child Australia) have developed the Wheatbelt Early Childhood Planning Tool Kit to enable communities to determine current and future early childhood care - specifically childcare needs in both the local and wider community. The planning tool kit aims to encourage planning and assessment of a community's capacity to establish, operate and manage a service. The tool kit can be used by the Shire to assess Jurien Bay's existing and future care requirements.

Coastal Kids Care is a not for profit organisation operating from the Family Resource Centre owned by the Shire. In 2012 the centre offers placement for 8 babies, 5 toddlers, 15 kindy and 20 after school aged care (new to license). With the after school care service up and running, this has freed up another 5 places a day in the long day care service, meaning that there is more flexibility for families with children aged 0-5 years old. For the past two financial years the centre has been operating at maximum capacity and waiting lists and holding fees have needed to be implemented. Modifications to the existing Family Resource Centre building will be required to cater for service expansion.

Further analysis of community childcare is required to determine the appropriate model of childcare to meet the needs of the community. This should include analysis of demand and community capacity to meet demand (including the availability of suitable premises). There is limited childcare services offered in the Central Coast sub-region beyond Jurien Bay with the nearest centres operating from the inland communities of Gingin and Moora. Shire of Coorow has no operational childcare centres. The facility in Leeman is used as a playgroup facility only.

Community Organisations

Community based organisations in Jurien Bay include, but is not limited to:

- Chamber of Commerce
- Country Women's Association
- Lions Club
- Parents and Citizens Association
- Progress and Tourism Association
- Playgroup
- Youth Group
- Senior Citizens Group

Community Events

The Jurien Bay Lions Club run Sunday Markets in Pioneer Park from the Queens birthday long weekend (September) to the Foundation Day long weekend (June) and there are about 9 market days during this period.

The Jurien Bay Family Festival runs for the first week of the New Year period. Events are based on the APEX camp site and various locations around the townsite.

The Indian Ocean Festival is held annually in November and includes a ceremony of the 'Blessing of the Fleet' which was the previous name of this event.

The Annual Easter Fair is held over the Easter long weekend at the Jurien Bay Oval. This event incorporates live entertainment, markets, displays and family entertainment.

Community Involvement

The provision of physical community infrastructure needs to be accompanied with community development to deliver services and programs for the community based on a 'whole of life' approach. This will ensure that all members of the community individually have opportunities for personal growth and development and collectively are part of a 'cohesive community'. Community development is an important part of attraction and retention of a diverse community and this is a primary responsibility of local government.

The development of community programs needs to acknowledge the needs of the whole range of groups, including those that are currently over represented, such as aged persons and those that are currently under represented, such as families with children and youth. Those needs must be reflected in the development and delivery of community services and programs including:

- Assistance to access Federal, State and NGO services
- Recreation and leisure
- Arts and culture
- Community events

In addition, the regional role of Jurien Bay requires engagement with the regional community through services and programs. The City Centre has an important role to play in the engagement of the community, building on the existing community events held throughout the year and to activate key public spaces.

Consideration also needs to be given to a community engagement strategy in the decision making processes of the Shire to encourage the community to be actively involved with local issues and help influence and shape the future of their community.

8.2 Key Findings

Population Projections

- A significant rise in the number of people in the 0-14 and 25-39 age groups by 2026 is predicted (WAPC, 2011). Catering for services and facilities for this population is essential for the growth of Jurien Bay.

Education

- It is critical that the education system within the Central Coast is capable of educating, training and re-training its population and fostering lifelong learning.
- The Shire of Dandaragan has identified land adjacent to JBDHS as a site for a TAFE facility and JBDHS are tailoring its vocational courses at the school for a coastal industry base and providing new courses.
- Opportunities in future development to consolidate education and training funding, utilise improving technology and extend relevant courses to a wide demographic will ensure that Jurien Bay and the sub-region are in the best position to meet industry and labour force needs.

Health

- The changing population structure of the community needs to be considered in relation to provision of health services due to the higher usage rates of health services as the community ages. This is particularly important given the popularity of Jurien Bay as a retirement living destination. Expanding health care services relevant to Jurien Bay's demographics will not only serve to meet demand but will foster a growing area of employment, particularly for skilled positions.
- People are moving away from Jurien Bay due to gaps and limited services - when the frail aged move out of town for residential care it often means the extended family move as well, as they need to move to Moora, Geraldton or Metro Perth for accommodation.
- Similar to the provision of education and training, expanding health care services relevant to Jurien Bay's demographics will not only serve to meet demand but will foster a growing area of employment, particularly for skilled positions.
- The Shire needs to pursue access to land (including servicing requirements e.g. power, water and telecommunications) for the purposes of establishing a facility to cater for residential aged care, which includes provision for low and high care beds, day and residential respite, dementia care and supporting services in addition to land to expand the Health Centre. This is a key recommendation from the Shire of Dandaragan Aged Care Strategy (ZKC Consulting 2010);

- Given the limited facilities currently available in Jurien Bay, there is significant opportunity to adopt an innovative approach to health and aged care service design to respond to current and future service demand.
- Opportunities to develop Jurien Bay as the healthiest coastal community in Australia and a best practice approach in health planning include the following considerations:
 - The rapid advances being made in the use of technology, medicine and pharmaceuticals.
 - Evidence that health promotion and other key interventions are effective in increasing population health and wellbeing.
 - Possible expectations from the community that hospital beds will serve the communities health needs - with evidence that this may not be the optimum use of money and human resources.

State Government Agencies, Social and Community Services and Facilities

- A limited number of services operate from offices within Jurien Bay with Government service delivery generally been provided via branch and head offices in a range of locations.
- Expansion of State and local government and community/social services requires additional accommodation to meet the growing needs of the regional community.
- Land occupied and surrounding the existing Shire administration building provides for additional capacity for growth and consolidation in community facilities and services. Vacant Crown land in close proximity to the existing townsite also offers land for future community service provision.

Community Resource Centre

- The Jurien Bay Community Resource Centre is located in a small building with limited space which severely limits the delivery of existing services and potential for expanded services. The services provided by the Community Resource Centre in Jurien Bay are extremely important in a central location which can provide a range of services which are not viable as standalone operations.
- The need to provide quality central facilities for this service is pressing and will greatly enhance the delivery of existing and future services to the regional community.

8.2.1 Community Infrastructure Requirements

Table 8.11 outlines the recommended population ratios for the provision of social infrastructure together with site area requirements.

The Turquoise Coast Structure Plan (MGA Town Planners, 2003) includes provision for a range of future community

purpose sites including a high school and five primary schools; civic uses and community sites; and open space and recreation areas. The North Head Structure Plan (Roberts Day Town Planning + Design, 2007) includes a community hub and public open space. The structure plan also provides flexibility for provision of a primary school site if required.



Legend for Table 8.11	
()	Figures in brackets are cumulative totals
*	Existing District High School is limited to year 10.
**	Sourced from Karratha City of the North document.
***	Established from discussion with Chairperson of Jurien Bay Community Child Care Centre based on child care centre for 30 children
+	Source: Department of Health and Ageing, 2011 Aged Care Approval Round, Essential Guide (page 1) National Planning Benchmark
++	Health data Based on Jurien Bay @ population levels plus the service catchment
+++	Review of the Rural Medical Workforce Distribution Programs and Policies; Department of Health and Ageing 17 August 2011
++++	Western Australian Home and Community Care Program (HACC) Triennial Plan 2008–2011 and DOHA HACC MDS

Table 8.11 Future Projected Community Infrastructure Needs at Key Population Trigger Points –

Adapted from Turquoise Coast Structure Plan (MGA Town Planners, 2003)

Community Facility or Service	Population Ratio	Required site area (ha)	Current Provision	Additional Requirement			
				@ 2,500	@ 5,000	@ 10,000	@ 20,000
Education							
Pre-School	4,000	0.25	1			+1 (2)	+3 (5)
Primary School (Public)	5,000	3.5	1			+1 (2)	+2 (4)
Full High School (Public)	18,000	8	1*				1
Primary School (Private)	12,500	4	Nil				1
High School (Private)	37,500	8	Nil				
Technical College	60,000	15	Nil				
TAFE/University	100,000	20/30	Nil				
Community Facilities							
Playgroup Centres	6,000**	0.1	Nil		1	1 (2)	1 (3)
Child Care	1/1,250***	0.1	1	+1 (2)	+2 (4)	+4 (8)	+8 (16)
Youth Centre	10,000	0.2	1				+1 (2)
Employment Services/Job Networks	10,000**	0.1	Nil			1	+1 (2)
Senior Citizens' Centre	5,000	0.5	1			1 (2)	+2 (4)
Neighbourhood Centre/Hall	5,000**	0.5	2				+2 (4)
Library	25,000**	0.5	2				
Community/Visitor Information Centre		0.2	1				
Churches							
Catholic	80,000	2.5	Nil				
Anglican	30,000	0.5	Nil				
Uniting	20,000	0.5	Nil				1
Other	30,000	0.5	Nil				
Health ++							
Doctor	1,000+++	0.05	2		+4 (8)	+4 (12)	+10 (22)
Dentist	2,500	0.05	1	1	+1 (2)	+2 (4)	+4 (8)
Child Health Centre	5,000	0.5	Nil	1	1	+1 (2)	+2 (4)
Community Health Centre	10,000	1	1				+1 (2)
Hospital (beds)	3.5/1,000						
Less JB self sufficiency ratio 8%	3	Nil			3	6	
Residential Aged Care - High Care (beds)+	44/1,000 (70+)	0.4	Nil	67	+12 (79)	+23 (102)	+46 (148)
Residential Aged Care - - Low Care (beds)+	44/1,000 (70+)	0.4	Nil	67	+12 (79)	+23 (102)	+46 (148)
Community Care+	25places /1,000 (70+)	20 sq m per 30	NIL	35	+6 (41)	+11 (52)	+24 (76)
HACC (services for the LGA) +++++	\$678 pert target	20 sq m per 200 persons	\$397,000 (\$696) P- 211	\$562,740 P - 290	\$861,060 P-445	\$1,457,700 P- 752	\$2,650,980 P-1,367
Local Active Recreation							
Football/ Cricket	2,500	3.2	1		+1 (2)	+2 (4)	+4 (8)
Rugby League	20,000	1.6	Nil				1
Soccer	7,000	1.2	Nil			1	+2 (3)
Hockey	3,000	0.3	Nil	1	+1 (2)	+1 (3)	+4 (7)
Tennis/Netball	600	0.1	8			+8 (16)	+16 (32)
Basketball	1,000	0.1	4		+1 (5)	+5 (10)	+10 (20)
Bowls (greens)	2,000	0.2	3		+1 (4)	+2 (6)	+4 (10)
Swimming Pool	17,500	1	Nil				1
Squash	2,500	0.1	2			+2 (4)	+4 (8)
Police (officers)							
	1 Officer /400	0.5	7		+5 (12)	+13 (25)	+25 (50)
Fire							
	50,000	0.3					



9 Environment

9 Environment

Climate

The region has a Mediterranean type climate characterised by cool, wet winters and hot, dry summers. Mean maximum temperatures of 30°C occur in January and February while the mean minimum temperature is 9.4°C during August.

The long term average rainfall for Jurien Bay is approximately 560mm of which 55% falls between June and August, 16% during the spring and 23% during autumn. A seasonal drought occurs during the summer months. Potential annual evaporative water loss in the region exceeds average annual rainfall by three to five times (Wills, 1989).

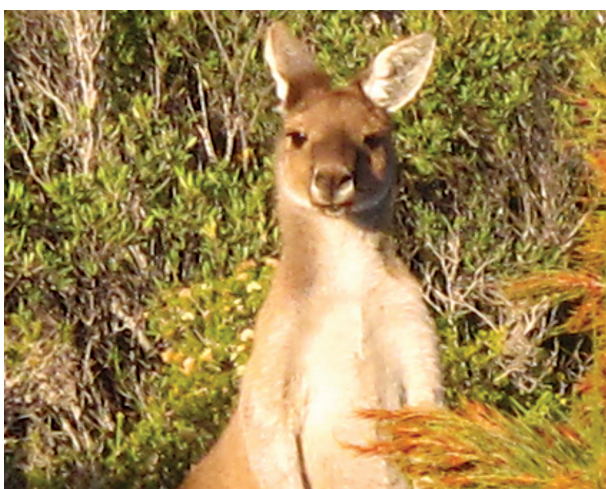
The Jurien Water Reserve Water Source Protection Plan notes that since 2000 the Jurien Bay area has received significantly reduced rainfall with only one year in excess of the 39 year average. In that time there was an 18% reduction in average rainfall.

Terrestrial Environment

The Coastal Settlement Planning unit is contained within a coastal foreplain and comprises areas of Safety Bay Sand, Tamala Limestone and Lagoonal deposits. The majority of the vegetation is characterised by heath and thicket and smaller areas of open heath.

Within the Coastal Settlement Planning Unit and areas adjacent there are a number of significant areas of environmental value. Some areas are protected within National Parks, nature reserves, other Crown reserves while others are located on privately owned land or unallocated Crown land.

The flora values of the Central Coast Region represent one of the three main centres of diversity in the State. Of particular note is Lesueur National Park which is of international significance. The Region is important for the conservation of heath mammals and there are 17 species found in the area. The dibbler is a declared rare species and is only found in one naturally occurring and one translocated population on islands near Jurien Bay and several small populations on the south coast of WA.



Surface drainage is seasonal with highly variable flows that are generally highest between July and August. The Hill River reaches the ocean about half way between Jurien Bay and Cervantes. Hill River has erratic flows and has recorded up to five years with little or no measureable flow.

Wetland areas include a line of playa lagoons to the north of North Head, an estuarine lagoon at Hill River and a stromatolitic limpid lake (Lake Thetis) near Cervantes.

Within the Jurien Bay - Cervantes area there are two principal aquifers. The unconfined superficial aquifer (dominated by the Tamala Limestone) has an average thickness of 10m but is up to 35m thick near the coast. Groundwater is recharged to the Tamala Limestone aquifer by various means including infiltration of rainfall. Groundwater flow is in a westerly direction and discharges to the ocean. Water levels vary seasonally in the order of 1-2m due to winter rainfall and summer drought. Groundwater reaches to the Lesueur Sandstone aquifer via infiltration of rainfall and surface runoff east of the Gingin Scarp. Leakage also occurs from superficial formations within the coastal plain (Water Corporation October, 2003).

Coastal and Marine Environment

The marine and coastal environment of the Jurien Bay region has a unique combination of offshore reefs, islands and sheltered lagoons which was identified in the Marine Parks and Reserves Selection Working Group Report, June 1994.

About 82,000 ha of the coast and marine environment extending from south of Wedge to Green Head and approximately 5.5 km offshore is within the Jurien Bay Marine Park. The ecological values of the Marine Park include:

- *A complex seabed and coastal topography consisting of islands, sub-tidal and inter-tidal limestone reefs, protected inshore lagoons and deeper basins, beaches and headlands.*
- *Extensive and diverse perennial seagrass meadows are an important habitat and nursery area for marine life and are important primary producers.*
- *A rich finfish fauna, which includes an interesting mix of tropical, sub-tropical and temperate species.*
- *The Australian sea lion (*Neophoca cinerea*), which is endemic to Australia and specially protected under the WC Act, breeds on Buller and North Fisherman Islands and uses islands in the Jurien Bay region as haul-out sites. (CALM, 2005)*

Figure 9.1 Environmental Areas



The Shire of Dandaragan Coastal Plan (1999) aims to provide a planning framework for future development along the coast and takes into account land use planning for coastal processes and the potential impacts of recreational and tourist activities along the coast.

The Plan reiterates a number of objectives defined in the Jurien Bay Coastal Plan (1984) which are still applicable as follows:

- to rationalise and upgrade the system of roads, tracks, car parks and walking trails within the area. These facilities should be designed to provide adequate access to the foreshore without impairing the landscape or damaging the vital vegetation cover which stabilises the soil;
- to rationalise and zone incompatible use pressures on the beach so as to avoid conflict between such activities;
- to develop facilities which will make boating in the area safer and more pleasant and assist in the control and management of launching activities;
- to undertake beach management programs which will provide visitors and residents convenient access to the beaches without degrading sand dune systems or interfering with coastal processes;
- to implement a soil conservation program to prevent erosion;
- to implement a native tree and shrub planting scheme which will upgrade the appearance of the town and improve its amenity value and landscape character;
- to provide an effective system of signs and interpretative material to orientate, educate, inform and control visitors;
- to develop low-key passive recreational facilities such as seating areas, picnic and barbecue facilities at appropriate locations around the town;
- to encourage recreational activities which cause least disturbance to natural ecosystems and to restrict potentially damaging activities.

9.1 Key Drivers and Pressures

Conservation

The conservation of biological, physical, cultural and landscape resources is a priority given the exceptional diversity and conservation value of marine and terrestrial environments in the region. Significant growth in population, tourism and industry will place increasing pressures on both the terrestrial and marine environment. The coastal environment is subject to particular pressures because of the popularity of the coast for recreational activity. The over-exploitation of marine resources due to recreational and commercial harvesting is a major pressure on the coastal marine environment identified in the Jurien Bay Marine Park Management Plan.

The conservation strategy for Lesueur National Park and Coomallo Nature Reserve focus is where possible to reduce external influences on the Park and Reserve to protect the diversity of priority and rare flora and animal species and their habitats. Conservation values are protected by preventing the spread of *Phytophthora* dieback, and minimising degradation caused by fire and introduced plants and animals. Human activities are monitored, and those activities considered compatible with the conservation goals will be facilitated.

Nambung National Park, Wanagarren Nature Reserve, Nilgen Nature Reserve and Southern Beekeepers Nature Reserve contain a diverse range of landforms. These include three old systems of sand dunes that run parallel to the coast, significant limestone cave systems and important geological features including the unique Pinnacles (*CALM, 1995*).

The surface water (wetlands) and groundwater resources of the area have important conservation values for the diversity of flora and fauna they support. One of the key objectives of the parks and reserves is to protect and conserve indigenous flora and fauna especially threatened and other priority species, the diversity of priority and rare flora and animal species and their habitats.



In addition, water resources supply local communities and have recreational and commercial value. The surface and groundwater system is closely interconnected so changes to natural regimes may have a wider effect.

Continued liaison with stakeholders regarding the use of surface and groundwater and its management, particularly monitoring of wetlands and cave hydrology in the vicinity of existing and possible new borefields is required. Continued participation in catchment management with the local landcare district, the Shire and other government agencies is fundamental to protection of groundwater resources. Action is also required to obtain security of tenure with appropriate authorities and landowners to protect hydrological systems with important conservation value.

The competing demands for land emphasises the need for continued assessment of areas values to determine which areas should be reserved and protected as part of the conservation system and which areas are suitable for commercial, urban or other activities. The assessment of values is the responsibility of both government and private landowners.

Management Plans

Jurien Bay Marine Park Management Plan 2005-2015

- The Management Plan recognises the unique values of the marine and coastal values of the Jurien Bay region, and the increasing visitors to the area resulting from the coastal road linking Lancelin to Jurien Bay. The vision outlined in the Management Plan is: *The area will support viable and ecologically sustainable fishing, aquaculture, recreation and nature-based tourism and the marine park will be considered an important asset by the local community.*

The park is a multiple-use park and the Management Plan sets out zones for sanctuary, special purpose, recreation, and general use. The goal of the plan is to facilitate the conservation of marine biodiversity of the area and to ensure that the existing and future pressures on the values of the marine park are managed within a framework aimed at ensuring ecological sustainability. The Management Plan also provides mechanisms for the local community to actively participate in the planning and management of the marine park.

Lesueur National Park and Coomallo Nature Reserve Management Plan (1995-2005) - The Management Plan recognises the Lesueur-Coomallo area as having outstanding flora conservation values, complex geological features and

unusually rugged terrain in the otherwise subdued landforms of the northern kwongan region. The recognition of Lesueur is based on:

- the areas exceptionally diverse flora of more than 900 species representing 10 percent of the State's known flora;
- the fact that Lesueur ranks as one of the three most important areas for flora conservation in southern Western Australia and its diversity is of international significance;
- Lesueur's fauna is diverse with at least 15 mammal, 124 bird, 48 reptile and nine frog species;
- the area is critically important to the survival of birds that nest in tree hollows, such as the Carnaby's Black Cockatoo, and is abundant in birds of the kwongan;
- the reptile fauna is particularly rich in geckoes and legless lizards, an indication show a wealth of invertebrate fauna;
- Lesueur's recreation values are regionally important; its scenic grandeur and spectacular view sheds attract a wide range of recreational use, including nature study, pleasure driving, sightseeing, photography, bushwalking and camping.

The biological diversity of Coomallo Nature Reserve has not been studied in the same depth as Lesueur National Park but, nevertheless, it too has high conservation value. It also provides an important biological corridor between Lesueur and conservation reserves further inland.

Nambung National Park, Wanagarren Nature Reserve, Nilgen Nature Reserve, Southern Beekeepers Nature Reserve Management Plan (1998-2008)

- The Management Plan recognises the parks and reserves have:

- a diverse range of landforms including three old systems of sand dunes that run parallel to the coast, significant limestone cave systems and important geological features including the unique Pinnacles;
- a diverse flora of several hundred species including low exposed heaths of mainly acacia and myrtles dominate the landscape, with Tuart Woodlands occurring in the valleys;
- important cultural heritage as there is evidence of Aboriginal occupation and early European exploration.

The plan recognises the importance of the Pinnacles as an international tourist destination and the recent large increases in visitor activity and commercial tourism in the area and the

opportunities for further tourism activities. The management plan has been prepared to resolve present conflicts, to plan for future needs and to ensure the Park's and Reserves values are protected and maintained.

The squatter settlements located at Wedge Point and Grey have been proposed for inclusion into the Nambung National Park and Wanagarren Nature Reserve subject to removal of squatters and rehabilitation of the sites. The Management Plan recommended specific site assessment and planning to determine the most appropriate form of recreation development facilities at Grey and Wedge.

Turquoise Coast Island Nature Reserves Management Plan

- The plan recognises:

- *the reserves are a chain of approximately 40 islands, islets and rocks lying between Lancelin and Dongara and extending from Lancelin Island and Edwards Island (approximately 110 km north of Perth) to the Beagle Islands group (260 km north of Perth);*
- *the islands range in size from less than 0.1 ha to approximately 31.5 ha and extend to low water mark, which includes the surrounding intertidal areas;*
- *the islands provide key breeding sites for the Australian sea-lion;*
- *the endangered dibbler naturally occurs on two of the islands and have been translocated to a third. Sixteen reptile species are found on the islands;*
- *as well as supporting threatened fauna species, the islands display a diverse assemblage of flora and fauna;*
- *a key factor in the islands' conservation value is their location in the Central West Coast marine bioregion, a zone of overlap between temperate and tropical marine biogeographic areas;*
- *the islands are influenced by the Leeuwin Current, resulting in the presence of corals and many other tropical species around and on the islands;*
- *the geomorphology of the islands is diverse and includes significant intertidal reef platforms;*
- *the islands provide educational, interpretive and recreational opportunities due to their diversity, conservation value and proximity to the coast;*
- *visitor pressure is predicted to increase significantly following the completion of Indian Ocean Drive and also as a result of Jurien Bay's growth as a regional centre.*

(Source: Department of Conservation and Land Management, 2004)

Wedge and Grey

Grey and Wedge accommodate approximately 500 recreational squatters shacks located south of Jurien Bay. Grey and Wedge have high recreational values and Grey in particular is suited for recreation development.

The Wedge and Grey Masterplan was completed by DEC in 2000 to provide a framework to guide future planning, development and management of recreation and tourism at Wedge and Grey. The Masterplan envisages that Wedge and Grey will provide nature based recreation and tourism opportunities for day visitors and short stay holiday makers, catering for a wide range of interests and budgets. The provision of basic amenities and interpretive facilities is recommended for potentially large numbers of visitors seeking access to the beaches and other natural attractions of the region. Accommodation types suited to a broad spectrum of visitors are proposed, with the emphasis on providing affordable accommodation and holiday destination for Western Australian families. A network of walk and cycle trails are also proposed connecting facilities and features at both sites. (CALM, 2000)

Development and management of Wedge and Grey aims to achieve high standards of environmental awareness and protection and the natural environment will be an integral part of visitor experience and facilities. Sensitive landscapes will be restored and protected and infrastructure will incorporate appropriate technologies to minimise environmental impacts and maximise the use of renewable resources.

Commercial partnerships were proposed to develop accommodation and other services, whereby the revenue from commercial operations contributes to maintaining the sites public facilities and services and provides adequate returns for the developers and operators.

In 2010, the Government commissioned a Committee of Inquiry following receipt of a petition in the Legislative Assembly signed by over 5,500 people asking for a review of shack sites. In relation to Wedge and Grey, the Committee recommends that the Minister and the Department of Environment and Conservation instruct shack owners to remove their shacks and, as a priority, develop the area to provide the public with low impact, nature based, affordable visitor facilities and accommodation, including camping and caravanning facilities.

The Committee found that Wedge and Grey has a highly significant tourism potential and the capacity to add immense value to the development of the region.

The Standing Committee on Environment and Public Affairs provided its report on the findings and recommendations arising out of its enquiry into Shack Sites in April 2011. The report acknowledged that shack policy is contentious and often complex primarily because shacks are privately owned structures, situated on public land.

It is acknowledged that planning for Wedge and Grey is ongoing and that it is a very important element of the Growth Plan given its highly significant tourism potential and the capacity to add immense value to the development of the region.

Urban Area Structure Plans

Structure plans for new urban areas have reflected the important environmental values of the region and the specific sites to which they relate. A summary of the relevant environmental response is shown in Table 9.1

Table 9.1 Environmental Response in Urban Area Structure Plans

Turquoise Coast Structure Plan	North Head Structure Plan
<p>The structure plan underwent a process similar to a standard environmental impact assessment, which was considered by the Environmental Protection Authority, who established conditions and recommendations.</p> <p>The strategy for nature conservation and biodiversity included a number of commitments some of which are summarised as follows:</p> <ul style="list-style-type: none"> • Establishing conservation reserves on the site to protect key environmental features including the coastline, the Hill River and its estuary, wetlands, a vegetated portion of the beach ridge plain at Island Point and the lower slopes of the Spearwood Dunes; • Preparation of management plans for conservation reserves; • Retain additional fauna and habitat in multi-purpose open space reserves; • Consult with CALM to determine requirements for protection of flora, protected species and species of interest; • Incorporate environmental measures in all future development plans to ensure ongoing environmental protection as the population expands. <p>(Source: MGA Town Planners, 2003)</p> <p>A water management plan has been prepared by the Water Corporation with the cooperation of Ardross Estates. The aim of the plan is to address both the water supply to meet urban needs and the disposal of water with the primary objective that development will not adversely affect the hydrological regime of the Hill River system, wetlands, conservation areas, the Jurien Bay Marine Park or ecological processes more generally. "The Water Management Plan incorporated the efficient use of source water, the reclamation of treated wastewater wherever possible and the paradigm shift to an emphasis on local infiltration systems and 'at source' controls".</p> <p>(Source: Kaesehagen et al, 2006)</p>	<p>The Structure Plan proposes a residential/tourist development that respects the sites distinct environmental values. The comprehensive environmental and landscape assessments have enabled more than two thirds of the site to be retained free from development, with parabolic dune ridges and natural vegetation retained in an integrated network of landscape and open space.</p> <p>The development concept includes:</p> <ul style="list-style-type: none"> • Retention of at least 60% of every existing species of vegetation species, more than double the Bush Forever requirement of 30% for nonmetropolitan areas. • Analysis of coastal processes to identify appropriate foreshore setbacks. • A Fire Management Plan to satisfy the standards for proposed residential and tourist uses and the interface with the Beekeeper's Reserve. • A dual-use path network connecting development nodes and locations of interest (such as areas of landscape character, look-outs and interpretative facilities) for pedestrians, cyclists and people of all abilities. The movement network aims to discourage the use of vehicles for cross-movements through the project area and to prevent pedestrian entry to sensitive areas. • Management Plans for key elements of the project area such as the foreshore reserve will be prepared and implemented to provide for the on-going protection of the sites natural environment and landscape values. • Ongoing attention will be given to identifying and implementing new technologies and innovation in relation to environmental protection, energy efficiency, renewable energy, construction, waste minimisation and re-use, water conservation and wastewater re-use as development progresses. <p>(Source: Roberts Day, 2007)</p>

Recreation and Tourism

Recreation and tourism in the Moora District, which includes Jurien Bay, are primarily coastal related activities undertaken by family groups, although inland features such as the national parks and wildflowers contribute to the leisure experience. The natural attributes of the area are the principal qualities that attract visitors, and the unspoiled environment, clean air and water are elements that enhance the quality of life in the region.

A range of recreation opportunities are available relating to both coastal and inland features of the area. The most popular pursuits in the Park and Reserves are visiting the Pinnacles, photography, viewing scenery, pleasure driving, swimming and fishing (1992/93 Visitor Survey).

The physical features of the natural environment make it attractive for recreation activities, particularly along the coastal foreshore. The Central Coast Strategic Tourism Planning Study (Macroplan, September 2008) states that the primary attractor for the Central Coast Region is the coastal beach environment. The "wild and secluded nature" of this section of the coast is its point of difference to other coastal regions in Western Australia together with the lower intensity of visitors at beaches. The expectations of the tourism market are not being met due to the lack of critical mass of attractions and experiences in the region.

The Study notes:

- *the only structured wildflower experience is located at the Lesueur National Park, where the Department of Environment and Conservation has recently spent \$1.5M on road sealing, toilets and interpretative signs.*
- *The most popular attraction in this region is the Pinnacles Desert located in the Nambung National Park. It receives over 225,000 visitors per annum, a majority of whom are international visitors.*
- *The region has not been successful in leveraging this visitation to provide meaningful economic benefits to the community.*

Management Plans for the National Park and Nature Reserves emphasise the need to provide for a range of nature based recreation opportunities while minimising environmental impacts and conflicts between user groups. The Management Plans support a range of activities with priority given to those that increase awareness, appreciation and understanding of the natural environment. The objective is to provide a range of nature based recreation opportunities while minimising

environmental impacts and conflicts between user groups.

The Management Plans also acknowledge the potential for commercial operations to enhance visitor use and enjoyment. It is recognized that many DEC managed reserves have the natural resources to provide for many facets of nature-based tourism.

Commercial operators deal with visitors on a regular basis and, therefore, play a significant role in disseminating information. Close liaison and training is required to improve commercial operators' understanding of the area's values and management issues, and to enhance visitors' experiences.

The attraction of the natural environment for both resident communities and tourists will place pressures on sensitive environments. The region presents significant recreation and tourism opportunities for sightseeing, bushwalking, nature appreciation, picnicking, coastal camping and four-wheel driving, all within a couple of hours drive from Perth.

Management Plans for the parks and nature reserves recognise that a regional perspective is essential when planning for recreational opportunities in order to complement existing opportunities in the region. The integration of recreation opportunities in the reserves with those of the surrounding area will become increasingly significant as greater numbers of people come to the area either to live or to recreate.

With the growing popularity of nature-based tourism, including camping and bushwalking, there is considerable potential for partnerships between DEC and the private sector tourist operators to develop nature based activities. A complementary approach by the private sector and government will ensure that visitors are given the opportunity to fully appreciate the parks and reserves and at the same time protect and preserve the natural and cultural values of these areas in perpetuity.



Education and Community Involvement

Education programs provide detailed materials and programs designed to facilitate learning for a wide range of target groups. The potential for increasing demands and incompatible activities highlights the importance of education and community relations. An effective information, interpretation and education strategy contributes to protection of the natural environment by increasing awareness, appreciation and understanding of its values. Increased knowledge informs the public of attractions and facilities and recreational opportunities available and provides an avenue to appreciate and better understand the natural environment and the risks it is subject to.

Developing community support for the protection of the natural environment is crucial. Community involvement and liaison at all levels including through volunteer programs increases understanding of values and management issues. This is particularly important when management issues go beyond the boundaries of the park and reserves such as dieback, fire, weeds and visual landscape. The principal benefit from community involvement is better informed decisions which have greater public acceptance. A wide range of groups including commercial operators, the Shire and other state government agencies contribute to education and building effective community relations.

As population and activity in the region increases, it will be increasingly important to develop integrated strategies to provide information to different user groups. Commercial operators including tour operators and accommodation venues, government and local government, volunteers and students will all have a role in providing information to visitors and users.

Research and Monitoring

There will be increasing demands for research and monitoring to provide a better understanding of the natural and cultural environment and the impacts of visitor use. Ongoing management is required to evaluate the effectiveness of management practices.

Research is necessary to develop an understanding of the way in which human activities and natural processes affect ecological values. Additionally research is required to develop a predictive capacity to forecast the response of natural systems to existing and potential pressures from natural and human sources. Much of the information required to understand

natural systems and make predictions does not yet exist and so research programs need to focus initially on understanding the 'natural state' of key ecological values and the processes that sustain them.

Priority is given to those environmental research and monitoring projects identified as being most at risk (sensitive to disturbance) and to activities that are most likely to have adverse ecological impacts. Social research and monitoring projects determine whether recreation, environmental education and interpretation activities and facilities are meeting visitor needs and DEC's expectations.

Research projects and monitoring programs benefit from involving volunteers, educational institutions and individual researchers as this can potentially reduce research and monitoring costs, and can help provide information to the broader community. DEC currently coordinates and promotes research undertaken within Nambung National Park and Nilgen, Wanagarren and Southern Beekeeper's Nature Reserves. DEC currently undertakes a wide range of research and management programs in Jurien Bay Marine Park. This includes the health of sea lions, seagrass, sea birds, whales, water quality, fish populations, macro algae and seabed habitat mapping.

Research and monitoring will also become increasingly important as activity intensifies. It will be important to maintain existing activities and also pursue opportunities to extend and develop research projects. There may for example be interest in nature based research as part of formal education through TAFE or universities.

Commercial and Other Uses

There is potential to develop and manage commercial activities in ways which contribute to the access and appreciation of the environment.

The Central Coast Employment Strategy 2011 also identified the tourism potential related to the natural environment, noting that the rise of nature-based tourism in the subregion justifies environmental protection and improvement. It identifies that the nature of the use, development and intensity should relate to the environmental sensitivity of the specific area.

Commercial fishing is one of the major industries occurring in the waters of the central coast. There is a recognised conflict between the commercial harvesting and the creation of no-take zones for conservation.

Basic raw materials, including gravel, limestone, marl sand and rock aggregate are sometime needed for road construction and maintenance. It is important to minimise the impact of the extraction of basic raw materials on ecosystem values.

Consideration needs to be given to the impact of utilities and services on the values of the natural environment. Proposals for utilities and services should be based on physical, biological, social and visual considerations, and their relationship with other land uses. These include development proposals for Grey and future town water supplies.

There will be continued competition between commercial marine activities and marine conservation on one side and interest in land development and agricultural enterprises versus conservation of land based environments on the other. Close working relationships and communication between stakeholders with diverse objectives and interest will be paramount to achieving a balance between commercial activities and conservation. Formal and informal arrangements will need to be maintained and further developed to monitor and manage these issues.

Land Use Management and Protection

There are a range of land management and protection issues that confront the natural environment. These issues are not restricted to areas within the parks and nature reserves and require the development of integrated land management strategies involving adjoining owners and a range of government agencies.

Fire management is also a principal management consideration in the region. Fire threatens people living or visiting the areas, declared rare flora and the agricultural industry with it's homesteads, pasture, crops, stock, machinery, buildings and fences. The adjoining coastal towns including Jurien Bay and Cervantes also represent highly vulnerable assets both in terms of their residents and the fact that they are popular tourist destinations. Protection of these values and assets must be considered in the development of fire

protection and prevention strategies. The principal concern in relation to fire management is to protect life, property and environmental values and to manage natural ecosystems.

Dieback disease caused by soil fungi (*Phytophthora* spp.) is also a significant management concern for areas of native vegetation. Much of the regional flora is highly susceptible to the disease which is most commonly introduced and spread in infected soil, mud or moist gravel on the wheels and underbodies of vehicles. The loss of vegetation to dieback will seriously reduce the areas conservation and recreation values.

Other issues for natural areas that require management include risks associated with introduced plants and animals. Weeds displace indigenous plants, particularly in disturbed sites, by competing with them for light, nutrients and water. Some exotic grasses provide a significant fuel source to support fire. They can also have a significant adverse impact on other conservation values by altering animal habitats and harbouring pests and diseases.

Management also needs to take into account the requirement to rehabilitate areas. This may be required as a result from human induced disturbance of the natural environment. These include vehicle tracks that are not considered essential for recreation access, fire management or for reserve management in general, borrow pits, squatter shack areas, and poorly sited camping nodes. Some sections of track may require stabilising to minimise erosion and promote natural rehabilitation.

Communication with neighbours and other land managers is essential in relation to management issues that extend beyond the boundaries of the parks and reserves such as protection of water resources and fire and land management.

An integrated approach and shared objectives and responsibility will be central to management of issues that extend beyond property boundaries. It will be important to identify a single agency to provide leadership and direction on shared issues.



9.2 Key Findings

Conservation

- The marine and terrestrial environments in the region have exceptional diversity and conservation value.
- The coastal environment is subject to particular pressure because of the popularity of the coast for recreation activity.
- The surface and groundwater system is closely interconnected and is susceptible to pollution.
- Continued liaison with stakeholders regarding the use of surface and groundwater and its management is fundamental to protection of groundwater resources.
- The competing demands for land emphasises the need for continued assessment of conservation values to determine which areas should be reserved and protected as part of the conservation system and which areas are suitable for commercial, urban or other activities. The assessment of values is the responsibility of both government and private landowners.
- Recreational and commercial harvesting of marine resources places pressure on natural ecosystems.

Tourism and Recreation

- Tourism and recreation present significant economic, social and environmental opportunities for Jurien Bay and the region. Management Plans for the parks and nature reserves recognise that a regional perspective is essential when planning for recreational opportunities in order to complement existing opportunities in the region. The integration of recreation opportunities in the reserves with those of the surrounding area will become increasingly significant as greater numbers of people come to the area either to live or for recreation.
- With the growing popularity of nature-based tourism, including camping and bushwalking, there is considerable potential for partnerships between DEC and the private sector tourist operators to develop nature based activities. A complementary approach by the private sector and government will ensure that visitors are given the opportunity to fully appreciate the parks and reserves and at the same time protect and preserve the natural and cultural values of these areas in perpetuity.
- The Wedge and Grey Masterplan provides the basis to expand tourism and recreation opportunities in the region. The aim for this area would be to achieve high standards of environmental awareness and protection with the natural environment being an integral part of visitor experience and facilities. The opportunities for commercial partnerships to develop accommodation and other services should be optimised.
- It is acknowledged that planning for Wedge and Grey is ongoing and that it is a very important element of the Growth Plan given its highly significant tourism potential and the capacity to add immense value to the development of the region.

Education and Community Involvement

- Education contributes to protection of the natural environment by increasing awareness, appreciation and understanding of its values. Increased knowledge informs the public of attractions and facilities and recreational opportunities available and provides an avenue to appreciate and better understand the natural environment and the risks it is subject to.
- A wide range of groups including commercial operators, the Shire and other state government agencies contribute to education and have a role in providing information to visitors and users.

Research and Monitoring

- Significant marine park research and monitoring programs are currently undertaken.
- Research is necessary to develop an understanding of the way in which human activities and natural processes affect ecological values. DEC currently coordinates and promotes research undertaken within Nambung National Park and Nilgen, Wanagarren and Southern Beekeeper's Nature Reserves.
- It will be important to maintain existing activities and also pursue opportunities to extend and develop research projects. There may for example be interest in nature based research as part of formal education through TAFE or universities.

Commercial and Other Uses

- There will be continued competition between commercial marine activities and marine conservation on one side and interest in land development and agricultural enterprises versus conservation of land based environments on the other. Close working relationships and communication between stakeholders with diverse objectives and interest will be paramount to achieving a balance between commercial activities and conservation. Formal and informal arrangements will need to be maintained and further developed to monitor and manage these issues.

Land Use Management and Protection

- There are a range of land management and protection issues that confront the natural environment. These issues are not restricted to areas within the parks and nature reserves and require the development of integrated land management strategies involving adjoining owners and a range of government agencies.
- An integrated approach and shared objectives and responsibility are central to management issues that extend beyond property boundaries such as protection of water resources and fire and land management. It is important to have a single agency to provide leadership and direction on shared issues.



10 Infrastructure

10 Infrastructure

10.1 Key Drivers and Pressures

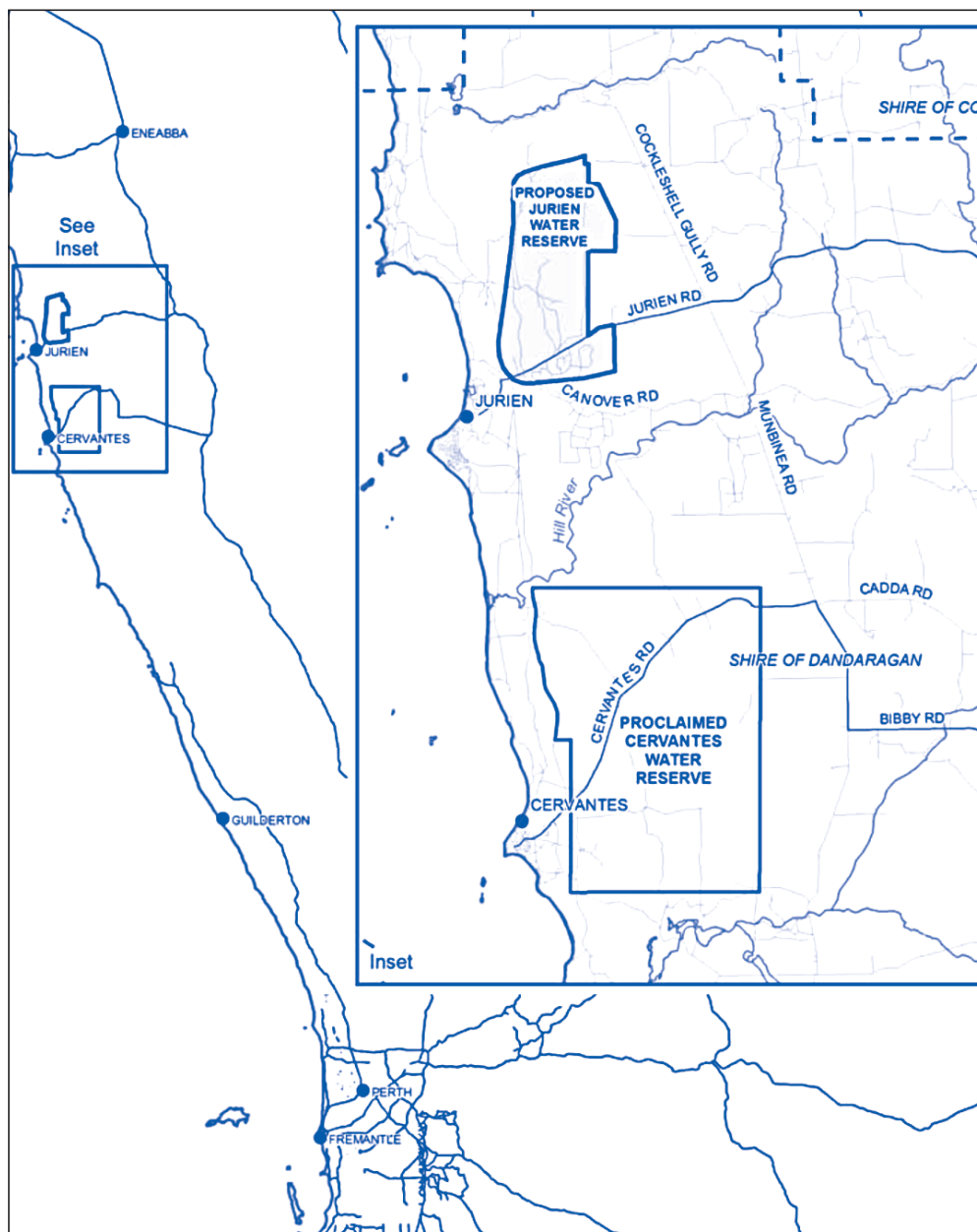
10.1.1 Water

The Water Corporation provides potable water to the Jurien Bay townsite under license via the Jurien Bay town water supply scheme. The scheme obtains its water supply from a wellfield located approximately 4km north-east of the town site, within the Jurien Groundwater Area, which is then gravity fed via a reticulated pipeline network to the townsite.

The Water Corporation is currently licensed to draw 420 000 kL/annum from the Jurien wellfield for public water supply purposes. The Jurien wellfield consists of shallow production bores that rely on groundwater extraction from an unconfined aquifer in the Tamala Limestone, which is vulnerable to contamination. The Jurien Water Reserve protects the public drinking water source area for the town of Jurien Bay.

Figure 10.1: Jurien and Cervantes Water Reserve Area

Source: Department of Water (2011)



A projected increase to the population of Jurien Bay would require a substantial increase in water supply and the Water Corporation has estimated 7ML for the ultimate reserve storage requirement for the Jurien Bay town site for a population of 15,000+ people. To cater for this increased demand the Department of Water have increased the size of the existing Jurien wellfield (and as a consequence the existing water reserve) and identified future potential borefield locations as extensions. The Water Corporation has advised that they have augmentation plans in place suitable for the planned expansion of Jurien Bay to a population of 20,000+ people. These plans include increased storage capacity, additional production bores at the current groundwater treatment plant site and two additional storage reservoirs located within the Turquoise Coast development.

The Jurien Water Reserve Drinking Water Source Protection Review 2011 provides protection of water quality, ensuring the availability of a reliable and safe drinking water in Jurien Bay now and in the future (Department of Water, 2011).

An integrated approach to water management will ensure adequate supply in the long term while managing demand. Infrastructure and development should be designed to encourage efficient and more sustainable water use via the implementation of water management principles. Investigation into rainwater reuse and wastewater recycling options is warranted to reduce the amount of water used, therefore sustaining the water source.

10.1.2 Power

Western Power is the operator of the power supply within Jurien Bay and Cervantes. Supply is through a 33kV power distribution line via the Eneabba Zone Substation, located approximately 60kms to the north east of Jurien Bay townsite. The Eneabba Zone Substation also supplies the power to Cervantes and other parts of the Shire of Dandaragan. There is existing capacity to extend a new 33kV power distribution line into Jurien Bay from the Eneabba Zone Substation.

Western Power have indicated 2MVA spare capacity in Jurien Bay on the existing network, which is capable of supplying 400 additional residential properties based on an After Diversity Maximum Demand (ADMD) of 5kVA per lot. Cervantes has an increase in capacity of 800kVA that is capable of supplying 160 additional residential properties. Any commercial developments will erode this capacity relatively quickly.

The main constraints of the existing network are:

- the spare power capacity will only be able to provide power for very short term growth so capacity would need to be increased, especially if more commercial type developments occur; and
- the existing network is predominately an overhead power line system and conflict may arise from the installation of deep sewer in the townsite.

Western Power has already identified land for a 132/33kV Zone Substation which would be able to service a population of up to 20,000 people. This transmission solution for Jurien Bay will provide benefits for Cervantes, however the power line to Cervantes will still be on an end of a spur line with limited interconnection.

The supply of electricity to individual developments in the Shire of Dandaragan is subject to agreements between the developer and Western Power concerning location, extent and scheduling. The cost of providing electricity services to new developments has proven to be a significant proportion of total development costs and is expected to remain so in the future. The high cost of providing electricity is proving to be a constraint to new development in the Shire. Western Power have not provided any constraints or limitations on providing future supply, however it is likely the growth of Jurien Bay may be stalled if commitments are not made regarding the point at which upgrades will be undertaken.

Further investigation into the trigger points for increased power supply capacity is required. Available spare capacity for Jurien Bay and Cervantes is limited and as such an upgrade of the power network i.e. new 33kV power line from the Eneabba Zone Substation to Jurien Bay is required in the short time to ensure this service does not constrain development.



10.1.3 Alternative Energy

There is significant potential for the Jurien Bay region to become an important area for renewable energy production projects. Wind power generation is already proving to be popular within the Jurien Bay hinterland with several projects in progression. The first WA utility scale solar photovoltaic farm is also been developed north of Jurien Bay highlighting the potential for solar power in the region.

There is adequate power generation within the region but the key issue for Jurien Bay is the transmission and distribution of power. The investment by energy producers to locate in the region is advantageous and in the future these alternative energy production developments could provide power for Jurien Bay. However, at present these developments have the ability to generate power but there is the inability of infrastructure to distribute what is been produced to Jurien Bay. Further investigation into the use of alternative energy to service Jurien Bay in the long term should be undertaken to ensure a future sustainable approach to energy production is progressed as the town develops.

10.1.4 Wastewater

The Water Corporation is the Licensed Service Provider for the treatment and disposal of wastewater in the Jurien Bay and Cervantes townships. Approximately 50% of the Jurien Bay township and 30% of the Cervantes township is currently deep seweraged. There has been a significant increase in sewer infrastructure provision in recent years (an increase from 10% in 2003 in Jurien Bay) principally by the private sector installing deep sewer as part of new residential developments. However, extending deep sewer in the Jurien Bay township is currently fragmented and difficult to manage due to the limited capacity of any single landowner to offset the cost of installation.

There are no infill sewerage projects scheduled for the existing township under the State Government Infill Sewerage Program.

Wastewater from sewer connections in Jurien Bay is facilitated by a gravity sewer network connecting wastewater pumping stations across the township which then discharges to the Jurien Wastewater Treatment Plant (WWTP), located in the eastern part of the township. The existing wastewater treatment plant consists of a Primary Pond, a Secondary Pond and Infiltration Pond and currently has limited capacity.

The existing WWTP is currently being expanded by the Water Corporation to provide capacity for increased development and population in the area. The Water Corporation has also advised that they have augmentation plans in place suitable for the planned expansion of Jurien Bay to population of 20,000+ (see Table 10.1).

Currently there is no wastewater recycling schemes in Jurien Bay. In recent years, the Water Corporation has pro-actively pursued opportunities to make better use of treated wastewater and reuse has been a preferred management option. Wastewater recycling options should be investigated further.

An important priority for the Jurien Bay township is the connection to deep sewer given that there is a high water table and development is restricted on unsewered lots. This has significant impacts for the development of Jurien Bay as a regional centre and implementing a staged plan for reticulated sewer development is essential for growth. The State Government has recently allocated funding for preliminary design work for provision of sewer for the City Centre area as part of the SuperTowns Royalties for Regions program. Staging and pricing of the scope area covered in this report will be included in the Feasible Implementation Plan.



Table 10.1 Water Corporation Capital Investment System Source: Water Corporation 2012

Project Title	System	Nominal Trigger	Est Cost
Jurien Bay Wastewater Treatment Plant Expansion	Jurien Wastewater Treatment Plant	Project in progress	\$3 M
Jurien Bay Wastewater Treatment Plant & Treated Wastewater Management Upgrade Stage 2	Jurien Wastewater Treatment Plant	Population 2,500+	\$15 M
Jurien Bay Wastewater Treatment Plant & Treated Wastewater Management Upgrade Stage 3	Jurien Wastewater Treatment Plant	Population 10,000+	\$10 M
Jurien Bay Wastewater Treatment Plant & Treated Wastewater Management Stage 4 New Site	Jurien Wastewater Treatment Plant	Population 20,000+	\$20 M
Jurien Sewerage Pump Station G DN450 Collection Sewer Stage 1	JURIEN - Sewer Dist. 172	Development in planned Pump Station G Catchment (south of Jurien Bay)	\$0.5 M
Jurien Sewerage Pump Station G DN450 Collection Sewer Stage 2	JURIEN - Sewer Dist. 172	Development in planned Pump Station G Catchment (south of Jurien Bay)	\$0.5 M
Jurien Sewerage Pump Station G DN450 Collection Sewer Stage 3	JURIEN - Sewer Dist. 172	Development in planned Pump Station G Catchment (south of Jurien Bay)	\$0.5 M
Jurien Sewerage Pump Station G DN375 Collection Sewer Stage 4	JURIEN - Sewer Dist. 172	Development in planned Pump Station G Catchment (south of Jurien Bay)	\$1 M
Jurien Sewerage Pump Station G Interim Type 40 & Pressure Main	JURIEN - Sewer Dist. 172	Development in planned Pump Station G Catchment (south of Jurien Bay)	\$3 M
Jurien Sewerage Pump Station G Duplicate Pressure Main DN300	JURIEN - Sewer Dist. 172	Development in planned Pump Station G Catchment (south of Jurien Bay)	\$2 M
Jurien Sewerage Pump Station G DN600 Main Sewer	JURIEN - Sewer Dist. 172	Development in planned Pump Station G Catchment (south of Jurien Bay)	\$1 M
Jurien Sewerage Pump Station F Additional Storage	JURIEN - Sewer Dist. 172	Development in planned Pump Station F Catchment (south of Jurien Bay)	\$1 M
Jurien Sewerage Pump Station F DN250 Pressure Main Stage 1	JURIEN - Sewer Dist. 172	Development in planned Pump Station F Catchment (south of Jurien Bay)	\$1 M
Jurien Sewerage Pump Station F DN250 Pressure Main Stage 2 Duplicate	JURIEN - Sewer Dist. 172	Development in planned Pump Station F Catchment (south of Jurien Bay)	\$1 M
Jurien Sewerage Pump Station F DN300 Gravity Sewer Stage 1	JURIEN - Sewer Dist. 172	Development in planned Pump Station F Catchment (south of Jurien Bay)	\$0.3 M
Jurien Sewerage Pump Station F DN300 Gravity Sewer Stage 2	JURIEN - Sewer Dist. 172	Development in planned Pump Station F Catchment (south of Jurien Bay)	\$0.3 M
Jurien Sewerage Pump Station F Type 90 Sewerage Pump Station Pressure Main & Storage	JURIEN - Sewer Dist. 172	Development in planned Pump Station F Catchment (south of Jurien Bay)	\$3 M
Jurien Sewerage Pump Station D Interim Sewerage Pump Station & Storage Stage 1	JURIEN - Sewer Dist. 172	Development in planned Pump Station D Catchment (Northern Light Industrial Area)	\$1 M
Jurien Sewerage Pump Station D Pressure Main Duplicate DN250	JURIEN - Sewer Dist. 172	Growth in planned Pump Station D Catchment (Northern Light Industrial Area)	\$1 M
Jurien Sewerage Pump Station D Ultimate Sewerage Pump Station & Storage	JURIEN - Sewer Dist. 172	Growth in planned Pump Station D Catchment (Northern Light Industrial Area)	\$2M
Jurien Sewerage Pump Station H Type 40 Sewerage Pump Station & Pressure Main	JURIEN - Sewer Dist. 172	Development in planned Pump Station H Catchment (south of Jurien Bay)	\$1 M
Jurien Sewerage Pump Station K Type 90 Sewerage Pump Station & Pressure Main	JURIEN - Sewer Dist. 172	Development in planned Pump Station H Catchment (south of Jurien Bay)	\$4 M
Jurien Sewerage Pump Station G Type 180 Divert to 5th Wastewater Treatment Plant	JURIEN - Sewer Dist. 172	Commissioning of the new Southern Wastewater Treatment Plant	\$5 M
Jurien Sewerage Pump Station 1 Mechanical and Electrical Storage Upgrade Stage 1	JURIEN - Sewer Dist. 172	Growth in existing Pump Station 1 Catchment	\$1.5 M
Jurien Sewerage Pump Station 1 Upgrade Mechanical and Electrical & Pressure Main - Stage 2	JURIEN - Sewer Dist. 172	Growth in existing Pump Station 1 Catchment	\$1 M
Jurien Sewerage Pump Station A Type 10 Pressure Main & Storage	JURIEN - Sewer Dist. 172	Development in planned Pump Station A Catchment (north west of Jurien Bay)	\$1.5M
Jurien Sewerage Pump Station B Type 40 Sewerage Pump Station Pressure Main & Storage	JURIEN - Sewer Dist. 172	Development in planned Pump Station B Catchment (north of Jurien Bay)	\$2 M
Jurien Sewerage Pump Station C Type 40 Sewerage Pump Station Pressure Main & Storage	JURIEN - Sewer Dist. 172	Development in planned Pump Station C Catchment (CBD area)	\$3 M
Jurien Sewerage Pump Station E Emergency Storage Stage 2	JURIEN - Sewer Dist. 172	Growth in the existing Pump Station 5 Catchment	\$0.5 M
Jurien Bay Town Water Supply Treatment Upgrade	Jurien	Aesthetic Water Quality	\$3 M
Jurien Water Supply New Scheme	Jurien	Population 6,000+	\$65 M
Jurien Bashford Ave North Reticulation Upgrade	Jurien	Peak Demand driven	\$1 M
Jurien Drill & Equip Additional Bore	Jurien	Population 2,500+	\$1 M

NOTE: Project scope, timing, triggers and cost are subject to ongoing review.

10.1.5 Telecommunications

Telstra has a telecommunications exchange building and accompanying telecommunications tower in Jurien Bay and in Cervantes. Telstra provides both Wholesale and Retail fixed line services from these two exchange buildings. The availability of Wholesale services in the region means that providers other than Telstra are also able to deliver fixed line telephony and broadband services. Optus also has communication towers in the light industrial areas of Jurien Bay and Cervantes. The four communication towers in the region house the equipment required for mobile cellular phone services for both carriers, which have additional capacity for future upgrades. Table 10.2 gives an indication of the status of telecommunications in the region.

Telstra has confirmed that both the Jurien Bay and Cervantes telecommunications exchange buildings do not have sufficient fixed line (telephone and Internet) surplus capacity to cope with a manifold increase in residents and, consequently, major development would have to be undertaken.

In terms of mobile services, the major costs for expansion are in the telecommunications tower, so expansion costs for both Telstra and Optus should be mitigated by the existence of the four mobile towers already in the region. Equipment on those towers, for both carriers, can be upgraded to cater for steady growth in population. However, additional towers may be required to cater for extensive population growth.

In September 2010 the State Government announced \$120 million from Royalties to Regions to deliver improved mobile telephone and emergency service coverage to regional Western Australia. \$40million was allocated to the Regional Mobile Communications Project (RMCP) and \$80million to the Community Safety Network Project (CSNP). Announced RMCP sites in the Central Coast sub-region include:

- Breton Bay, Shire of Gingin (complete)
- Coomallo Hill, Shire of Coorow (2012)
- Wongonderrah, Shire of Dandaragan (2012)
- Woodridge, Shire of Gingin (2013)
- North Gingin, Shire of Gingin (2013)

The Shire of Dandaragan will work with the Wheatbelt Development Commission to ensure information regarding other black spot areas (particularly in and around Indian Ocean Drive) is provided to the Department of Commerce and Department of Regional Development and Lands who are administering the RMCP project.

Telstra and Nextgen (a competitor to Telstra in long-haul telecommunications) have intra-state trunking, which provide dual backhaul voice and data carriage paths to capital city data centre facilities. Both trunks follow the Brand Highway.

Table 10.2 Telecommunication Services for the Shire of Dandaragan 2010

Source: Wheatbelt Development Commission, 2010

	Badgingarra	Cervantes	Dandaragan	Jurien Bay
ADSL	No	Yes	No	Yes
ADSL2	No	No	No	No
Broadband Wireless	Poor	Yes	Poor	Yes
Fibre to the Node	No	No	No	Very small section
Fibre to the Premise	No	No	No	Very small section of town
Mobile Phone Base Stations	Yes	Yes	Yes	Yes
Other communications towers (e.g. Police, FESA, mining company assets, LGA microwave systems)	No	Yes	Yes	Yes
Known mobile phone black spots	Yes	No	Yes	Yes
Is there a digital TV tower in this area?	No	No	No	No
Is there currently a digital TV reception in this area	No	No	No	Yes

Telstra has spurs off its trunk into both Jurien Bay and Cervantes. The Nextgen trunk bypasses both towns and would need substantial infrastructure build to service Jurien Bay and Cervantes. Further investigation will be required to determine whether existing intra-state trunking will cope with the phone and internet demands of a significant population increase, and if there is sufficient individual fibre cores to provide for particular institutions (such as hospitals, University, TAFE and schools) as Jurien Bay develops. The capacity for backhaul links is important to the growth of Jurien Bay as lack of availability could have impacts on education and health, since technology is vital in achieving higher levels of service provision in those sectors.

The National Broadband Network (NBN) scheme provides an opportunity for Jurien Bay to significantly upgrade telecommunications data speed. NBN is an Australian Government initiative under the Department of Broadband, Communications and the Digital Economy (DBCDE). This wholesale-only, open access high speed broadband network is planned to deliver high-speed broadband across Australia. It should be noted that with the introduction of the NBN, Telstra is no longer obligated to undertake expansion of existing facilities and services in Jurien Bay, deferring instead to NBN Co to build for future demand.

NBN Co has advised that Jurien Bay and Cervantes are on the rollout to receive fibre. Works are due to commence in December 2013 with an expected deployment time of 12 months.

NBN development at Jurien Bay will be characterised by:

- Deployment addressed through the NBN 'greenfields' new developments build program, which will be driven by the level of release of new land on a stage by stage basis over the next 10 years. The NBN Co 'greenfields' program is an iterative program, and two development applications for NBN fibre installation were initially accepted in the region

(Cervantes Estate and Drovers Retreat developments). Their acceptance confirmed that the region lies within NBN Co's 'fibre footprint' and indicates that NBN fibre will be delivered to the main residential hubs of the region.

- Outside those residential hubs, lower capacity fixed wireless services will be delivered to an area of approximately 20 km radius from a tower installed in Jurien Bay. NBN Co, via its wireless partners Ericsson and Daly, are contemplating building a 40 metre monopole tower at the Cambewarra Drive rubbish tip reserve. Given that the surrounding terrain is relatively low lying, from North Head down to Cervantes, this tower will likely serve that coastal region with NBN Co's fixed wireless service. Paradoxically, if built, this tower may push the delivery of NBN fibre further back in NBN Co's fibre 10 year roll-out program for existing Jurien Bay housing, because demand for fibre services could abate as residents adopt the lower speed, and lower cost, wireless services. The wireless services at 12Mbps are an ADSL2+ equivalent, and will be attractive to existing residents.
- Potential collaboration with the Commercial division of NBN Co, which considers co-contribution projects that assist NBN Co to enhance its distribution network. NBN Co already has a record of supporting regional initiatives in the education and health sectors, via. Labshare which is a remote laboratory initiative that supports students and educators in accessing shared real lab apparatus across the internet, and the 'Ageing Well at Home with Broadband' project which is a part of the Victorian Government's Broadband-Enabled Innovation Program. NBN Co has also flagged its interest in equipping regional WA, as a priority, by deploying new estate fibre in Broome prior to any other new development in WA.

Collaboration with the Commercial division of NBN Co would be advantageous for Jurien Bay and should be investigated further.



Analogue to Digital Switchover

Regional WA is programmed to begin the switch over from analogue to digital television broadcasting transmissions in June 2013. However, recent discussions with the Digital Switchover Taskforce have highlighted this could be earlier across the State of Western Australia.

The Shire of Dandaragan has three self-help retransmission sites currently in operation within the Shire located in Jurien Bay, Cervantes and Badgingarra (provided and funded by the ratepayers of the Shire of Dandaragan). Currently there is potential for the Shire to update its current rebroadcasting service to allow for digital rebroadcasting within the Jurien Bay town site area. However, as Jurien Bay is in an area where the commercial broadcasters will not be providing digital television services there is no financial assistance to upgrade retransmission services to digital.

There are several advantages for the Shire to upgrade its existing analogue self-help sites to a digital self-help terrestrial and this is the Shires preferred option (for Jurien Bay) however there are several issues making it difficult for the Shire to determine whether they can continue offering this service. The Shire has a license from the Australian Communications and Media Authority (ACMA) for self-help retransmission but ACMA have not set the guidelines for re-broadcasting digital transmission. This has made it difficult for the Shire to determine the costs associated with the upgrade, or whether further upgrades would be required due to the license conditions demanded from ACMA. The initial outlay cost of funding the service upgrade is seen as the biggest inhibitor for the Shire at present due to limited funding options. The Shire is also aware of the continued cost of maintaining or upgrading the system to incorporate changes to meet the license conditions which could also make the upgrade unviable.

A key consideration for the Shire, where Viewer Access Satellite Television Service (VAST) may be the only provision in Jurien Bay, is the potential impact on existing and future multi-dwelling facilities such as hotels, the hospital and lifestyle villages. There are currently no subsidies provided to cover the considerable cost of the connectivity they require to service a large number of televisions. In the Shire many of these facilities are quite small and have minimal profit margins, which will make the costs associated with providing the service prohibitive.

Another key consideration for the Shire is the impact on tourists visiting the region, especially as this is a key economic driver

for Jurien Bay. Tourists coming through the area will be able to get a satellite service and roaming access to the satellite feed if they have the required VAST system equipment. Tourists without the required equipment will not be able to receive television broadcasts. Tourists may opt to stay in areas where reception is available and this will restrict tourist movement through this part of the Wheatbelt region.

There are essentially two options available for the Shire:

- 1) The Shire could self fund the upgrading of the current rebroadcasting services to a digital signal.
- 2) Residents in Jurien Bay can access the Viewer Access Satellite Television (VAST) platform for digital television services.

Council has since prepared a Business Case and applied for funding to establish a Digital Television Service in the coastal growth area of the Shire. In partnership with the Shire of Gingin, a request for funding under the Country Local Government Fund Regional Funds has been submitted and a response is due in October 2012. In the short term the Shire will continue their analogue transmission service for the residents of Jurien Bay and will cease re-transmission once the service is no longer available.

Residents in the Shire will then have to move over to the VAST platform. Home owners in Jurien Bay will need to purchase equipment if they want to continue enjoying what is now considered a basic service. This will have considerable impact on tourist accommodation operators. The Satellite Subsidy Scheme (SSS) funding program provides a subsidy for eligible households to switch to satellite TV via VAST. All Jurien Bay residents would be eligible as Jurien Bay falls within a Satellite Subsidy area reducing the cost of purchasing and installing the necessary equipment to enable access to VAST.

The Shire has reserved the right to provide digital transmission in the future via the self-help retransmission sites in the local government area. The Shire of Dandaragan has also applied for the appropriate licenses from the Australian Communications and Media Authority (ACMA) to retransmit the digital service in preparation for the upgrade of its existing equipment.

10.1.6 Drainage

Stormwater drainage in the Jurien Bay townsite is currently generally managed by a combination of pipes, culverts and drainage sumps. Most streets are kerbed and drained with piped drainage sumps spread throughout the townsite. The Mediterranean type climate of the Jurien Bay region is

characterised by heavy rainfall from low pressure cyclonic systems during winter often resulting in heavy rains and localised flooding. In some areas the existing drainage infrastructure cannot cope with these weather phenomena when they occur. Further investigation into the existing drainage, its current condition and capacity needs to be progressed to determine what upgrades and additional infrastructure will be required.

There is an opportunity to apply better urban water management principles throughout the townsite. Drainage management in the latest stages of the Turquoise Coast development have demonstrated how best practice management can be applied in Jurien Bay. Vegetated swale drains enable the collection of water runoff from both sides of the street, allowing the water to leach directly into the soil. This controls stormwater disposal at the source, minimises piped drainage and reduces nutrient inputs. Whilst it would be possible to retro-fit some areas in the townsite, given the wide road reserves, to improve the amenity of these spaces, this would require investigation.

10.1.7 Transport and Movement

Road Network

Jurien Bay's road network comprises a series of Main Roads WA (MRWA) and Shire controlled roads. The majority of roads are of a good standard with upgrades been actioned through the Shire's Capital Works plan.

Indian Ocean Drive (IOD) - The IOD is a recently completed major regional transport corridor and is categorised as a Primary Distributor road. IOD, which is under the control of MRWA, connects Jurien Bay with Perth to the south and Geraldton to the north passing the coastal towns and tourist destinations along the way. The IOD provides a scenic alternative route away from heavy vehicle traffic on the inland Brand Highway and reduces travel times between Perth and Geraldton by

at least 30 minutes. Access to Jurien Bay was significantly improved with the opening of the IOD in 2010.

Bashford Street - Within the town of Jurien Bay, Indian Ocean Drive is known as Bashford Street. Bashford Street has the main function as the primary road within Jurien Bay providing north-south access through the town and provides localised traffic movements both along the road and across it. Bashford Street also has a role as a regional distributor road (through traffic movements) linking significant destinations within the State and enabling the efficient movement of people and goods between and within regions. As part of the Indian Ocean Drive, this road is also promoted as a tourist route for those travelling along the coast between Perth and Dongara.

Short term traffic counts were undertaken by MRWA over a nominal four week period immediately before and after the opening of the IOD on 19 September 2010. This highlighted that there was a 1,086% increase (140 before and 1,660 after) in average daily traffic volumes in the Jurien Bay townsite (this study monitored traffic on a continuous basis). The completion of the IOD has undoubtedly increased the volume of traffic through Jurien Bay along Bashford Street and this volume is expected to further increase as the coastal towns between Perth and Geraldton grow in population. The option of a Jurien Bay bypass to remove the 'through traffic' function of Bashford Street has been acknowledged by MRWA and identified in planning conducted for the town, however there are no plans for the construction of a bypass in the immediate future. MRWA have indicated that the timing for the construction of a bypass will depend upon traffic growth, funding availability and other factors.

It should be noted that the carrying capacity of Bashford Street is expected to remain more than adequate for many years to come, even without a bypass. Nonetheless, the long term alignment corridor for a bypass should be protected from future development.



Due to a higher proportion of traffic travelling through the town along Bashford Street there is a greater need for safe crossing points for vehicles, cyclists and pedestrians, particularly during school term. The typical road reserve width of Bashford Street through the town is 60m, which increases to 80m between Roberts Street and Doust Street. This wide road reserve gives potential to modify the design of Bashford Street to maintain a safe environment for local traffic movements, in conjunction with providing for through traffic movements.

Brand Highway - Brand Highway is a State Highway that forms part of the major route from Perth through Geraldton to the north west of the State. It also acts as a major inter-town link for towns such as Eneabba, Jurien Bay, Green Head and Dongara. Brand Highway is under the control of Main Roads WA and for the most part is a single carriageway with one lane in each direction. Brand Highway is a strategic freight, tourist and inter-town route that facilitate the movement of all types of traffic.

Jurien Road - Jurien Road is a sealed road and is a key west-east link connecting Indian Ocean Drive with the Brand Highway. It also connects with the Cockleshell Gully Road, Indian Ocean Drive and the Munbinea Road.

Local Roads - The remainder of the road network with Jurien Bay consists of local streets. They provide access to residents, businesses, and other destinations within the town.

The existing road hierarchy within Jurien Bay is considered appropriate to the current road network. However, as the town grows, the road hierarchy will need to be modified to reflect this growth.

Pedestrian and Cycle Network

The climate and topography of Jurien Bay and the relatively compact size of the town presents a good opportunity to promote walking and cycling as key modes of transport within the town. Increasing the proportion of trips made by these travel modes will assist in reducing the level of car dependence in Jurien Bay.

At present, there is a mix of pathway infrastructure provided throughout the Jurien Bay town site including older narrow footpaths and newer concrete paths with a greater width. Pedestrians and cyclists would benefit from paths across the townsite being upgraded to shared path standard, with the

installation of appropriate crossing points, particularly along Bashford Street.

The Shire has a has an existing five year plan for capital works related to path infrastructure within Jurien Bay. An approach by the Shire to link key destinations throughout the town is currently improving the existing path and cycle network and this should be continued. Providing connections between Bashford Street and existing key destinations such as the Jurien Bay District High School and Primary School, the City Centre commercial area, and the coast and future developments will facilitate pedestrian and cyclist movements through the townsite. The Turquoise Way Walk Trail along the coast from the Jurien Marina to Island Point is a walking and cycling trail that is an important part of this network and connecting this to future developments will be valuable.

The development of a Footpath and Cycling Network Plan is required to identify and prioritise works to be undertaken in relation to network improvements and also include strategies on how to encourage and educate residents to increase usage. This will help to develop a functional pedestrian and cycle path network within Jurien Bay, providing safe and walkable neighbourhoods that are sustainable and promote walking and cycling providing opportunities for incidental exercise, resulting in community health benefits.

Public Transport

The establishment of a private 6 days per week bus service has recently commenced and provides services to the towns of Dongara, Leeman, Green Head, Jurien Bay, Cervantes and Lancelin (Indian Ocean Drive route). There is also a school bus network service that transports children in the rural areas to the local school.

Currently there is no funding or planning to develop a public bus network within Jurien Bay and for the surrounding areas of the Shire and neighbouring local government areas. The availability of transport services within, and to Jurien Bay and the settlements within the region, needs to be assessed and the provision of an appropriate public transport system needs to be developed as Jurien Bay grows. The timing of the development of a local service will depend on the amount of growth and speed of growth that occurs within Jurien Bay. Expanding the existing school bus network service could be investigated as an initial measure in the short term.

Airport

Jurien Bay has an airport located in the north east part of the townsite. It comprises of a single sealed runway of 1,200 metres length by 20 metres wide, which is a typical dimensional standard for the operation of Royal Flying Doctor aeroplanes. The current usage of the Jurien Bay airstrip is for recreational use, Royal Flying Doctor, skydiving and scenic flights, flight training, corporate and government use and for emergency services such as water bombing for fire fighting purposes. There is no regular public air service to or from Jurien Bay, however, there is opportunity for this to occur in the future. The airport provides a permanent operating site for air support in suppressing bush fires with a water storage facility. A major upgrade in 2005 saw all airstrip components constructed to Civil Aviation Safety Authority (CASA) standards. Movements at the airstrip have been monitored by the Shire and show that between 1 April 2011 and 31 March 2012, there were 2,457 movements, a significant increase in recent years.

Usage Type	Count	Percentage
Commercial	1,906	77.6%
Private	482	19.6%
Emergency Service	69	2.8%
Total	2,457	

The potential population growth in Jurien Bay will lead to a potential increase in use of the airfield. The Jurien Bay Aerodrome Development Plan (September, 2010) indicates that the existing airport has capacity that is sufficient to accommodate operational growth for the foreseeable future.

The Development Plan indicates that when required expansion of the main runway can be achieved, and that the site has the potential to be developed to ultimate development standards which would permit larger charter aircraft type

operations (Airport Assist, 2010). However, there are several key implications related to the expansion of the airport on the existing site in relation to the growth of the townsite that need to be considered:

- there is currently no east-west cross runway so planes cannot land at all times. It is a high risk option for the Shire to maintain the existing site if this is going to be a long term issue.
- the current site is situated in close proximity to the townsite and residential areas and with the inevitable aviation growth over time there is potential for noise issues to arise within the community, for instance from night operations or flying training activity, or simply with an increase in traffic.
- to provide for bigger aircrafts additional upgrades are required and the provision of additional infrastructure, such as a future passenger terminal and fuel storage facility, would also be required. The Shire would need to consider whether it would be cost effective to continue to upgrade the existing compared to moving to a new site with fewer restrictions.
- the existing and future emissions impacts of the airport need to be considered to determine whether they are acceptable and if they are still acceptable when the capacity is increased.

Through the Shire's Strategic Community Plan the community highlighted that further investigation is required into the relocation of the existing airport and development of a regional airport, based on considerations for the future needs of industry, emergency services, recreation and tourism as Jurien Bay develops into a regional centre for the Wheatbelt. As part of forward planning, the Shire has recently submitted a Regional Airport Development Scheme (RADS) application and was successful in receiving funding for the preparation of a plan identifying a new site for a future expanded airport in Jurien Bay to service the surrounding regional area. This



master plan will consider the costs and implications of the proposed relocation of the Jurien Bay airport including operational requirements.

Tourism and recreation use are the principal drivers of aviation traffic at the current site. The Skydiving company is a significant user of the Jurien Bay airport with 71.2% of recorded landings between April 2011 and March 2012 (1,749 counts). There has also been interest in developing airfield accommodation hangars aimed at meeting the recreation pilot demand for coastal holiday visitation. This demand is likely to increase as Jurien Bay grows and Jandakot airport reaches maximum usage. It is also feasible that with the growth of the residential community in Jurien Bay, Fly-in Fly-out (FIFO) charter operations could occur, subject to the availability of workers suitable for company operations (Airport Assist, 2010). There is potential for Jurien Bay to become a desirable residential location for resource sector employees, requiring aviation infrastructure to suit.

A number of reports and strategies recognise that in the longer term, Jurien Bay and the Wheatbelt region will require improved airport facilities. In their final report, the Wheatbelt Aviation Strategy Ministerial Taskforce found that there appears to be a lack of forward planning and policy development surrounding Western Australia's general aviation and pilot training industries, that is stagnating further development of the industry and contributing to the loss of significant economic opportunities for the State. The significant level of aviation activity currently occurring in Jurien Bay and the Wheatbelt in general, a diversity of facilities and optimal flying conditions present a sound infrastructure base for future development of general aviation and pilot training capabilities.

The possible relocation of the airport will provide opportunities for increased aviation activity developing the industry in Jurien Bay and the Wheatbelt region.

Boat Harbour

The Jurien Bay Boat Harbour was opened in November 1988 and is located at the northern end of the townsite. It provides a modern marina with service facilities for the central west coast fishing industry, sea search and rescue and recreational fishing boats. The boat harbour is a fully integrated facility with 69 mooring pens, 4 service jetties and public car parking and toilet facilities and provides the primary boat maintenance facility between Geraldton and Two Rocks.

The boat harbour is a strategic infrastructure asset that is currently underutilised. There are large areas of undeveloped and underutilised land at the harbour which have significant potential to create a vibrant commercial, tourist and recreational precinct to contribute to the development of Jurien Bay as a future regional city. There has been limited activation of the commercial and tourism potential than can be found in like marinas eg. Geraldton Boat Harbour, Mandurah Marina and Hillarys Boat Harbour.

Preliminary investigations have been undertaken by the Department of Transport to examine the future potential of the boat harbour and surrounding land. The Jurien Bay Boat Harbour Final Summary Report (2009) concluded that while there was limited local employment and economic generators there was an opportunity for the Jurien Bay Boat Harbour to play a long term role in supporting the growth of Jurien Bay, which would be somewhat reliant on the establishment of alternative industries to support local fishing and tourism and commercial viability.

The Department of Transport have continued to investigate opportunities that could activate sale and/or development of vacant lots at the marina and stimulate greater use and development of the wider marina precinct. The Master Planning Report – Jurien Bay Boat Harbour Southern Precinct – May 2012 (subject to public consultation) examines the development



potential of an approximately 6ha area vested with the Department of Transport. The study recommends staged development of the site. Key elements of the proposal are:

- Tourist Chalet Park – To initiate an immediate short to medium term population of the site it is proposed that a short stay tourist chalet park be established. In the future it is proposed that the park be relocated to the eastern side of Harbour Drive and the land redeveloped with higher yield permanent options.
- Waterfront mixed use complex – This would be the key note attraction development with a potential to provide in order of 4500m² of net lettable area and accommodate a variety of retail, small business, markets and food and beverage venues.
- Iconic Attraction – The site and broader harbour could benefit from having an iconic structure to make it readily identifiable. There is also the opportunity for such a structure to be an important icon and attraction in itself to stimulate visitation to the harbour precinct.

The continued development of the harbour has the capacity to deliver significant social and economic benefits to the community and create a vibrant commercial, tourist and recreational precinct integrated with a diversified fishing and marine industry. Public consultation and further investigation into the development of this area is required.

The Shire of Dandaragan Council supports the concept presented in the Jurien Bay Boat Harbour Southern Precinct plan and encourages the Department of Transport to work with the Shire to pursue tourism and mixed use development at the Marina precinct. The Council is also supportive of pursuing a long term caravan park strategy identifying key sites for the future to address tourist demand. Planned development at the Boat Harbour, existing structure plans and reviewing of lease arrangements will be considered as part of this activity.

Waste

Waste management in the Shire involves the collection, transfer, recycling, and land filling of wastes generated in the Shire. The Shire of Dandaragan has four manned waste management facilities (located in Jurien Bay, Dandaragan, Badgingarra and Cervantes) that provide the collection and transfer of waste disposal. The Badgingarra and Dandaragan sites also provide a drum Muster program to dispose of used chemical drums. The Jurien Bay and Dandaragan waste facilities are also landfill sites which have capacity for 10-15 years.

There are three recycling depots in the Shire at Dandaragan, Cervantes and Jurien Bay. The Badgingarra Primary School has also built a recycling depot adjacent to the school with the children looking after the running of the depot as an ongoing school project. Kerbside recycling was introduced in 2009 and is offered to Jurien Bay townsites residents and the properties in Alta Mare, Jurien Bay Heights, Marine Fields and Hill River. 356 tonnes of dry recyclables (bottles, cans, paper) was diverted from landfill and recycled in the 2010/2011 financial year.

A Waste Management Review in 2008 identified key strategies to improve the management of waste within the Shire to which the Shire have since been initiating e.g. kerbside recycling. No further reviews have taken place.

Waste management operations will need to evolve to an operation required for a regional centre due to the increase in waste generation from new developments. A Waste Management Program should be developed to identify how the Shire is going to cope with disposal of this increased waste including measures to further minimise waste production and encourage recycling, reuse and appropriate disposal of waste.



10.2 Key Findings

Water

- A projected increase to the population of Jurien Bay would require a substantial increase in water supply. To cater for this demand the Department of Water have increased the size of the existing Jurien water reserve and there is adequate capacity for a future population of 15,000+. Protection of this reserve is crucial when planning for future growth. Ongoing monitoring of the availability of adequate water supply is also required to ensure the town has adequate provision as it grows.
- To sustain the existing water source investigation into rainwater reuse and wastewater recycling options within the townsite is required.

Power

- The main constraints of the existing network are:
 - the spare power capacity will only be able to provide power for the very short term growth so capacity would need to be increased to facilitate development; and
 - the existing network is predominately an overhead power line system and conflict may arise from the installation of deep sewer in the townsite.
- Western Power has identified land for a 132/33kV Zone Substation which would be able to service a population of up to 20,000 people.
- The high cost of providing electricity is proving to be a constraint to new development in Jurien Bay. Western Power have not provided any constraints or limitations on providing future supply, however the growth of Jurien Bay may be stalled if commitments are not made regarding the point at which upgrades will be undertaken.

Wastewater

- Approximately 50% of the Jurien Bay town site is currently deep sewer.
- Extending deep sewer in the Jurien Bay townsite is currently fragmented and difficult to manage due to the limited capacity of any single landowner to offset the cost of installation.
- An important priority for Jurien Bay is the connection to deep sewer given that there is a high water table and development is restricted on unsewered lots in the townsite.
- Investigation into wastewater recycling options in Jurien Bay is required to ensure sustainable management of the existing water supply.

Telecommunications

- The Central Coast sub-region will receive additional mobile towers as part of the Regional Mobile Communications Project (RMCP) 2012 funding announcement to improve mobile telephone and emergency service coverage.
- NBN Co has advised that Jurien Bay and Cervantes are on the rollout to receive fibre. Works are due to commence in December 2013 with an expected deployment time of 12 months.
- Regional WA is programmed to begin the switch over from analogue to digital TV broadcasting transmissions in June 2013. A key consideration for the Shire, where VAST may be the only provision in Jurien Bay, is the potential impact on existing and future multi-dwelling facilities such as hotels, the hospital and lifestyle villages. There are currently no subsidies provided to cover the considerable cost of the connectivity they require to service a large number of televisions.

Drainage

- An investigation into the drainage for the town is required to determine what upgrades and additional infrastructure will be required to ensure drainage infrastructure improvements can be aligned with population growth.
- An opportunity exists to incorporate cost effective urban water management principles into future upgrades and new developments.

Roads

- Ongoing improvements to the existing road network are required.
- Investigation into the provision of a comprehensive, well-planned road network system is required to ensure the long term connectivity of the town.

Pedestrian / Cycleways

- The flat terrain and centralised community and recreation facilities make cycling and walking attractive options.
- The Shire's current program of linking key destinations throughout the town is currently improving the existing path and cycle network and this should be continued.

Public Transport

- Currently there is no funding or planning to develop a public bus network within Jurien Bay and for the neighbouring local government areas.
- The availability of transport services within, and to Jurien Bay and the settlements within the region, needs to be assessed and the provision of an appropriate and viable public transport system needs to be developed as Jurien Bay grows.

Airport

- Recreation use is currently identified as the principal driver of aviation traffic.
- As part of forward planning, the Shire has recently submitted a Regional Airport Development Scheme (RADS) application and was successful in receiving funding for the preparation of a master plan for the airport. This master plan will consider the costs and implications of the relocation of the existing airport and development of a regional airport based on considerations for the needs of industry, emergency services, recreation and tourism as Jurien Bay develops into a regional centre for the Wheatbelt.

Boat Harbour

- The boat harbour services the commercial fishing industry and provides a range of community benefits for recreation and tourism. The harbour and land immediately adjacent is substantially underutilised and has considerable capacity for further development.
- Continued development of the harbour is required to deliver significant social and economic benefits to the community and create a vibrant commercial, tourist and recreational precinct integrated with a diversified fishing and marine industry. It is a strategic infrastructure asset, not only for Jurien Bay and the Central Coast sub-region, but for the State.
- The Shire of Dandaragan Council supports the concept presented in the Jurien Bay Boat Harbour Southern Precinct plan and encourages the Department of Transport to work with the Shire to pursue tourism and mixed use development at the Marina precinct. The Council is also supportive of pursuing a long term caravan park strategy identifying key sites for the future to address tourist demand. Planned development at the Boat Harbour, existing structure plans and reviewing of lease arrangements will be considered as part of this activity.



10.2.1 Infrastructure Requirements for Growth

Adequate provision of telecommunications, water, and power is vital for industry and population growth within Jurien Bay. Well planned and strategically located infrastructure will influence the future development pattern, and specifically, the

timing of development within Jurien Bay. Significant gaps in power and sewerage have been identified as linking future development opportunities.

Table 10.3 identifies the infrastructure requirements as the Jurien Bay population increases.

Table 10.3 Future Service Infrastructure Requirements for Jurien Bay

Infrastructure Service	Existing Situation	Growth Plan Requirements
Sewer connection	<ul style="list-style-type: none"> 50% of existing townsite connected to deep sewer restricting development within this vital area of Jurien Bay. Water Corporation 'user pays' model does not work in Jurien Bay townsite due to high costs of installation for single landowners. Remainder of Jurien Bay (outside townsite) is connected due to financial investment by private sector developments. No infill sewerage program scheduled for Jurien Bay. 	<ul style="list-style-type: none"> Future development of the townsite is impeded by limited sewer connection therefore resolution of this factor is a high priority for the future growth of Jurien Bay. The State Government has recently allocated funding for preliminary design work for provision of sewer for the City Centre area as part of the SuperTowns Royalties for Regions program.
Sewer reticulation	<ul style="list-style-type: none"> Existing Waste Water Treatment Plant (WWTP) has adequate capacity for current population. Currently 3 pump stations. Water Corporation has augmentation plans in place that are subject to ongoing review based on asset capability monitoring and funds prioritisation. 	<ul style="list-style-type: none"> Existing WWTP will need to be upgraded as the population increases. The Water Corporation has also advised that they have augmentation plans in place suitable for the planned expansion of Jurien Bay to a population of 20,000 +.
Wastewater recycling	<ul style="list-style-type: none"> No existing wastewater recycling schemes within Jurien Bay. 	<ul style="list-style-type: none"> Investigation into the re-use of rainwater and wastewater is required to ensure sustainable use of water resources.
Water supply	<ul style="list-style-type: none"> Water Corporation is licensed to extract 420,000 kL/ annum. Adequate capacity for current population. Water Corporation has augmentation plans in place that are subject to ongoing review based on asset capability monitoring and funds prioritisation. 	<ul style="list-style-type: none"> Adequate capacity for future population at a population threshold of 15,000+ The Northern borefield and Southern borefield (as identified in the Jurien Bay Water Reserve Protection Plan) will to be utilised for future water supply. A new reservoir will be required at a 10,000+ population threshold. Investigation into the implementation of water management principles in the design and construction of new development is required to ensure sustainable use of water resources.
Water reticulation	<ul style="list-style-type: none"> Water Corporation has augmentation plans in place that are subject to ongoing review based on asset capability monitoring and funds prioritisation. Developers enter into commercial agreement with the Water Corporation to install Water Corporation capital works which are then refunded within an agreed period, typically 5 years 	<ul style="list-style-type: none"> Further investigation is required to identify constraints and required upgrades to improve service within the City Centre.
Drainage	<ul style="list-style-type: none"> No information is available regarding capability of existing infrastructure and capacity constraints. 	<ul style="list-style-type: none"> Further investigation into the existing drainage situation, its current condition and capacity needs is required to determine what upgrades and additional infrastructure will be required.

Infrastructure Service	Existing Situation	Growth Plan Requirements
Power supply	<ul style="list-style-type: none"> Existing 33kV power distribution line has some additional capacity. Spare capacity is only capable of supplying equivalent of 400 additional residential lots. Planned private residential and commercial projects in Jurien Bay would erode the available capacity. Western Power have land identified for a 132/33kV zone substation in Jurien Bay. In the townsite there are predominately overhead power line networks and a conflict may arise from the installation of deep sewer installation. 	<ul style="list-style-type: none"> Capacity needs to be increased as soon as possible otherwise growth will be stalled. A new 33kV line is required to serve immediate growth up to 2,500 population. Installation of a 132kV line is required to serve a 10,000+ population. Further investigation is required to identify constraints and required upgrades to improve supply.
Telecommunications	<ul style="list-style-type: none"> Wholesale and Retail fixed line services are provided. Limited surplus fixed line capacity in existing telecommunications exchange buildings. Telecommunications tower equipment can be upgraded when required. Substantial infrastructure build is required for Intra-state trunking to service Jurien Bay. NBC Co has advised that Jurien Bay and Cervantes are on the rollout to receive fibre. Works are due to commence in December 2013 with an expected deployment time of 12 months. 	<ul style="list-style-type: none"> Further investigation is required to identify constraints and required upgrades to improve supply.
Road Network	<ul style="list-style-type: none"> Sufficient for existing population. 	<ul style="list-style-type: none"> Bashford Street needs to be upgraded within the City Centre to achieve improved and safer pedestrian/cycle links and enhancement of the City Centre. The Indian Ocean Drive link (bypass) will be required at 10,000+ population and further investigation by MRWA is required to determine costs. Further investigation is required to identify required upgrades to existing road network. Strategic transport planning for the region should take into account future state freight movements.
Pedestrian & Cycle Network	<ul style="list-style-type: none"> Sufficient for existing population. 	<ul style="list-style-type: none"> Further investigation is required to identify constraints and required upgrades to existing pedestrian and cycle network.
Airport	<ul style="list-style-type: none"> Used for general aviation and recreation purposes. Spare capacity sufficient to accommodate operational growth for the immediate future. No adequate information is available regarding the constraints on growth. 	<ul style="list-style-type: none"> The Regional Airport Development Scheme (RADS) funding to the Shire for a master plan for the airport will consider the costs and implications of the relocation of the existing airport and development of a regional airport. This will be based on considerations for the needs of industry, emergency services, recreation and tourism as Jurien Bay develops into a regional centre for the Wheatbelt.
Harbour	<ul style="list-style-type: none"> Provides services and facilities for the central west coast fishing, industry, sea search and rescue and recreational boating and fishing. 	<ul style="list-style-type: none"> Further investigation is required to determine how this infrastructure asset can be best utilised for future growth of Jurien Bay, the Central Coast sub-region and the State.
Waste	<ul style="list-style-type: none"> Waste collection and recycling is provided. 	<ul style="list-style-type: none"> The existing landfill site has a capacity to accommodate requirements for about 10-15 years. Investigation is required to identify a new landfill site.



11 Spatial Planning and Built Form

11 Spatial Planning and Built Form

Planning Framework

The Shire of Dandaragan Town Planning Scheme No 7 was gazetted on 24 Oct 2006 and is the land use based statutory Scheme for the whole of the Shire of Dandaragan.

The Growth Plan recognises the statutory planning framework and develops further detail to be included in the current preparation of the Local Planning Strategy for the Coastal Settlement Planning Unit (PU1). The objectives for the strategy are to:

- Determine the potential across and within settlement nodes to accommodate population growth.
- Identify and attend to deficiencies in current planning for settlement nodes.
- Incorporate principles of sustainable settlement planning.
- Identify economic drivers that will assist in facilitating growth.
- Allocate sufficient land for future commercial and industrial development as well as any other land use that can contribute to or will be required for future growth.
- Capitalise on tourism and other development opportunities.
- Identify key recreation spaces, primary schools and other key community services.

The Shire of Dandaragan has prepared a draft Local Planning Strategy Rural Land Use and Rural Settlement which focuses on Planning Unit 2 (PU2) - Coastal Hinterland and Planning Unit 3 (PU3) - Rural and Rural Towns.

The Strategy includes Figure 11.2, illustrating a longer term vision (20-30 years) for the Shire and in particular the rural areas. The vision plan is simplified and is not intended to be used for decision making purposes but does provide a context for the review.



Figure 11.1 Planning Precincts

Source: Landvision, 2010

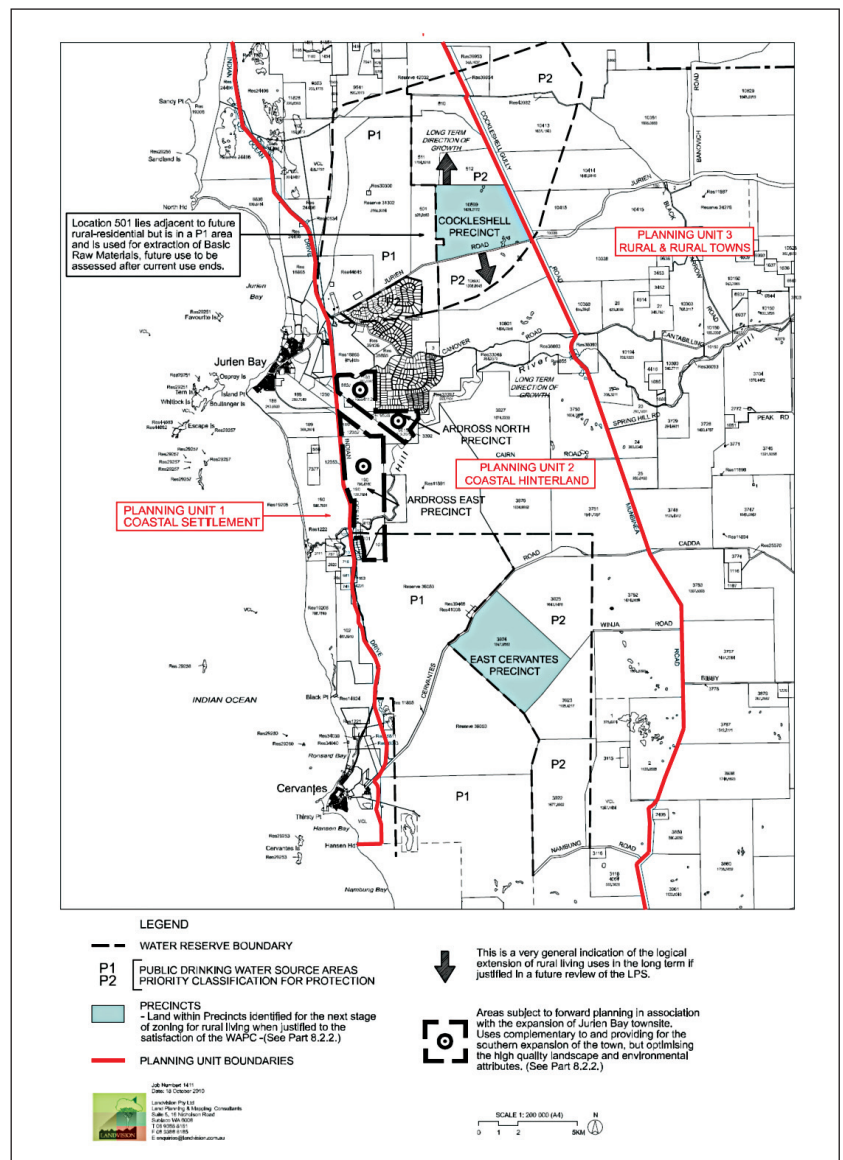
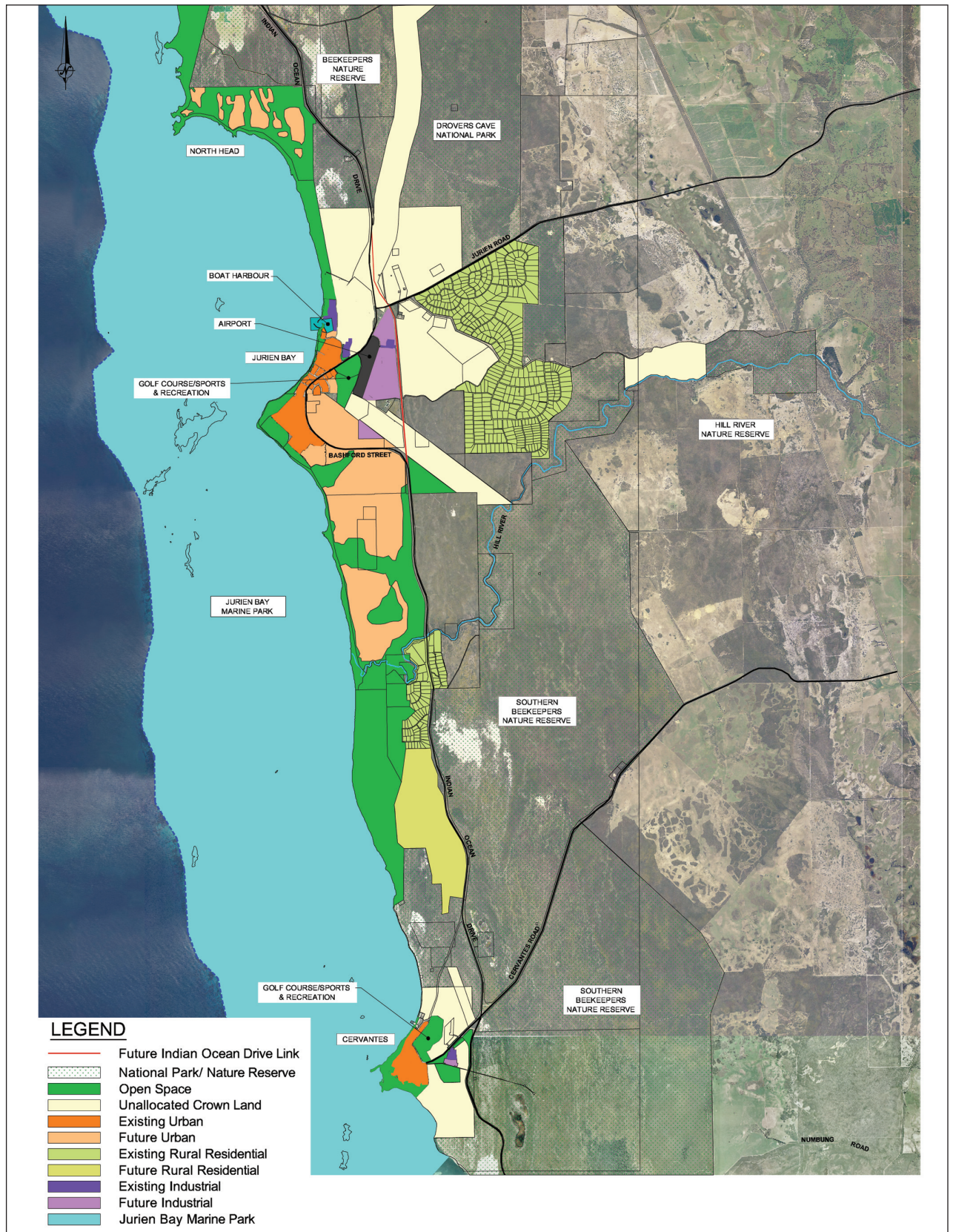


Figure 11.3 Urban Form and Structure



Constraints and Opportunities for future development include:

- A single land owner with a desire to develop a large parcel of freehold land extending south from the Jurien Bay townsite;
- Provision exists to enable Indian Ocean Drive to bypass the town on an alignment east of the airport;
- The proposed linear pattern of future urban development spans a distance of approximately 20km.;
- Significant potential exists for further expansion of the Coalseam Road industrial area;
- Substantial areas of undeveloped rural residential development have been identified to south and east of the townsite;
- Potential exists for further development of land within the Boat Harbour and future urban development of Crown land adjacent to the boat harbour, subject to planning and environmental assessment;
- The development of unallocated Crown land is subject to native title requirements.

Figure 11.4 Jurien Bay Foreshore Plan – Option 2

Source: UDLA, 2008



11.1.2 Land use and activity

The general pattern of development within the Jurien Bay townsite is indicated on Figure 11.5.

Foreshore Area

The foreshore area comprises two formalised parks, Dobbyn Park at the end of Roberts Street and Fauntleroy Park at the end of Cook Street.

Dobbyn Park was substantially upgraded in 2011 with the completion of a curved jetty at the end of Roberts Street and installation of playground furniture. This work was undertaken in accordance with the Jurien Bay Foreshore Plan illustrated in Figure 11.4. Most of the remaining areas of the foreshore contain natural vegetation.

Commercial

The commercial areas of Jurien Bay comprise:

- a small shopping centre on the corner of Bashford and White Streets;
- a hotel and motel complex adjacent the intersection of White and Padbury Streets;
- a group of shops and other commercial uses at the intersection of Bashford and Roberts Streets;
- a group of predominantly vacant lots bounded by Murray, Andrews and Sandpiper Streets and a mix of vacant and light/service industrial developments on the lots bounded by Sandpiper, Doust, Bashford and Murray Streets.

The Shire of Dandaragan has completed and adopted the Jurien Bay City Centre Strategy Plan to establish a clear direction for future planning, development and management of the City Centre. The Strategy Plan is currently awaiting endorsement by the Western Australian Planning Commission.

Future commercial land will be provided in the Turquoise Coast 'Mixed Use' area described as the 'Booka Valley Centre'. The Turquoise Coast Structure Plan recognises that it will be important to develop a balanced relationship between the Jurien Bay City Centre and the Booka Valley Centre. The challenge will be to stage development so that the traditional City Centre retains and strengthens its role along with the establishment of appropriate facilities at Booka Valley.

Figure 11.5 Land Use and Activity

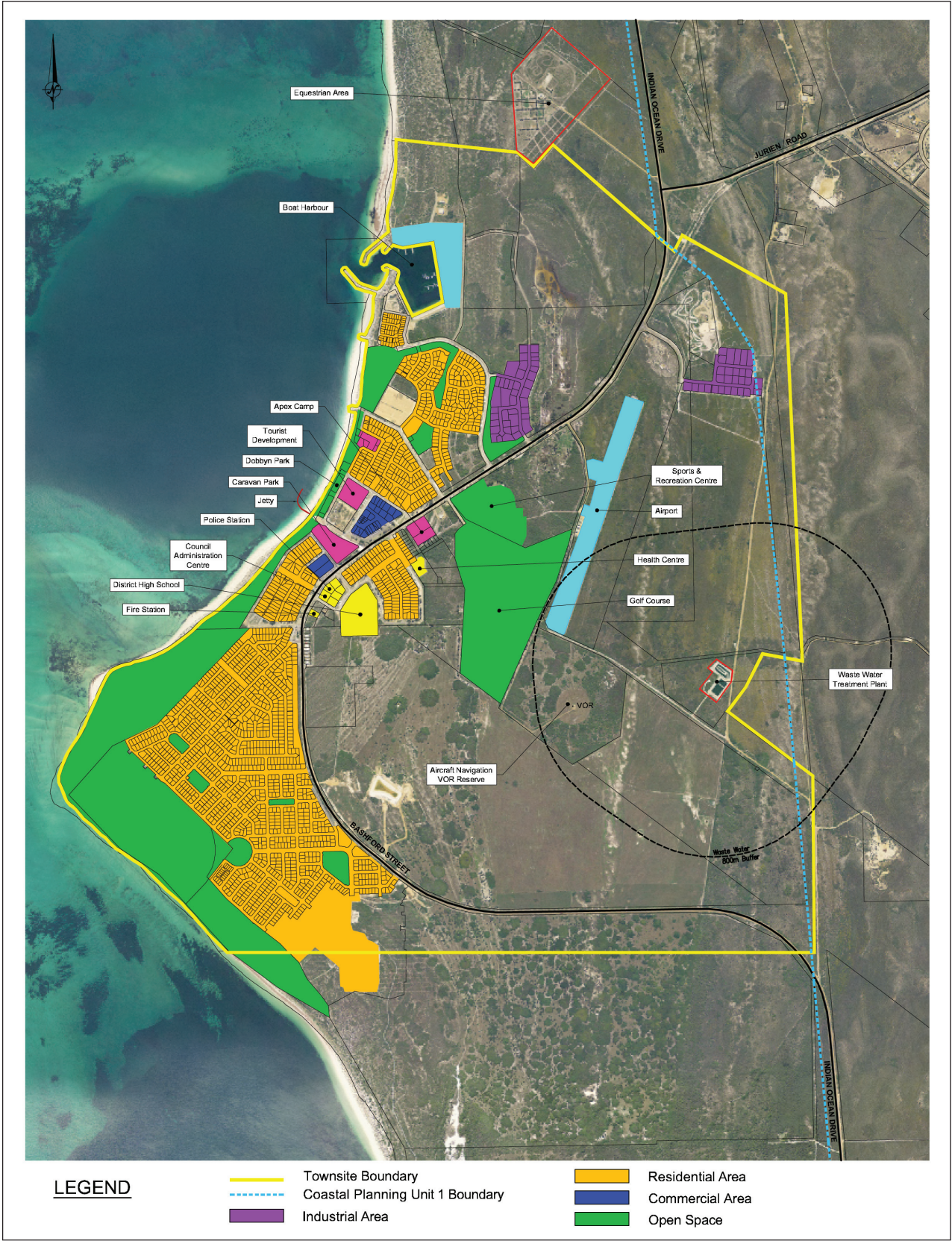
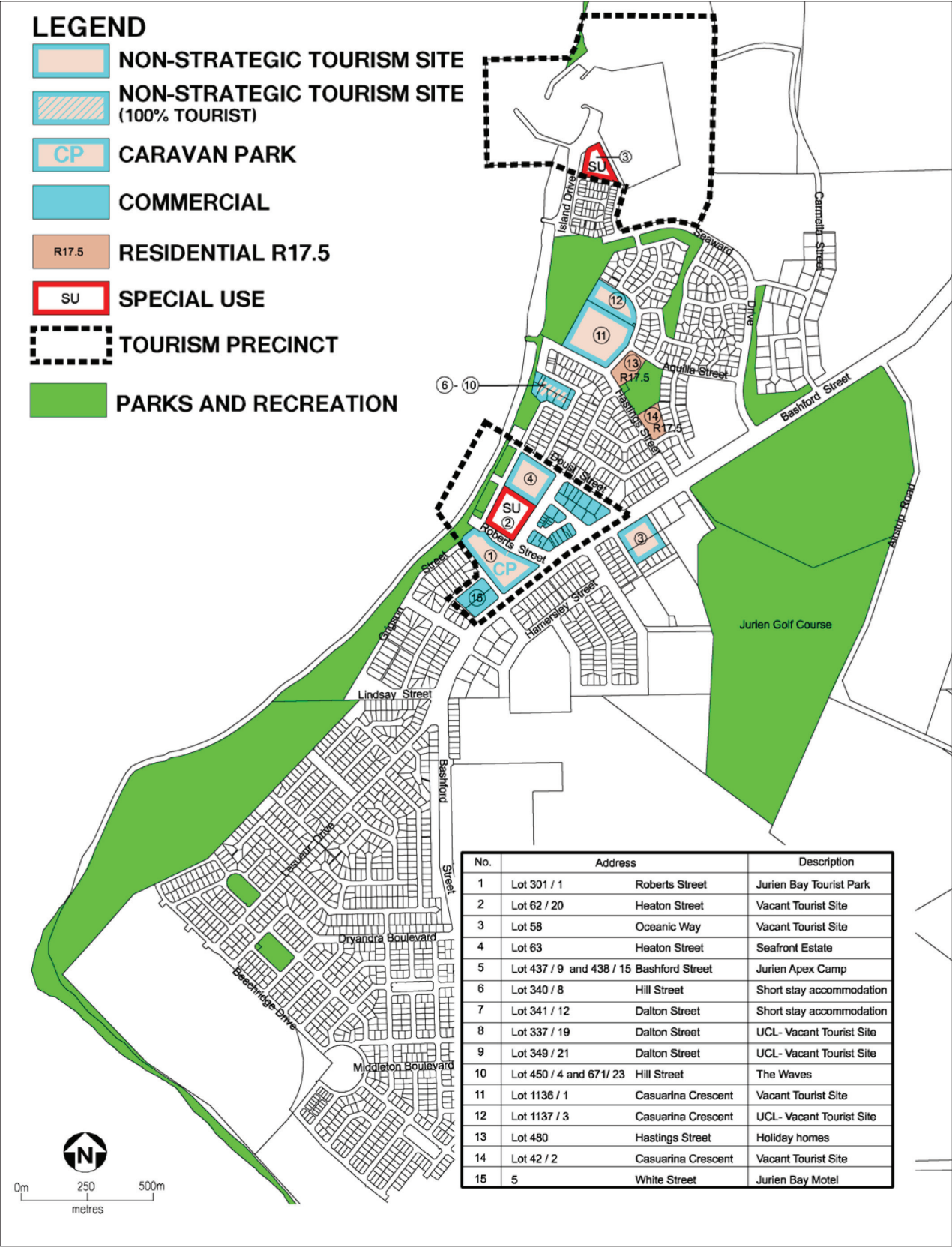


Figure 11.6 Jurien Bay Tourism Sites
 Source: Shire of Dandaragan, 2011



Tourism

Tourism zoned sites, identified in the Shire of Dandaragan (Draft) Local Tourism Planning Strategy (modified Jan. 2011), include:

- the caravan park on Bashford Street between White and Roberts Streets.
- the large vacant tourist on the corner of Heaton and Roberts Streets, which has an approval in principle for a major tourism accommodation development in conjunction with residential and other commercial uses.
- two adjoining sites at the intersection of Casuarina Crescent and Hasting Street adjacent to the foreshore. These are large areas of land in prime locations adjacent to Memorial Park on the coast.
- the Boat Harbour has a vacant tourism site on the southern end of the Harbour.
- the Apex Camp on Bashford Street opposite Doust Street is an important community based tourism facility.

The Strategy identifies a number of Tourist zoned sites which should adequately cater for medium/long term demand. The sites recommended for retention for future tourism development are sites 1-4, 6-10, 11, 12 and 15 shown on Figure 11.6.

In addition to tourism accommodation and sites, holiday homes form a significant part of the short stay accommodation industry. The Draft Local Tourism Planning Strategy estimated 9 % of domestic and 4% of international visitors stay in rented houses. As the sector has grown, so has its impact on a range of issues such as mainstream tourist accommodation operators, prices of long term rental properties and social issues for the local community.

Residential

Residential development in Jurien Bay is predominantly low density residential development typical of a traditional holiday destination. A significant number of residential properties are holiday homes unoccupied for large parts of the year.

Future Residential Development

The direction of future residential development will be predominantly on freehold land to the south within the Turquoise Coast development. The Turquoise Coast Structure Plan comprises approximately 2,000 hectares of land owned by Ardross Estates Pty. Ltd. It extends along the coast from the southern end of the Jurien Bay townsite to Hill River and is bordered by Indian Ocean Drive to the east.

The developers have entered into a Memorandum of Understanding (MOU) with the Shire and the Western Australian Planning Commission which includes guiding principles for the project. The MOU includes the following objectives:

- The facilitation of resort development at Jurien Bay, broadening the economy of the region, creating employment and general economic benefit to the community;
- Proper provision for employment, not only in the hospitality industry but in primary, secondary and service industries and which are established to serve the expanding population; and
- The creation of viable communities with high degrees of self-sufficiency in terms of employment and social infrastructure.

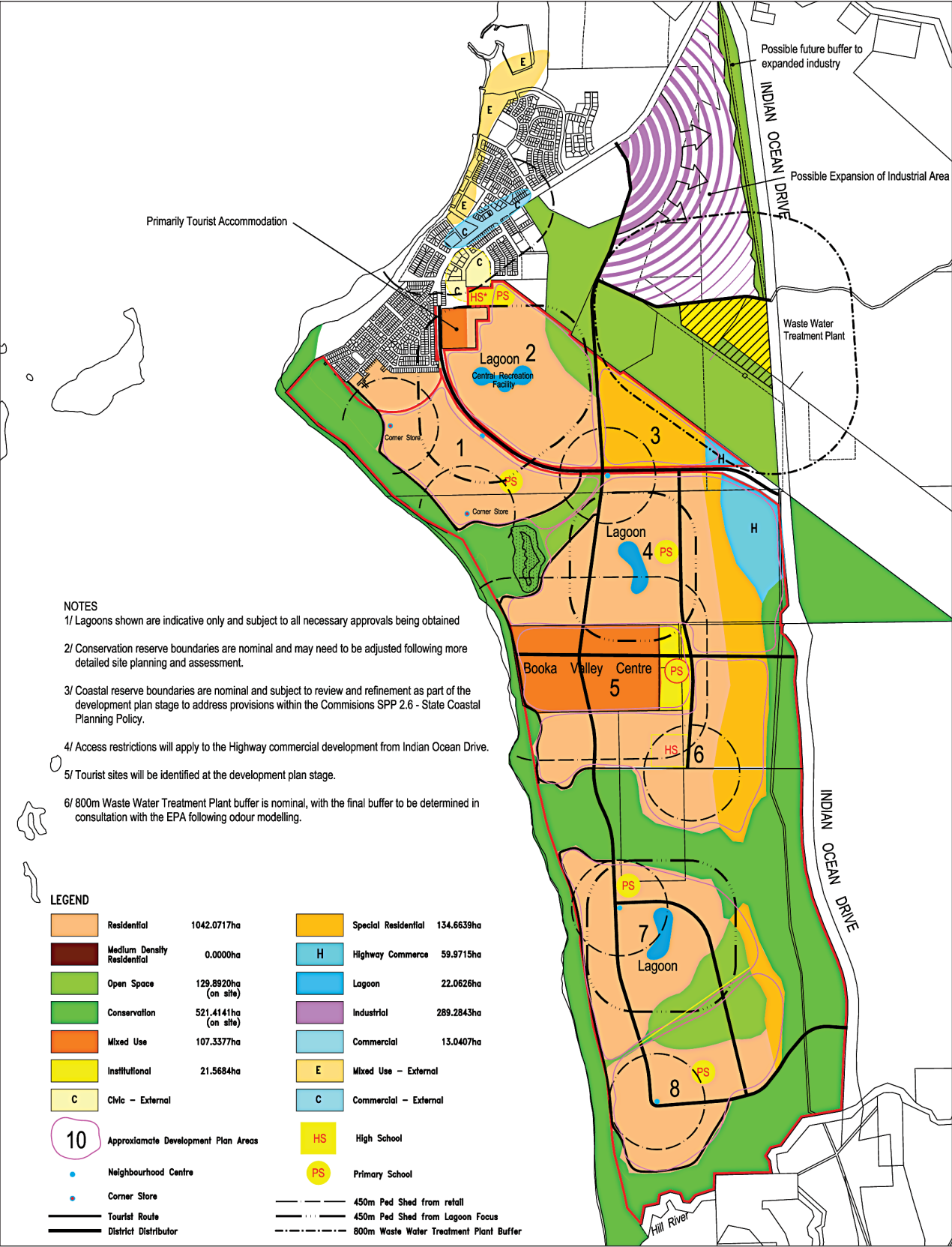
Indicative development yields under the approved Structure plan are as follows:

- 9,000 residential lots;
- 1,400 tourist beds;
- 500 caravan park sites; and
- Up to 30,000m² of retail floor space.

The North Head development area also provides potential for residential accommodation and comprises 650ha located approximately 6km north of the Jurien Bay City Centre. It has a 6 km. frontage to the coastline and is a popular location for recreation.



Figure 11.7 Turquoise Coast Structure Plan 2003
 Source: MGA Town Planners, 2003



The key elements of the Structure Plan submitted in support of the rezoning of the site include the following:

- More than two thirds of the site remains free from development, with parabolic dune ridges and natural vegetation retained in an integrated network of landscape and open space.
- Six residential/tourism precincts comprising 2,215 single residential lots and 550 tourist rooms (located in three strategic areas set aside for tourism uses).
- An access road from Indian Ocean Drive provides the “gateway” to North Head and serves as a spine from which secondary spur roads provide access to each of the precincts.
- A design response that achieves an authentic and coherent built form across the site to complement the coastal landscape and evoke the site’s distinctive sense of place.

- Encouraging walking over the use of vehicles, with an inter-connected network of dual use paths and roads putting all residents located within 800 metres (a 10 minute walk) of beaches, open space or community facilities.

- Acknowledging that existing commercial facilities and services exist in the Jurien Bay City Centre, commercial uses for the development will be limited to those that service the day today needs of residents and tourists.

Community Uses

The community facilities, including health, education and recreation are centralised in the City Centre. There is significant potential for further growth of facilities but future expansion is constrained by lack of infrastructure. While availability of Crown land provides for further expansion and development of community facilities, some of these areas are subject to native title processes and development therefore needs to factor adequate lead times for projects. There are four major groupings of community facilities:

Figure 11.8 North Head Structure Plan

Source: Roberts Day Town Planning + Design, 2007



- Area bounded by Bashford, Batt, Hamersley and Bayliss Streets which accommodates the Council Administration Centre, Family Resource Centre, the Police Station and offices occupied by Department of Environment and Conservation.
- Area bounded by Bashford, Bayliss, Hamersley Streets which is largely undeveloped apart from the Fire Station and Country Women's Association building.
- Area on the southern corner of the intersection of Sandland and Hamersley Streets which is the site of the Jurien Bay District High School.
- The area of Crown land between Whitfield Road and the golf course which is undeveloped, except for the Health Centre in the north west corner of the site.

Special Use

A special use site for the purpose of Aged Persons Accommodation at the corner of Bashford Street and Nineteenth Avenue is currently being developed. A group of sites which have an additional use designation adjacent to the intersection of Bashford and Cook Streets are developed with community and residential uses.

Boat Harbour

The existing Boat Harbour at the northern end of the townsite provides for a range of uses including sea search and rescue, fishing, tourism operators, boat storage and marine industry.

There are large areas of undeveloped and underutilised land with potential for development for a range of uses.

In addition to the viability of industrial uses of the marina, there has been recent interest in the introduction of knowledge based niche industries to support the vision for Jurien Bay.

These niche activities would play a role in opportunities for innovation to broaden Jurien Bay's economy to include knowledge based and research and development industries. Activities with an emphasis on sustainability would align with the natural attributes and values of the coast.

The Master Planning Report – Jurien Bay Boat Harbour Southern Precinct – May 2012 investigates opportunities that could activate sale and or development of approximately 6ha located within Crown Reserve 39149 located on the corner of Seward and Harbour Drive vested with Department of Transport. This could stimulate greater use and development of the wider marina precinct.

Industrial

There are two areas available for industrial development:

- The Carmella Street light industrial area is largely developed with no proposals for further expansion.
- The large area to the east of the airport (Coalseam Road), of which only a small area has been developed to date with the balance being unallocated Crown land.

Rural Living

There are extensive areas of rural living development east of the townsite on the southern side of Jurien Road and a limited amount of rural living development south of the townsite between Hill River and Cervantes.

11.1.3 Land and Property Market

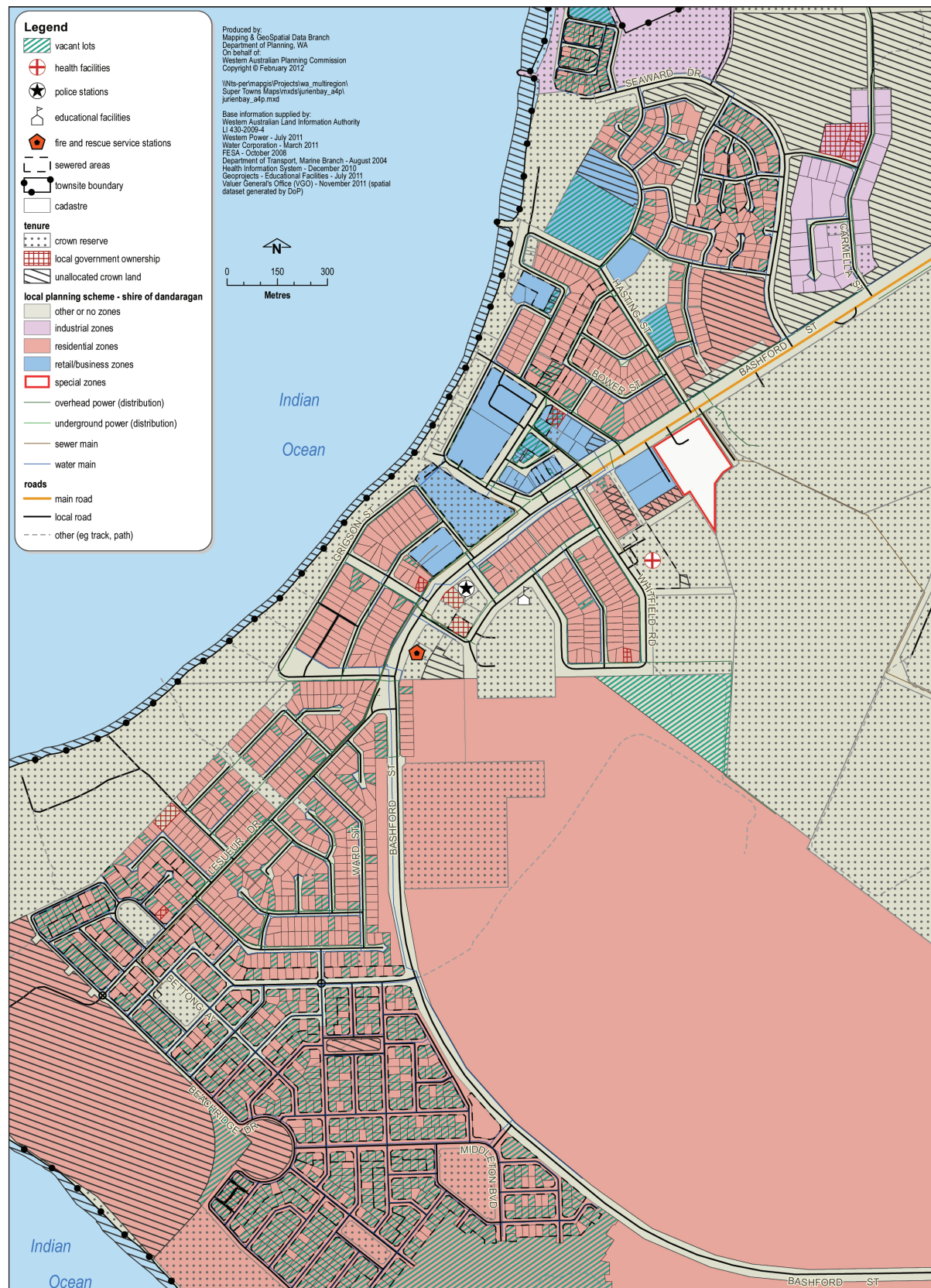
Land Supply

Figure 11.9 illustrates land supply by zoning within the Jurien Bay townsite, including vacant lots as at September 2011.



Figure 11.9 Jurien Bay - Land Zoning and Vacant Lots

Source: Department of Planning, 2012



Figures 11.10 and 11.11 summarise the conditional and final subdivision approvals for Jurien Bay over the last 10 year period.

Figure 11.10 Conditional Subdivision Approvals – Jurien Bay

Source: Department of Planning, 2011

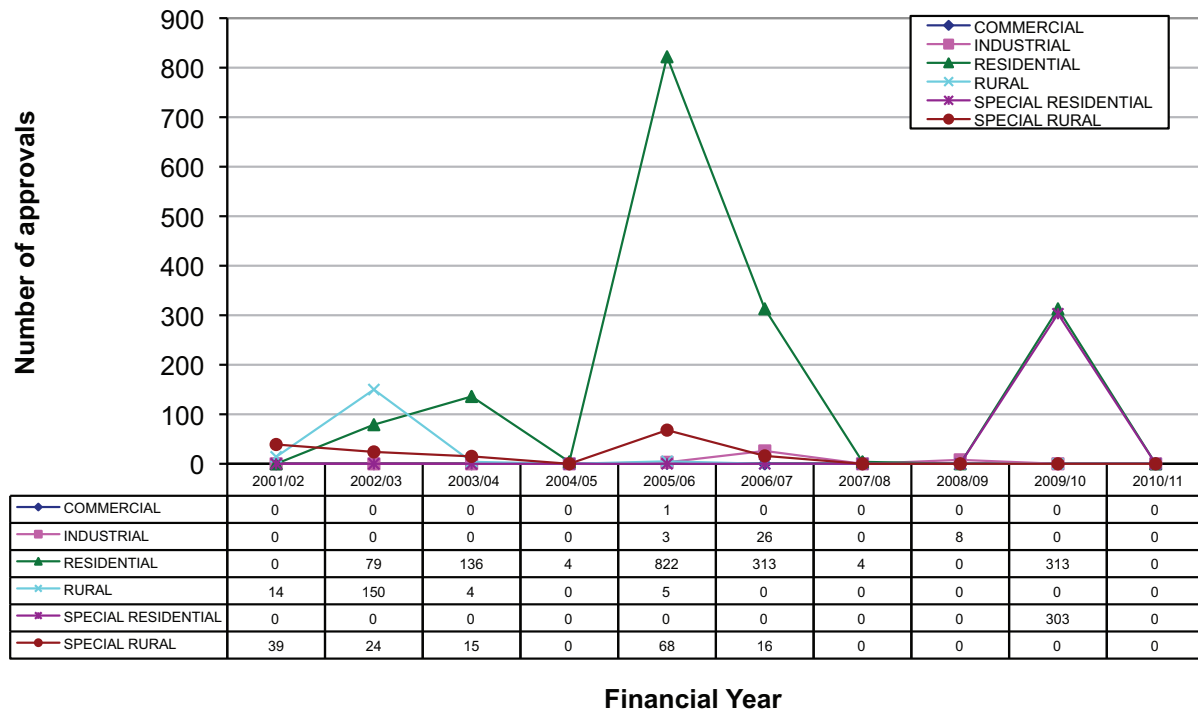
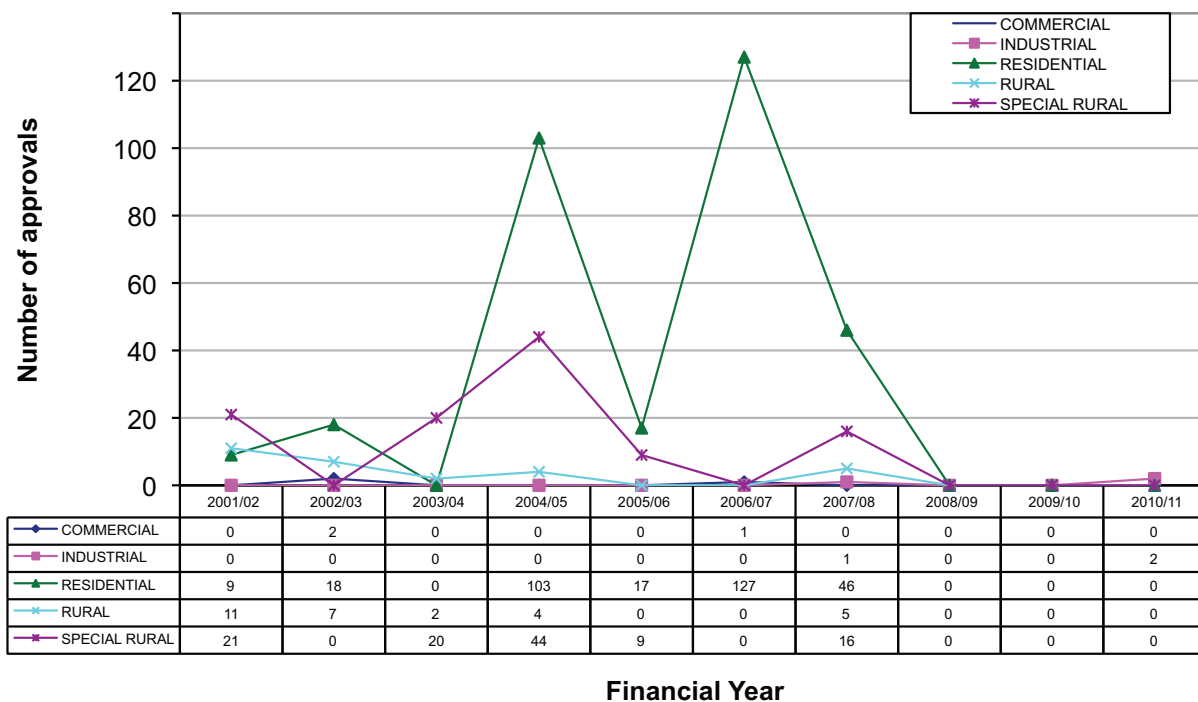


Figure 11.11 Final Subdivision Approvals – Jurien Bay

Source: Department of Planning, 2011



Housing Form

The diversity of residential dwellings is currently very limited. The 2006 census for Jurien Bay (UCL) highlights that nearly all of the 514 occupied dwellings were single houses with a small number of town houses and units. There were 407 unoccupied dwellings in Jurien Bay representing a vacancy rate of 44 percent.

The projected demand for housing type based on population has been assessed as part of the Growth Plan and is outlined in Table 11.1

Existing residential densities within the townsite do not facilitate increased housing density or diversity and this is compounded by the absence of sewer in parts of the City Centre area.

The Turquoise Coast development provides for some mixed densities in particular locations including around the proposed 'Booka Valley' centre and will improve housing diversity.

The development of a retirement (lifestyle) village comprising 98 single storey residential units on Bashford Street has commenced and will also add to the housing variety within Jurien Bay.

Residential Land Availability

Existing land

Jurien Bay has a high rate of undeveloped vacant residential lots in the northern and southern end of the existing townsite. There is also potential for more intensive residential development in some locations. Table 11.2 illustrates land supply within the townsite.

There is also a high percentage of absentee ownership of dwellings within Jurien Bay (see Economy Section for further details). If this trend continues it will affect the land and housing market. Ardross Estates have provided development incentives to purchasers of residential lots within the Beachridge Estate area to encourage development of lots within 2 years of purchase, in response to land been purchased and held for speculation. It is estimated that 15 % of lots sold in the Turquoise Coast development have been to existing residents of Jurien Bay, 50% to Perth residents and 35% to people from other regional areas of WA (Hatch et al, 2011).

Table 11.1 Projected Demand for Housing type in Jurien Bay

Source: Pracsys Analysis, 2011: benchmarked against Busselton

Population	1,173	2,500	5,000	10,000	20,000
Separate house	1,047	2,139	4,277	8,554	17,108
Semi-detached	32	132	263	527	1,053
Flat, unit or apartment	0	59	119	237	474
Caravan, cabin, houseboat	69	57	114	229	457

Table 11.2 Existing Residential Land Supply

Area Description	Number of Existing Lots	Current Zoning	Vacant Lots*	Additional Development Potential
North of Hastings Street	223	Predominantly R12.5 with some R30	113	Yes. Strategically located land which should be investigated further to consider increased development potential of some vacant lots.
City Centre area - Hastings to Lindsay Streets	368	R12.5	10	Yes. City Centre Strategy Plan proposes recoding to R25 to achieve additional dwellings. In addition, some areas are proposed to accommodate mixed use development with a residential coding of R80. Additional development potential is based on the provision of sewer.
South of Lindsay Street	465	R12.5	49	No.
Beachridge Estate (Turquoise Coast Development)	623	R15 & R20	490	No.

* Estimates based on preliminary data from Department of Planning dated September 2011.

Crown Land

There are significant areas of unallocated Crown land, however planning and development of unallocated Crown land in Jurien Bay has been limited because there is an adequate supply of privately owned land for development. Crown land provides opportunities for the consolidation of urban form and uses required to support the growth of the regional centre including community, industry and infrastructure. Areas with potential for development include:

- Land bounded by Bashford, Bayliss and Hammersley Street adjacent to the Council Administration Office and the District High School.
- Expansion of the Coalseam Road industrial area. This project is in the feasibility stage with lot yields and timing yet to be determined.
- Land adjacent to Bashford Street between Hastings Street, Seaward Drive and Aquilla Street.
- Land east of the Boat Harbour.

Planned Residential Projects

Jurien Bay has two large residential land development projects. Ardross Estates commenced large scale residential subdivision in 2004 to the south of the townsite and subsequently obtained approval for the Turquoise Coast Structure Plan for an area that will eventually provide 9,000 residential lots. The WAPC recently approved the rezoning of land at North Head

for residential and tourist uses creating the potential for a future satellite settlement north of the townsite.

The planning undertaken to date for these two areas will ensure an adequate staged land supply identified for residential development to ultimately achieve a population of 20,000. The staging of land releases is illustrated in Table 11.3.

11.1.4 Public Realm and Built form

In a broad sense the future development of Jurien Bay needs to have regard to the coastal context and environmental characteristics. The flatness of the landform within the town is typical of settlements on the coastal plain and this prevents people from being able to view the ocean from an elevated position. This increases the importance of creating an 'internal' visual landscape within the town.

Mature trees through parts of the town signal the location of Jurien Bay when approaching the town. These trees are a key feature of Jurien Bay's visual character. The most striking visual feature of Jurien Bay is the view to the Marine Park with its off-shore islands and long sandy beaches.

The northern entry to Jurien Bay along Bashford Street provides a sense of arrival with mature trees lining the street. However the southern entry to the town, which was established with the completion of Indian Ocean Drive lacks this character. Other than adjacent land uses along Bashford Street there are no visual cues to signal the location of the City Centre, or the close proximity of the beach and jetty.

Table 11.3 Planned Residential Projects

Residential Project	Development Plan Stage	No. of Residential Lots
Turquoise Coast Structure Plan - 2,000 ha Staged developed based on Structure Plan	1	1,300 (partly complete)
	2	1,050
	3	75
	4	2,000
	5	Not defined
	6	1,600
	7	1,800
	8	1,300
TOTAL		7,825*
North Head Structure Plan - 650 ha Staged developed based on Structure Plan	South Head	390
	The Valley	155
	North Head	225
	Pumpkin Hollow	620
	Beekeepers	835
TOTAL		2,215
OVERALL TOTAL		10,040

* The lot estimate does not account for medium density residential lots and development which will be included in more detailed Outline Development Plans over time, which includes a significant medium density residential component in Development Plan Area 5.

Jurien Bay City Centre

Bashford Street is a central feature of the City Centre with most of the civic, government and community uses to the east of the road and the commercial and residential areas to the west. Other than some sections of the road being lined with trees the general amenity of the road is poor and offers limited road treatments for safe crossing points.

In relation to the City Centre there is not a strong sense of Jurien Bay having a distinctly coastal character away from the immediate foreshore environment. There has been little treatment of public spaces and streetscapes to remediate the climatic conditions of wind and summer heat.

Generally non-residential buildings within the City Centre lack character and visual appeal. Some do not provide activation at street level or shelter for pedestrians, as they are disconnected from and do not face the footpath and do not have awnings/verandahs, which is compounded by a lack of street trees.

Wide road reserves and undeveloped sites within the core area of the City Centre provide a largely disconnected urban form with a lack of visual interest or climatic protection for pedestrians. Wide road reserves, minimal landscaping and street trees and overhead power lines, in addition to the separation between buildings, provides no visual appeal or amenity and exaggerates the horizontal scale.

With the exception of the foreshore area including the recently completed jetty project, there has been little development of the public realm and built form of the Jurien Bay City Centre area.

The City Centre Strategy Plan highlighted the importance of public realm and built form. Importantly the strategy recognises that built form alone does not create the character of a place and that public spaces and streetscape character have a significant ability to influence a sense of place.

Public workshops undertaken as part of the Strategy Plan process defined key outcomes sought for the future character of Jurien Bay as follows:

- A consolidated town centre;
- Unique town character and urban style;
- A seaside community that is relaxed, vibrant, inviting and fun;
- Sustainable community;
- Improved and maintained natural environment;
- Safe attractive open spaces with activities for adults and children;
- Improved transport and accessways;
- Increased diversity in residential and tourist development; and
- Improved infrastructure.

Public spaces within the City Centre largely lack activity other than the developed foreshore area of Dobbyn Park, which has been enhanced with the construction of a new swimming and fishing jetty and playground area on the beach.

The demand and supply of car parking within the Jurien Bay City Centre has been heavily influenced by the peak tourist periods. This is compounded by the demand for long vehicle parking (vehicles towing caravans and boats). Sections of the wide road reserves of many of the roads within the City Centre have been developed for paved parking, often without adequate shade trees and landscaping treatment.

Turquoise Coast

The approach to urban design for the Turquoise Coast project has been influenced by the coastal setting and water management objectives. Development within the Turquoise Coast Beachridge Estate is subject to Residential Design Guidelines based on integrating public space and built form. General principles include:

- Landscaping using the natural coastal vegetation which is water efficient, low maintenance and attractive, with indigenous vegetation provided in road reserves and required within street setback areas.





- Building form encouraging verandahs and balconies facing the street and structural, cladding and roofing materials which reflect the marine and coastal environment. Use of material to unify the streetscape and pastel colours to reflect the seaside environment are also considered appropriate.
- Setbacks to the street are reduced below normal requirements to provide for closer engagement of private property and the public domain.
- Roof forms require pitched roofs with eaves overhangs on all elevations and metal roofing materials, with a prohibition on tiled roofs.
- Garaging and access requires parking structures to use the same materials as the dwelling and limitations on the width of crossovers.
- Fencing is not permitted within the street setback areas to retain the closer engagement of private property and the public domain.

In parts of the Turquoise Coast development there is an absence of street trees, which adversely impacts on the visual and climatic amenity of the streetscape. It is understood that the Shire have some concerns relating to their ongoing management of the road reserves in the Turquoise Coast development.

North Head

The North Head project is based on creating five residential/ tourist precincts with the future detailed planning for each precinct based upon the transect model. This will be applied in this context by the transition from a wilderness experience at the edges of precincts where single houses will be set into the landscape, to more traditional forms of urban development at the centre of the precincts.

Design concepts have been developed to form the basis for more detailed design guidelines. The design concepts include design codes as a framework for the design guidelines including the following:

- Architectural code based on a limited palette of materials addressing building elements such as walls, roofs, openings and attachments;
- Environmental code to restrict building footprints on the landscape and vegetation, passive solar design and power and water conservation; and
- Landscaping code to define both hard and soft landscaping requirements with promotion of local species of plants to minimise water use and reflect the local context.

11.2 Key Findings

Spatial Planning and Built Form

- The urban area is set within a unique environmental setting made up of marine and terrestrial National Parks, conservation and nature reserves and parks and recreation reserves.
- Crown land provides opportunities for the development of uses required to support the growth of the Jurien Bay including community, industry and infrastructure.
- Opportunities for consolidation of urban form together with staged development will ensure a sustainable pattern of growth and efficient use of land, public facilities and infrastructure and natural resource use. Consolidation can provide more diversity in housing type and form.
- The linear pattern of development will increase the need for public transport to ensure accessibility to facilities and services. The transport and communication system will need to develop to connect what will be a spatially dispersed community.
- Provision exists for Indian Ocean Drive to bypass the town on an alignment east of the airport.
- A large area of undeveloped land zoned for industrial development is located east of the airport.
- The Boat Harbour is a substantially undeveloped infrastructure asset with potential to contribute to tourism and the economy.
- There is potential for further development of land within the Boat Harbour and future urban development of Crown land adjacent to the boat harbour, subject to planning and environmental assessment.
- There is potential for additional residential and tourism development north of the townsite at North Head.
- Existing public purpose and recreation reserves and those proposed in the Turquoise Coast structure plan will ensure adequate provision for State and Local government facilities.

City Centre

- The area currently defined as the Town Centre will need to accommodate an increasing range of government services and facilities to service a wider coastal and hinterland. It will also be a focus of tourism development and provide retail and commercial uses.
- The future Booka Valley centre, 3.5 km. to the south of the Town Centre will be a 'District Centre' providing retail uses and mixed use development.
- Given the capacity of the Booka Valley centre and its advantage as an unconstrained greenfield site, there needs to be provisions in place to ensure that the Town Centre has sufficient capacity and advantages for growth to accommodate the appropriate range of functions to serve the regional catchment.
- It is important that the staged development of the urban areas and other centres are not developed such that they undermine the role of the City Centre.

- Land is available for the expansion of community facilities and services in the existing centralised location within the City Centre.
- Crown land including the large area of unallocated Crown land in Whitfield Road adjacent the existing Health Centre, should be secured for community purposes to ensure sufficient land is available in the long term for major facilities serving a regional catchment, particularly health and education.
- The lack of adequate infrastructure, particularly sewer in the older part of the town, is a major impediment to new development and intensification of development.

Land and Property Market

- There is a large amount of land zoned for a variety of uses including residential, industrial, rural residential and tourism sites. There is a high rate of vacant residential lots.
- The planning undertaken to date for Turquoise Coast and North Head will ensure an adequate staged land supply identified for residential development to ultimately achieve a population of 20,000.
- There are substantial areas of unallocated Crown land north of the existing residential areas with potential for future urban development subject to planning, environmental, servicing and native title assessments.

Public Realm and Built Form

- With the exception of the foreshore area, there has been little development of the public realm within the City Centre area.
- It is critical that the City Centre not only develops as an area which provides the facilities and services expected from a regional centre, but has a distinctive character with high quality public spaces and built form that the community values.
- The City Centre Strategy Plan:
 - recommended that the development of the public realm and urban form guidelines have regard to the coastal setting and the climatic conditions.
 - highlighted the importance of public realm and built form. Importantly the strategy recognises that built form public spaces and streetscape character have a significant ability to influence a sense of place.
 - recommended the continuation of better urban water management principles within Bashford Street and other public spaces.
- The development of the Turquoise Coast project is based on the principles of better urban water management, design guidelines and treatment of the public realm. It is important that issues related to ongoing management of the streetscape and establishment of street trees is addressed to enable refinement and improvement of outcomes.
- Recognition of an environmentally responsive approach to urban development should guide development of future urban areas.



12 Vision, Goals and Objectives

12 Vision, Goals and Objectives

12.1 Vision

The vision developed for Jurien Bay is based on the consideration of the three critical elements of sustainability being community, economy and environment. Importantly the vision reflects the key elements of the Shire's 'Towards 20,000 – Building the Turquoise Coast Regional City Plan' and the key outcomes of the process being undertaken to develop the Shire's Strategic Community Plan.

VISION

Jurien Bay – a Regional City of 20,000+ on the Turquoise Coast, which is based on continuously improving the wellness of its community and the economic development of the region, and protecting the unique and diverse environment that provides its natural setting.

12.2 Goals and Objectives

Aspirational goals and project objectives have been developed based on an understanding of the issues relevant to Jurien Bay identified in the analysis undertaken.

The aspirational goals developed provide a set of desired inter-related conditions for the elements of economy, community, environment, spatial planning and built form and infrastructure that together define a sustainable future. The project objectives defined form the basis for transforming Jurien Bay from its present state to achieving the aspirational goals and provide a basis for evaluation.

Aspirational Goal	Project Objectives
Spatial Planning and Built Form A consolidated and connected urban form that has access to facilities and services, fosters community well-being, provides centres that are functional and vibrant, together with a public realm and built form that responds to the natural environment	A range of land use activities to serve the city and the region A hierarchy of activity centres with appropriate uses to serve the needs of the catchment Increased development density within and adjacent to activity centres A high standard public realm, particularly within activity centres Development that is responsive to the coastal context and natural resource use An integrated movement network to connect the community and the wider region Staging of growth based on optimising the use of hard and soft infrastructure and supporting the role of the City Centre
Environment A unique terrestrial and marine system that balances environmental values and natural resource use with the requirements of urban development and tourism	Protection of the marine and coastal environment Protection of significant vegetation and habitat Protection of groundwater quality Minimise waste to landfill Facilitating human engagement with the environment
Community A community that is healthy and diverse, has appropriate facilities, services, attractive lifestyle and amenity and is engaged in community decision making.	Provision of a range of facilities and services to foster well-being for the city and regional community Develop Jurien Bay as Australia's healthiest coastal community Provide education and training facilities and services to develop knowledge and skills required by local growth industries Attract and foster a diverse and cohesive community Use the capacity of the community in decision making processes
Economy A diverse, resilient export-oriented economy that capitalises on the opportunities within the region and beyond to provide for a wide range of employment and business opportunities for existing and future Jurien Bay residents	To leverage Jurien Bay and the region's attributes to meet national and international needs through niche, high productivity activities Develop targeted local and regional infrastructure that supports the competitive advantages of Jurien Bay and the region Develop strong relationships with major state growth industries, in particular resource extraction projects in the greater region Maintain high employment participation rate and a local labour force of sufficient size and skill to supply local jobs Build capacity within Jurien Bay and surrounds to support economic growth and economic development Support the redevelopment of Jurien Bay's population-driven activities to deliver a viable, vibrant and high amenity city centre that provides for the needs of the local and regional population, as well as visitors to the City Leverage whole-of-life wellness initiatives and sea-change retirees as a significant source of population-driven activity
Infrastructure Cost effective infrastructure that is sustainable, efficient in relation to natural resource use and facilitates a connected community	Ensure infrastructure upgrades required to accommodate growth do not hinder private investment and are completed within a timeframe that allows growth to continue Efficient use of energy and water in infrastructure design Integrated and safe road, public transport, cycle and pedestrian network to connect the community Provision of quality telecommunication and technology infrastructure

12.3 Population Potential

The population target of 20,000 set out in the Vision is a long term target and as such shorter term population scenarios have been considered for the purposes of both planning and monitoring. This is to ensure that ongoing growth is sustainable and that planning and delivery of outcomes is not only directed to the end state scenario.

Progressive population scenarios provide a basis for planning, setting targets and monitoring matters related to the Growth Plan. The population scenarios which have been used are for populations of 2,500, 5,000, 10,000 and 20,000.

The targets relate to both growth and capacity issues, to determine the progress towards achieving the outcomes sought and to ensure that there will not be impediments to growth continuing. The targets themselves should be the subject of review and refinement over time.

The relevant targets set out for monitoring the Growth Plan are set out in Table 12.1.

In addition to the targets there are also quantitative indicators of the progress towards achieving some of the key project objectives and they are set out in Table 12.2. These indicators should also be reviewed over time.

Table 12.1 Targets for Monitoring the Growth Plan

Measures	Population Scenarios			
	2,500	5,000	10,000	20,000
Additional Strategic Employment (Jobs)		620	1540	
Additional Population Driven Employment (Jobs)		1170	2640	
Total Convenience Retail Floor space – nla m2	1780	3580	7190	14450
Total Comparison Retail Floor space – nla m2	2930	5890	11830	23770
Total Office Floor space – nla m2	1210	2430	4880	9810
Service Infrastructure	See tables in Section 13.5.3			
Community Infrastructure	See tables in Section 13.5.3			

Table 12.2 Indicators for Monitoring the Growth Plan

Measure	Indicator	Data
State trends	Illustrate points of difference and similarities to state and national trends	ABS figures, SALM figures, GDP figures
Population	Increased rate of population growth of Jurien Bay and the region	ABS figures
Population Profile	Change in population age structure and ABS figures characteristics compared to the State and the region to determine retention and attraction of young people, working age, and the aged	ABS figures
Employment	Increased employment by industry sector to determine strategic and population driven employment	ABS figures
Industry	Increased number of industries including strategic employment industries	ABS figures
Business Activity	New businesses and business retention	Shire to develop data base of records based on survey of current businesses and completed developments and new occupancy
Land Development	Sufficient activity to ensure adequate land supply for a range of uses	WAPC records on land subdivision preliminary and final approvals based on land zoning
Property Development	Increased development and construction activity and industry growth	Shire records on number of building licences issued and development commenced by land use/ industry category
Workforce	Increased level of education and industry skills of workforce Increased enrolments numbers in industry based TAFE courses offered in Jurien Bay	ABS figures TAFE statistics
Education	Increased enrolments numbers at primary and high school and in industry based TAFE courses offered in Jurien Bay	Jurien Bay District High School and TAFE statistics
Community	Level of community 'wellness'	Shire to develop a baseline survey of measures to be developed as part of community development plan based on ability to benchmark those measures with other comparable communities.



13 The Integrated Strategy

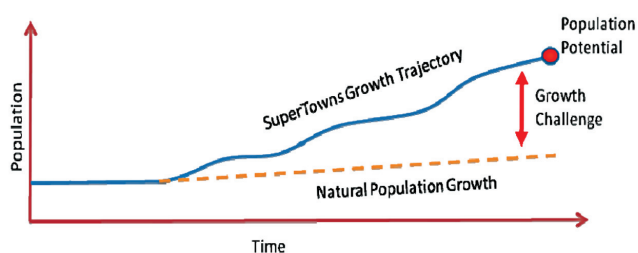
13 The Integrated Strategy

The Integrated Strategy comprises the broad strategies required to form the response that will meet the project objectives and transform Jurien Bay from a small coastal settlement to a regional city of 20,000 people. They encompass the key economic, community and environmental strategies that are required to achieve the vision and create a sustainable community.

The Integrated Strategy is effectively an intervention to change from the current natural population growth to a growth trajectory to meet the growth challenge and to achieve the aspirational population potential of 20,000 people. This is illustrated in Figure 13.1.

Figure 13.1
Addressing the “Growth Opportunity” –
Growth Scenario Planning

Source: RDL, 2011



The Integrated Strategy will inform all stakeholders about the growth of Jurien Bay, how it is to occur and what is required. It comprises both spatial and non-spatial elements, with the spatial elements informing the Spatial Growth Plan and the City Centre Strategy Plan.

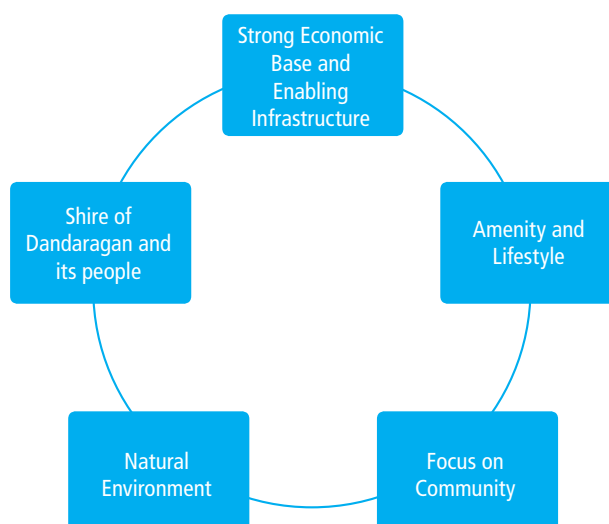
In addition to identifying the drivers that will create the growth trajectory to achieve the population, it also identifies capacity requirements for community and servicing infrastructure at population thresholds and how and these requirements can be met in the staged development of that growth.

The Integrated Strategy forms the backbone of the implementation of the Growth Plan. Priority projects are described from which business cases have been prepared to apply for Royalties for Regions funding, available to SuperTowns. Government endorsement and support for the Growth Plan will be essential to unlock the growth potential and help leverage funding for transformative projects.

The Driving force-Pressure-State-Impact-Response (DPSIR) Framework was used to assess the current situation, pressures and implications, and derive aspirational goals and project objectives. The Consultant Team then used this framework to workshop what strategies and actions were required to realise the vision for Jurien Bay. The resulting strategies were identified and then tested through workshops including an evaluation against community aspirations and priorities. Importantly the Integrated Strategy reflects the draft goals developed to date as part of the Shire’s Strategic Community Plan. Those draft goals are illustrated in Figure 13.2.

Figure 13.2
Draft Goals from Shire of Dandaragan Strategic
Community Plan

Source: Shire of Dandaragan, 2011



13.1 Key Elements of the Integrated Strategy

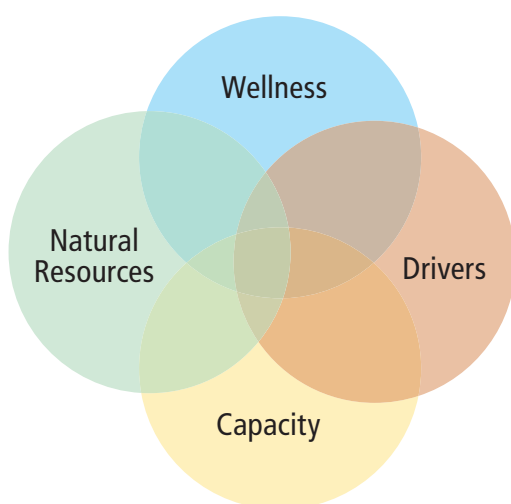
The four key elements of the Integrated Strategy in the Growth Plan are:

- **Drivers:** A diversified and resilient local economy will be critical to support sustainable growth. Strategies are identified that will drive the transformation of the local economy.
- **Wellness:** The Growth Plan for Jurien Bay imagines the broad concept of wellness as a key theme of community and economic life encapsulated in the aspirational statement; ‘Jurien Bay Australia’s Healthiest Coastal Community’. This concept naturally embraces and in part describes the attractive lifestyle available to those migrating to Jurien Bay and the natural coastal and marine setting.

- **Natural Resources:** The context for all strategies, and the principal point of difference of Jurien Bay, is the natural environment that is recognised nationally and internationally for its biodiversity and unique heritage values. Jurien Bay's future will be intimately connected to the natural resources of the region. This makes it a key component in planning for future growth, the community and the economy as the aspirations of the Growth Plan are realised.
- **Capacity:** Underpinning all the other elements is the vital element of capacity. Increasing capacity is essential for the potential of Jurien Bay to be unlocked. The capacity of existing infrastructure and community and social forums will need to meet the new demands of a rapidly growing population. Immediate investment in new, and upgraded, capacity will bring long term benefits such as economic development, technological currency, environmental sustainability, and community evolution.

Figure 13.3 illustrates the interrelated nature of the key elements, which, when combined together, form the basis for the implementation of the Growth Plan. Each of the key elements is described in detail in this section.

Figure 13.3 Jurien Bay Integrated Strategy



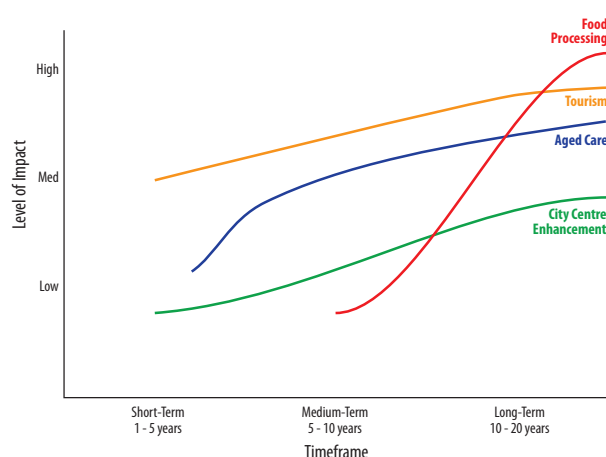
In the short term, Royalties for Regions funding will be used to demonstrate commitment to the Growth Plan, meet identified needs, produce targeted plans for the future, and provide infrastructure to meet future capacity.

The following graph indicates that the early impacts will be achieved through strategies focusing on population driven

initiatives including aged care and City Centre enhancement. While it is expected that the relative impact of these strategies will slow over time, they will remain an important part of the overall economy.

Two additional strategies providing growth in the medium to long term have also been identified. Tourism will be a driver in the medium term, and food processing is a high-impact, but longer term economic driver. The graph reflects the likely lead times of the projects, and their ability to deliver the job creation and economic activity that will support the vision.

Figure 13.4 Predicted Impacts of Strategies over Time



13.2 Drivers

Jurien Bay has unique potential to accommodate growth. The aspirational goal for the economy is to create:

"A diverse, resilient export-oriented economy that capitalises on the opportunities within the region and beyond to provide for a wide range of employment and business opportunities for existing and future Jurien Bay residents."

Sustained growth will build on the inherent economic strengths of the region, and its competitive advantages. The economic drivers of the Integrated Strategy will focus on the natural advantages in Jurien Bay and the Central Coast sub-region for tourism development and food processing.

The population growth envisaged within the Jurien Bay SuperTowns vision will require interventions to restructure the local economy, and generate economic activity and employment opportunities to support the growing local workforce. Without access to jobs population growth will be limited to those not in the workforce, those who have the ability to access quality employment elsewhere, and those who are involved in jobs

that will naturally occur to support the existing population (this population-driven activity typically equates to approximately one third to half of the required employment).

A more diversified and resilient economy will drive economic development and strategic employment growth as:

- There is no 'saturation point' to economic development (whereas there is only so much population-driven activity that a particular population needs/can afford);
- A diverse range of economic activity servicing external markets diversifies the risk associated with downturns in a single market;
- Local jobs are potentially less vulnerable to fluctuations in the costs of travel (including potential peak oil shortages and carbon pricing);
- Economic development activity tends to include higher 'value-add' activities that are more likely to result in greater flow-on benefits to the local economy;
- Economic development activity tends to result in high wage-productivity for employees and significant business opportunities for small to medium enterprises;
- Local quality employment means that choice in place of residence is less substitutable (i.e. if you want local quality jobs, you need to live locally). By contrast quality jobs a long way from a regional population may mean that the workforce can substitute a particular community for another (e.g. FIFO jobs now being offered to residents in Bali provides an alternative lifestyle for workers).

Sustainable, resilient regional economies and communities are built on local enterprises exporting goods and/or services to external markets. With current labour shortages and trends of fly-in-fly-out worker arrangements, it is common for regional communities to seek to export their requirement for jobs to major resource projects elsewhere in the State. Whilst there is an undoubted opportunity to service this component of the present-day labour market, it is critical to recognise that factors such as the automation of mine sites over the next 10-20-years, may lead to a decrease in FIFO workforce requirements of up to 50% on present-day levels for many projects. (University of Queensland & Pracsys 2012). This means that whilst construction jobs for new projects may continue to be required, the longer-term operational jobs for resource projects may actually decrease in demand from present-day levels.

Employment in economic development (driver) activities can be distinct, in industries where there is little or no local demand (e.g. iron ore mining/wheat farming), or in the same industries as population-driven activity but with a different focus (e.g. manufacture of food/wine, higher education, tourism hospitality activities). This employment does not occur automatically. It results from an enterprise actively seeking to meet the needs of an external market (ranging from other regional communities, to international businesses and consumers), and leveraging a local competitive advantage to meet these needs. The type of economic development activity suitable to a particular location, is likely to be unique, building upon the differentiating characteristics of a particular region rather than meeting generic, commoditisable needs.

The difference between population-driven and strategic employment extends to the behaviour of workers attracted to these jobs. Employees in strategic jobs tend to be willing to travel further for work, and are more inclined to remain in a given industry or sector for longer. The absence of strategic employment in a town or region will mean a lower employment self-containment, as these workers travel further afield to their place of work (e.g. resource projects in the north-west or the Perth metropolitan area). By contrast the low-salary and skill requirements of many population-driven jobs, makes them more attractive to residents in close proximity to a place.

Jurien Bay's economy has historically been developed through two general types of activity. These are:

- Food production
- Tourism

Whilst the structure of these general activities will need to adapt and change to meet the future needs of regional, national and international markets, Jurien Bay's future economic development will likely be highly dependent upon both of these activities (see below).

13.2.1 Complementary Strategies

Whilst the key economic drivers for growth are food production and tourism, it is recognised that priority projects focus on wellness and capacity will also assist to drive economic development and employment. These are described later in this section.

An initial driver of growth is likely to be through the development of aged care infrastructure proposed within the Growth Plan.

This infrastructure will not only support significant growth in quality employment in Jurien Bay (with knowledge intensive consumer services jobs being created as a direct result of the facilities infrastructure), but will also create the environment conducive to retention of residents at later stages in their lives and their families. This initial investment predicates more targeted investment in strategic industries, whilst helping to build the capacity and wellness value propositions of Jurien Bay.

Investment in the Jurien Bay City Centre in terms of configuration, offer and amenity will also potentially be an early driver for Jurien Bay as it helps to define itself as a place of growth and investment. The value proposition of the City Centre and its ability to facilitate multiple transaction trips will be key to leveraging expenditure from visitors, and minimising leakage of expenditure from residents.

Key infrastructure projects aimed at addressing capacity issues will also make a contribution to supporting economic development, and attracting new investment and enterprise.

13.2.2 Industry Development Planning – Food Processing

In the case of food production, traditional wild capture crayfishing and fishing activities are likely to plateau or even gradually decline, however significant opportunity exists for Jurien Bay and surrounds to act as a major post farm-gate food production centre north of Perth. This will leverage the proximity of Jurien Bay to a wide range of existing food inputs including seafood, broad acre agriculture (grains and livestock) and horticulture, with a relatively unconstrained food processing site with suitable power (including alternative energy), water supplies, and strong road transport linkages. Secondary production activities seeking to add value to existing food value chains may include:

- World class alternative grains milling (including lupins, barley, chia, quinoa etc)
- Abattoirs
- Food manufacturing and packaging
- Complement aquaculture industry development

Identification of an appropriate site to locate a food production hub, as well as management of land use planning requirements, water allocations and servicing has been identified as key factors in developing this significant opportunity.

Jurien Bay and the Shire of Dandaragan are ideally placed to leverage the vast amount of food production activity occurring in the land and sea in the immediate catchment, and greater Wheatbelt region as illustrated in Figure 13.5. Currently this primary production activity accounts for an estimated \$51.2 billion in output per annum and \$7.3 billion per annum export revenue.

The Department of Food and Agriculture, along with the Wheatbelt Development Commission and Shire of Dandaragan have identified a significant opportunity to add value to this food production through the development of secondary processing capabilities that turn raw inputs into a range of products for domestic and international markets. This has the ability to inject significant investment, directly support numerous jobs, and increase the value added to the Central Coast economy.

This area provides a strategic location for the development of agricultural and horticultural supply chain networks in Western Australia. Located between major ports in the state, export into international and interstate markets has become more realisable in recent years with the development of transport networks and extension/upgrading of utility networks. North of the Central Coast the Oakajee Port and Rail project is developing a deep water port capable of servicing the anticipated needs of the mining industry in the Mid West Region, however it is determined that the Oakajee Port will eventually become a multi-user, multiproduct port. The Geraldton and Fremantle ports will continue to be working ports into the future, with a considered development of an outer port in Fremantle in the coming decades.

Activities will be targeted to meet the specific needs of major markets, and include a range of 'post farm-gate' value addition activities including:

- Food product manufacturing and packaging
- Cattle, pig, sheep and chicken abattoirs and processing infrastructure
- Specialised world class alternative grain milling
- Logistics and supply chain management
- Intensive food production
- Management of wastes through an active industrial eco-system (e.g. wastes become inputs for further food production)

Figure 13.5
Primary food production activities surrounding Jurien Bay
Source: Pracsys, DAFWA and Wheatbelt Development Commission, 2012



These activities would ideally be located in an intense food processing cluster in close proximity to major transport infrastructure, reliable 3-phase power, and readily available fresh water. The Shire of Dandaragan has particular locational advantages given the links with Brand Highway, proximity to the growing horticulture sector and intensive agriculture, Mid West Energy Project, wind farm power generation, and significant groundwater supplies. Spatial planning assessment will be required to identify potential locations for this activity, in order to manage potential negative externalities associated with these activities, including noise and odour.

Determining a suitable location for such a precinct requires consideration of a few key criteria; the site should be mainly vacant or have a compatible existing use have at least 50 ha of developable land. Other recent identifiable sites in the South-West of the state have identified areas of nearly 700 ha. This includes a substantial buffer zone when locating near areas subject to urban encroachment. The site should have limited to no environmental constraints that hinder development of the land or approval time frames.

Food processing and other activities associated with agri-precincts are often high water use. A significant competitive advantage of fostering such industry expansion in the Central Coast and parts of the Central Midlands is the availability of significant water resources. In the central coast there is 94.6 GL available for take annually from the Jurien groundwater area. The volume of licensed entitlements as measured in April 2010 was 18.7 GL for general consumption and 1.5 GL for public water supply. 7 GL has been reserved for public water supply to meet demand until 2040 and there is approximately 64.4 GL from all resources available for new users. Extension or upgrading infrastructure accessing this water supply would be required with growth and increasing demand. The site should have a minimum depth to groundwater of two metres and have direct access to a district distributor.

Access to power is also critical for establishing a food processing hub. The Mid West Energy Project addresses capacity constraint on all substations located north of Eneabba and Muchea. Once constructed, the line will unlock significant new Mid West mining projects and provide a gateway for renewable energy to feed green energy to consumers across the South West Integrated System. The target completion date for this project is February 2014. The coastal location between Pinjar and Geraldton also provides a very prospective wind resource with wind load factors well in excess of 40% (compared with around 30-40% in most locations nationally) and relatively straightforward access to land. Western Power currently has enquiries from proponents seeking to develop over 1,300 MW of wind generation projects in this locality.

Development of this food processing/agri-precinct opportunity requires a market-driven approach to product development, manufacture, transport and marketing. This means that targeted actions will need to be developed with a clear focus on future national and international market needs, trends and niches with outputs from the cluster targeted to achieve premium value due to a close match with end-user desires.

As per the planning and staging process undertaken in the WA's South, it is envisaged that site identification would take in the vicinity of six to twelve months upon the evaluation of relevant reports. Moving forward in the development of a potential site would be subject to the acquisition of land in terms of any native title claims or the purchase of from current landholders. This process can range extensively unless the identified land was government owned. Further considerations as to the environmental assessment and relevant zoning would be determined by the relevant state agency and local government. This process would be determined by the core operating requirements of those entities. It would be envisaged that in a best case scenario, land could be development ready within a time frame of 2-5 years.



Figure 13.6 describes the need to consider all components of the value chain in developing the cluster. This includes suppliers (raw inputs), collaborators (public and private), logistics and customers (including end-users). This process allows for planning of targeted infrastructure and activities rather than a focus simply on the development of a generic site, as this will not produce the economic development outcomes envisaged within the Growth Plan.

The potential economic impacts for development of a food-processing cluster in the Shire of Dandaragan will need to be the subject of an industrial development plan that includes detailed investigation of the market and site opportunities. Based upon national averages however, it could be expected that a 300ha net lettable productive area site could potentially yield \$81.3 - \$122million of gross value added output for the region, with an estimated 1,000-1,500 directly created jobs.

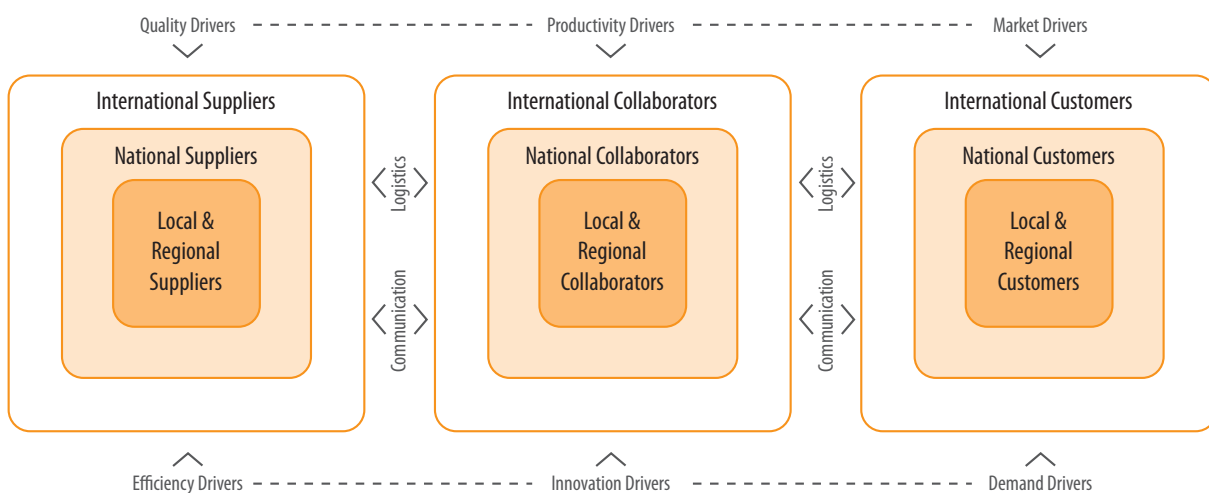
13.2.3 Industry Development Planning – Tourism

The second key economic driver relates to the potential for expanded tourism development in Jurien Bay.

Jurien Bay's tourism activities have historically focused on budget, medium-long stay, caravan park and holiday home accommodation. As this type of tourism offer has become increasingly scarce in many traditional coastal destinations surrounding Perth, Jurien Bay has the potential to build this market whilst also developing a strong value proposition as a higher-end 2-3 day destination for national and international guests. This will leverage the Pinnacles and the beautiful local natural environment as the icons within the 'Turquoise Coast' brand, but will require the development of a multiple-day value proposition to keep visitors in the area (rather than as day-trippers).

Figure 13.6 A whole-of-value chain approach to industry development

Source: Pracsys, 2012



Successfully developing an authentic value proposition will be critical in encouraging investment in demand-driven activities, such as quality and alternative accommodation provision.

Another opportunity for economic development focused on tourism will be the increased capture of expenditure from passing travellers. The key to this will be turning single transactions stops (e.g. getting fuel) into multiple transaction stops by continuing to improve the amenity and offer of the City Centre. This includes ensuring that attractions are accessible from Indian Ocean Drive, and that offerings that complement each other are configured in such a way as to encourage visitation. Future spatial planning and City Centre design aimed at activating and improving the amenity of the area is proposed to leverage this opportunity further.

A specific challenge for the continued development of the tourism industry within the Turquoise Coast as a whole, and Jurien Bay specifically, is the expansion of the multiple-day visitor market segment. The opening of Indian Ocean Drive has provided the region with a major opportunity to expand its tourism related offer but it has also made major attractions (such as the Pinnacles) a realistic and pleasant single day trip.

Developing a compelling reason for visitors to not only visit iconic sites, but to stay for a number of days is now critical to leverage the significant opportunity presented by the new road, and expanding this strategic industry as a whole.

The proposed industry development plan for the Jurien Bay and surrounds tourism offer proposes to focus specifically on multiple-day visitor market segments. This is due to the high flow-on benefits from these segments due to increased expenditure in the region through:

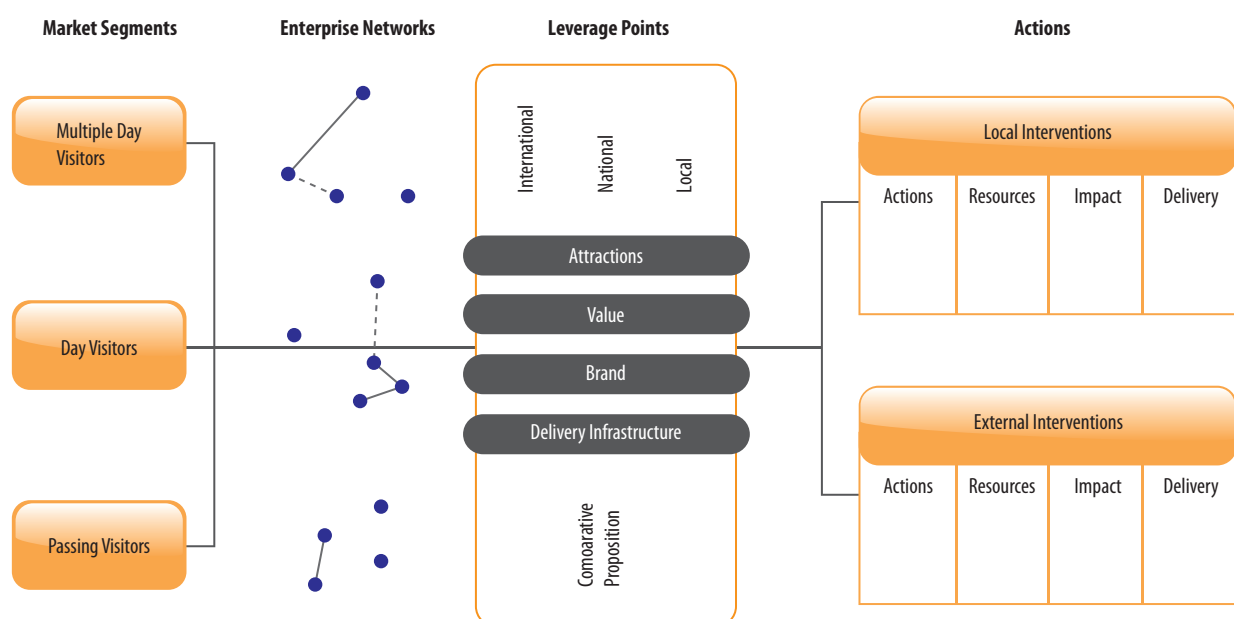
- Accommodation
- Secondary attractions
- Restaurants and entertainment
- Convenience and comparison retail offerings

The development plan will explore four main areas illustrated in Figure 13.7. These are:

- Market segments
- Enterprise networks
- Leverage points
- Actions

Figure 13.7 Elements of Development Plan for Tourism

Source: Pracsys, 2012



- **Market Segments:** Consideration of multiple day visitors to the Turquoise Coast and Jurien Bay should begin with a clear understanding of existing and potential user groups within this segment. Currently, Jurien Bay's value proposition has developed as a budget family holiday destination for regional visitors through the supply of caravan parks and reasonably priced holiday homes. As such these users dominate this segment of the market. A detailed study is required to understand the attributes of this group, and the potential for expansion. Other potential user groups should then be considered with the existing value proposition for the area compared to the major drivers for each group.

- **Enterprise Networks:** Map existing relationships between tourism industry operators within the Turquoise Coast (and Perth and other locations where relevant). These relationships will be measured based upon the strength of collaboration, and will identify existing cliques, and central coordinators. Opportunities for creation and strengthening of connections will be identified and explored. This process will occur through extensive consultation with industry representatives.

- **Leverage Points:** Identify potential leverage points in existing and future tourism industry structures around which interventions may be focused. These will likely be in the following areas:

- Attractions – Scale, quality and typology
- Value – Value proposition and price point
- Brand – Recognition, penetration and match to segmentation
- Delivery infrastructure – Drivers, adequacy and match to segmentation

- **Actions:** Identify key interventions required to increase visitation and expenditure capture from multiple day visitors. Build a case for public and private investment in these interventions through consideration of:

- Action – Scale, characteristics, goals
- Resources – Human and financial requirements for establishment and ongoing operations Identification of key stakeholder contributions required
- Impact – The effect of the action on the industry's value proposition for targeted market segments over a short, medium and long-term timeframe

- Delivery – Identification of governance and delivery mechanisms required to deliver an optimal outcome for any investment

13.3 Wellness

The Growth Plan outlines a blueprint for the growth of the area over the next 30+ years. Regional growth will be driven by economic diversification, but will be complemented by "lifestyle" factors that will continue to make Jurien Bay an attractive place to live.

The Growth Plan envisages the Perth metropolitan region in the future as a region with an expanded and increasingly congested city, and south western towns expanding to a point where their "rural" attractiveness to the economically mobile will become more limited.

The attractiveness of regional centres is in being able to offer an alternative to city living, whilst meeting the aspirations of the economically mobile, for the kinds of services, infrastructure and activities that will provide the right conditions to support population growth.

Jurien Bay is located within easy reach of the Perth metropolitan area, whilst being far enough away to offer an affordable, laidback, safe and healthy lifestyle to live, work, recreate and raise a family. Strategies have been identified that will develop this point of difference, and build on its strengths as a centre of "wellness".

The Jurien Bay SuperTown imagines the broad concept of wellness as a key theme of community and economic life encapsulated in the aspirational statement; 'Jurien Bay Australia's Healthiest Coastal Community'. This concept embraces, and in part describes, the attractive lifestyle available to those migrating to Jurien Bay and the natural coastal and marine setting.

The Jurien Bay community recognises the lifestyle benefits currently on offer from which to build. The marketing of "Wellness" will be expressed in family life, education, recreation, community services, aged care and health services. Wellness provides a comparative and competitive advantage that will distinguish Jurien Bay from alternate locations for people seeking to relocate and therefore is a significant factor in population growth. Given the small population and limited facilities currently available in Jurien Bay, there is significant opportunity to adopt an innovative approach to health and aged care service design to respond to current service demand.

Wellness will be realised through sustained efforts (leadership, plans, programs and infrastructure) that facilitate connectedness, active community engagement, and partnerships amongst community members and amongst community groups/clubs/churches and organisations that serve the community (e.g. health, education, community/family services, and aged care). When strong connections are evident there will be enhanced social, economic and environmental benefits for Jurien Bay.

The opportunity to realise the goal of wellness will be facilitated by:

- **Buy-in from Stakeholders:** It is critical that all levels of Government delivering services are involved in an integrated and consistent approach to wellness (contemporary policy supports this approach).
- **Social Cohesion:** A sustainable community with a balanced aged structure and a broad range of social and economic groupings. This requires facilities and programs that support equitable access to the services that are required within the Jurien Bay community for all ages and a broad range of social economic groupings. Social cohesion is supported by strong local leadership that facilitates community participation, the valued role of all community members across ages/ socioeconomic groups, volunteerism and access both physical and through an open/hospitable culture.
- **Innovation:** Priority projects have been identified that demonstrate innovation and the use of new technologies. Access to the National Broadband Network, and accompanying initiatives and infrastructure. Over time the delivery of health services will change significantly. The adoption of strategies that attract the National Broadband Network (IT Communications Centre) will facilitate significant educational and health impacts affecting all aspects of health care and aged care services. This early and comprehensive adoption of TeleHealth in this rural setting will change the way services are delivered. It will reduce costs and increase the capacity to reduce avoidable hospitalisation, improve the timeliness and accuracy of assessments and improve restorative and post operative care (general and geriatric). The comprehensive adoption of TeleHealth has been defined in the Growth Plan as 'Future Health'.
- **Capacity and skills:** The 'Future Health' and 'Wellness' approach to health and aged care (health promotion and preventative care) affords students an opportunity

to study a community wide approach and may attract universities to establish discrete programs for evaluation and fieldwork. The unique marine and coastal ecology of Jurien Bay and industries based on the ecology may also facilitate tertiary programs that support field studies. The aged and retirement communities will also be supported to participate in lifelong learning aided by access to the National Broadband Network and programs such as U3A.

- **Sense of place:** A sense of place is established and maintained through the quality of homes, public space, streetscapes, the maintenance of the natural environment, community facilities and building design/materials. A sense of place is also maintained and developed through a comprehensive and integrated plan.

The Growth Plan has identified priority infrastructure and other projects that will assist in the realisation of wellness that include:

- **Residential Care:** The development of residential care will facilitate ageing in place, family connection and the maintenance of the valued role of the elderly within Jurien Bay. It will act as a catalyst to the development of an aged specific community centre (senior citizens, limited rehab/allied health, social supports, café to be developed by RSL WA), and the rapid completion of the RSL WA retirement village is likely to attract other retirement living developments. This development will have a positive impact on the economy through, construction, employment and through maintaining older persons and their families in the community. Governance will be best managed directly by an Approved Provider of residential aged care. The residential care project will have two stages, Stage (1) the acquisition of crown land, the construction of an access road and the provision of services to the site and Stage (2), capital to assist in the cost of construction. Both stages will leverage other funding both private and Government.
- **IT Communications Centre:** The IT Communications Centre will support learning at all levels both formal and informal, and act as a catalyst to secure a National Broadband connection earlier than otherwise would be achieved. A formal partnership will be developed with the schools expanding their capability to access the best IT available. The IT Communications Centre will also support and act as a catalyst to the development and delivery of TeleHealth to be used by GPs, aged care and WACHS. It will also enhance

initiatives aimed at competency based training and tertiary outposts. The development of the IT Communications Centre will also act as leverage to other funding, and facilitate some activities that will be commercially sustained. The IT Communications Centre will contribute to the social and economic development of Jurien Bay.

- **Wellness Centre/Community Health Centre:** The Wellness Centre and Community Health Centre will have a key role in developing and delivering services that promote health (geriatric and general), reduce risk factors (including screening and immunisation), educate, facilitate social connections, engage the community in information provision and community education, facilitate and coordinate volunteerism in service delivery and provide meeting areas and exercise space. The Wellness Centre and Community Health Centre are best separated from the hospital and the GPs to promote a non medical emphasis (Wellness) and to maximise the concepts of community development and community connection (community hub principles). The Wellness and Community Health Centres will benefit from the NBN through enhanced video conferencing that could be used for a variety of support programs and training. The infrastructure and services will leverage multiple funding sources and programs. This infrastructure will be best served through a shared community facility governance model with WACHS or the Shire taking a lead role. The wellness centre will provide a focus and momentum that will help realise the goal of Jurien Bay: Australia's Healthiest Coastal Community.
- **Hospital Expansion and reconfiguration and GP Clinic:** The expansion and reconfiguration will include a GP clinic and will reduce current hospital congestion, enhance the working environment for the doctors, support visiting doctors, support the growth of the GP clinic as the population increases and support TeleHealth. TeleHealth will also be integrated into clinical services of the hospital. The hospital expansion also includes improvements such as the commissioning of two 23 hour observation beds in A&E, improved storage and staff amenities. The expansion will be coordinated with the Southern Inland Health Initiative, however it is contingent on the development of the Wellness and Community Health Centre to allow for some services delivered out of the current building to be moved from the hospital enabling the intended expansion/reconfiguration. The support of SIHI funding for this initiative will facilitate

some aspects of TeleHealth and be a strong catalyst to the 'Future Health' concept incorporated in 'Wellness'. WACHS, the Shire and the GPs will participate in the governance.

- **Planning, Facilitating and Evaluation Project:** The project will enable a clear focus to be maintained on the elements of 'Future Health', engage stakeholders and the community, unlock constraints to achieving the vision, utilise expert input to ensure leading practice is realised in health and aged care planning and development in Jurien Bay and its service catchment. It will also gather data longitudinal that will provide evidence to leverage benchmark and additional funding and programs for health and aged care service development. The relative unencumbered health service design and aged care services will facilitate unique opportunities to develop services and approaches that maximise 'Wellness' in the short, medium and long term.
- **Age Friendly City:** The Growth Plan and the wellness concepts will assist Jurien Bay to realise the goal of being an 'age friendly city'. These plans embody structures, services, the context and enablers that will assist older persons to actively age.

13.4 Natural Resources

All strategies will all be leveraged off the unique natural resources surrounding Jurien Bay, that are recognised nationally and internationally for their biodiversity and unique heritage values.

The ocean and surrounding hinterlands have historically provided resources for food production and even resource extraction, local employment opportunities and supporting population growth. Jurien Bay's future will be intimately connected to the natural resources of the region, making it a key component in planning for the future growth, the community and the economy as the aspirations of growth outlined within the Growth Plan are realised.

The marine and coastal environment of Jurien Bay and surrounds has a unique combination of offshore reefs, islands and sheltered lagoons which has traditionally been the focus of the Jurien Bay population as a source crayfish and fish for export and recreational capture. The Jurien Bay Marine Park has sought to protect the ecological values of the marine environment with approximately 82,000 ha of the coast and marine environment reserved. The ecological values of the Marine Park include:

- A complex seabed and coastal topography consisting of islands, sub-tidal and inter-tidal limestone reefs, protected inshore lagoons and deeper basins, beaches and headlands.
- Extensive and diverse perennial seagrass meadows are an important habitat and nursery area for marine life and are important primary producers.
- A rich finfish fauna, which includes an interesting mix of tropical, sub-tropical and temperate species.
- The Australian sea lion (*Neophoca cinerea*), which is endemic to Australia and specially protected under the WC Act, breeds on Buller and North Fisherman Islands and uses islands in the Jurien Bay region as haul-out sites.

Outside of the reserve area an active crayfishing and wildfish capture industry is based out of Jurien Bay and Cervantes. Jurien Bay's Western Rock Lobster fishing industry is part of an internationally significant supply chain, exporting to countries like Japan, China and the United States.

This industry has played a significant part in shaping the local economy and its population structure. In addition to direct employment, the industry contributes to employment in ancillary activities, including processing, transport, boat-building and repair, and public services (Hatch et al, 2011). Annual outputs from this industry vary due to seasonal conditions and other external factors such as fishing restrictions which have significantly reduced the number of people engaged in this industry. Although, the industry as a whole remains profitable and the fishery industry still has an important place in Jurien Bay, its role as a major employer is diminishing (Hatch et al, 2011).

The interface between the ocean and the land in Jurien Bay and surrounds ranges from pristine islands, to rugged headlands, to turquoise beaches. This environment includes the Lesueur National Park, Coomallo Nature Reserve and Nambung National Park, areas with exceptionally diverse flora, unique geology (the Pinnacles) and cultural heritage with evidence of Aboriginal occupation and early European exploration. The area's National Parks and reserves have long acted as attractors for visitors seeking to experience the unique coastal environment of the Turquoise Coast. Continued development of infrastructure to support tourism and conservation activities will see the reputation and visitation to the area continue to grow.

Squatter settlements are located on the coast at Wedge Point and Grey. Grey and Wedge have high recreational values

and Grey in particular is suited for recreation development. Activities here may support not only the development of local recreation activities, but act as an attractor for further tourism ventures and accommodation.

In 2003 the Water Corporation Infrastructure Planning Branch undertook a source and distribution planning study for the regional area between Jurien Bay and Cervantes. The comprehensive report identified there was sufficient potable water supply sources in the northern borefield to adequately service a township of 20,000 people. The Water Corporation also identified that there were sufficient areas (expansion of the southern borefield towards Cervantes) should climate change continue to reduce rainfall. Both borefields will require protection in the form of gazetted water reserves. Understanding of the availability of ground water to support agriculture and industrial growth will require further in depth study.

Agricultural activities occurring within Jurien Bay's immediate hinterland are typified by broad acre agriculture, with the growing of crops, pastures and livestock. Further inland a range of more intense activities exist including the establishment of intense horticulture, tree farms, poultry, ostrich, goat, and marron farming, and piggeries. Such industries often require significant private capital investment and access to adequate power supplies (Hatch et al, 2011). The opportunity to leverage available land for intense agricultural activities will continue to be a critical component in supporting the envisaged growth of Jurien Bay.

The Jurien Bay area's wind and solar resources have been recognised as an area of significant potential for future affordable sustainable low carbon energy. The utilisation of this resource is occurring through a number of wind farms, with the resultant power an input into both specific activities (such as horticulture), as well as feeding into the general grid. This source of energy has great potential in the future to act as an input for a range of future growth initiatives.

13.5 Capacity

Increasing capacity is essential if its potential is to be unlocked. The capacity of existing service infrastructure and community infrastructure will need to meet the new demands of a rapidly growing population. Immediate investment in new, and upgraded, capacity will bring long term benefits such as economic development, technological currency, environmental sustainability and community development.

The Growth Plan has an aspirational target population of up to 20,000. The ability to deliver such a population reflects the existence of a single major landowner that has been working for many years together with the Shire to make this a reality. The infrastructure authorities generally adopt an 'as needs' approach to infrastructure, and look to prospective land developers for capital contribution where system augmentation is required to support new developments. For the major areas of expansion it can be expected that the major landowner will work with the relevant authorities to ensure that sufficient infrastructure is in place as this land is developed.

Within the City Centre opportunities for growth are hindered by a lack of capacity of existing power and sewer reticulation. The opportunities for growth are significant under the City Centre Strategy Plan and provide for intensive forms of commercial and residential development including more diversity in housing. The lack of capacity is clearly a detractor for new development, and the promise of subsequent growth. Lack of deep sewerage in the City Centre and limited power supply capacity for the town generally, has impacted on development costs, and slowed development. Consequently, telecommunications in the region have also not had the impetus for upgrade to meet potential new demand. In combination these capacity shortfalls have impacted on growth in the region, and suggest the need for a quantum change to capacity, in order to kick start growth.

The provision of community infrastructure is also essential to meet the population's needs for services, school and health facilities, and programmes aimed at supporting a healthy lifestyle. The Jurien Bay community has identified shortfalls in community services, together with opportunities to unlock constraints and build capacity for the future.

The Growth Plan identifies targeted priority interventions for hard and soft infrastructure that can be undertaken to overcome these constraints, boost capacity and accelerate growth.

13.5.1 Hard Infrastructure Projects

Priority projects to address servicing constraints propose the development of a pumping station, pressure main, and associated infill sewerage reticulation in the City Centre. The resulting increases in development will, in turn, provide an increased contributions base for the Water Corporation, thus increasing the financial viability of the deep sewerage project.

Western Power has advised there is limited power capacity

(33KV) remaining and any future provision of additional power will most likely be on a "user pays" system, which will restrict future expansion as the capital cost is excessive for most single developers. The principal options available to Western Power to augment the power supply are:

- New 33kV aerial power line from Greenhead to Jurien Bay
- New 33kV aerial power line from Eneabba to Jurien Bay

13.5.2 Community Infrastructure Projects

The Growth Plan identifies a number of community infrastructure projects housed within the Visitor and Civic Precinct. A concept plan for the Visitor and Civic Precinct project has been prepared that proposes an iconic community complex, housing the following centres of activity;

- **IT and Communications Centre (ITCC):** The ITCC project is the keystone of the Visitor and Civic Precinct re-development providing the mobilisation capability for other projects like the TIC, CRC the Arts and Culture Centre and the Training Centre. Rather than a mere incubator, it will be a facilitator for business to business development, distance learning, and Telehealth. It connects Jurien Bay to metropolitan Australia, engendering population growth through wider business, education and health opportunities.
- **Tourist Information Centre (TIC):** The TIC project supports the driver project of developing tourism. It anticipates a state-of the art building featuring digital display screens, Interactive kiosks, local artwork and comprehensive information on what to see and do whilst in the region. Visitors to the centre can plan their stay in the region and pre-book accommodation for the region, and for other locations throughout WA. It will leverage the technology and video connectivity of the ITCC to allow TIC staff to speak face to face with prospective visitors and travel organisations from anywhere in Australia and beyond.
- **Community Resource Centre (CRC):** This important community project will transfer all the facilities of the existing CRC into the new complex, and provides state of the art library facilities, café, crèche and a meeting room for not-for-profit groups. It will leverage the technology and video connectivity of the ITCC to provide an enhanced experience for visitors, local students and businesses. CRC staff will be re-trained to provide in-house support for the CRC and all other ITCC facilities.

- **Government & Enterprise Office space (GEO):** This project proposes that the new complex includes increased office space for Government departments, Shire and visiting officers/experts, e.g. DEC, Fisheries, WDC. There will also be additional office capacity, which leverages the technology and video connectivity of the ITCC, to facilitate Australian metropolitan government agencies/corporate entities using the GEO as a testbed for staging and mobilisation of special projects and branch office development initiatives. The GEO is intended to engage and up-skill the local workforce and connect it to a wider labour market.
- **Arts and Culture Centre (ACC):** The ACC project is an extension of the TIC and features an exhibition space, audio/visual staging for small presentations and performances, and displays of public and local artwork. It will have vaulted ceilings for hanging artwork, and large stacking doors and tall windows invite natural light. It will display works from regional galleries on a rotating basis. It will leverage the technology and video connectivity of the ITCC.
- **Education and Workforce Training Centre (EWTC):** The EWTC project proposes a centre of excellence for the education of local students and regional industry. It is a commitment to, and investment in, a local workforce. It will offer industry skills development using various delivery modes including face-to-face workshops, e-learning and simulation. It will leverage the technology and video connectivity of the ITCC to connect to local and nationally registered Training Organisations who will deliver courses that lead to nationally-recognised qualifications.

Partnerships are anticipated with universities to develop and deliver customised graduate certificate and masters programs. The EWTC will provide school-day access to selected training rooms for the delivery of courses that would otherwise be unavailable to local schools. Connectivity to the NBN through the ITCC will ensure face to face interactivity with other teachers, students, advisors and schools throughout Australia.

All capacity building strategies will require participation from various corporate and government agencies such as the Water Corporation, Western Power, NBNCo and Telstra. They have been developed through appropriate consultation with each entity, in the context of their current planning programs. The participation of other agencies does present some risk

to delivery timeframes, but ongoing and close collaboration with those agencies, together with coordinated project management will mitigate that risk.

13.5.3 Thresholds and Staging for Infrastructure Provision

The timely provision of infrastructure is critical to facilitate growth. The population thresholds and requirements for community and service infrastructure to support the Growth Plan are set out in Section 8 - Community and Section 10 - Infrastructure respectively.

The population thresholds and the related staging for delivery of infrastructure are set out in Tables 13.2 – 13.6 and they are referenced where relevant to the Spatial Growth Plan. It should be acknowledged that the certainty of thresholds, details and location for the provision of infrastructure will be less reliable in respect to longer term scenarios.

Standards, infrastructure delivery and spatial elements and staging of the Growth Plan will inevitably change over time. In addition investigation of requirements that are not known at this time need to be undertaken. These factors all need to be considered and highlight the importance of the ongoing monitoring and review of both infrastructure provision and the Spatial Growth Plan.

It is also important to acknowledge that the referencing of infrastructure to the Spatial Growth Plan is subject to detailed planning through Outline Development Plans and similar processes. This detailed planning will determine the appropriate locations and site area requirements through a process of negotiation and agreement between the Shire, private landowners and relevant Government agencies (where applicable) as part of the planning process.

Table 13.1 sets out the assumptions that have been made in relation to the staging of the Spatial Growth Plan in relation to key population thresholds. There are a range of variables which will affect the relationship between staging and population thresholds, including changes to current factors such as the high percentage of vacant residential lots and low rates of permanent occupancy of dwellings. It is reasonable to expect that as Jurien Bay evolves from a coastal settlement with a high percentage of holiday homes to a regional city that these current characteristics will change significantly. More details including plans illustrating staging are contained in the Spatial Growth Plan.

Table 13.1 Development Staging Assumptions for Population Thresholds

Area Description	2,500 population	5,000 population	10,000 population	20,000 population
North Head	Stage 1	Stages 1 & 2	Stages 1 - 4	Stages 1 - 5
City Centre and Townsite ¹	10% of additional residential development potential	30% of additional residential development potential	50% of additional residential development potential	70% of additional residential development potential
Turquoise Coast	Development Plan Areas 1 – 3	Development Plan Areas 1- 3, & 50% of 4	Development Plan Areas 1 -5	Development Plan Areas 1 - 8

¹ Residential areas excluding Turquoise Coast Structure Plan area

Table 13.2 Additional Community Infrastructure Requirements at Population of 2,500

Community Facility or Service	Required site area (ha)	Additional Requirement @ 2,500	Staging in Spatial Growth Plan
Community Facilities			
Child Care	0.1	1	Commercial or residential premises
Health			
Dentist	0.05	1	To be accommodated in first stage of Care construction of Residential Aged Care within Health Precinct adjacent the City Centre
Child Health Centre	0.5	1	
Residential Aged Care – High Care (beds)	0.4	67	
Residential Aged Care – Low Care (beds)	0.4	67	
Community Care (places)	20m ² / 30 places	25m ²	
HACC (Persons)	20m ² / 200 persons	30m ²	
Local Active Recreation			
Hockey	0.3	1	Expansion of existing Community Recreation & Sports area

Table 13.3 Additional Community Infrastructure Requirements at Population of 5,000

Community Facility or Service	Required site area (ha)	Additional Requirement @ 5,000	Staging in Spatial Growth Plan
Community Facilities			
Playgroup Centres	0.1	1	Future stage of concept plan for Community Uses Precinct in City Centre
Child Care	0.1	2	Commercial or residential premises
Health			
Doctor	0.05	4	Commercial premises
Dentist	0.05	1	Commercial premises
Child Health Centre	0.5	1	Site to be identified in Development Plan Area 4 or 5 of Turquoise Coast project
Residential Aged Care – High Care (beds)	0.4	12	To be accommodated in future stage of construction of Residential Aged Care within Health Precinct adjacent the City Centre
Residential Aged Care – Low Care (beds)	0.4	12	
HACC (Persons)	20m²/ 200 persons	15m²	
Local Active Recreation			
Football/Cricket	3.2	1	Sporting field area to be identified in open space area between Development Plan Areas 1 & 4 in Turquoise Coast project
Hockey	0.3	1	
Basketball	0.1	1	Expansion within existing Community Recreation & Sports area
Bowls (greens)	0.2	1	Expansion within existing Community Recreation & Sports area
Police (officers)			
	0.5	5	Future stage of Community or Civic Uses Precincts in City Centre

Table 13.4 Additional Community Infrastructure Requirements at Population of 10,000

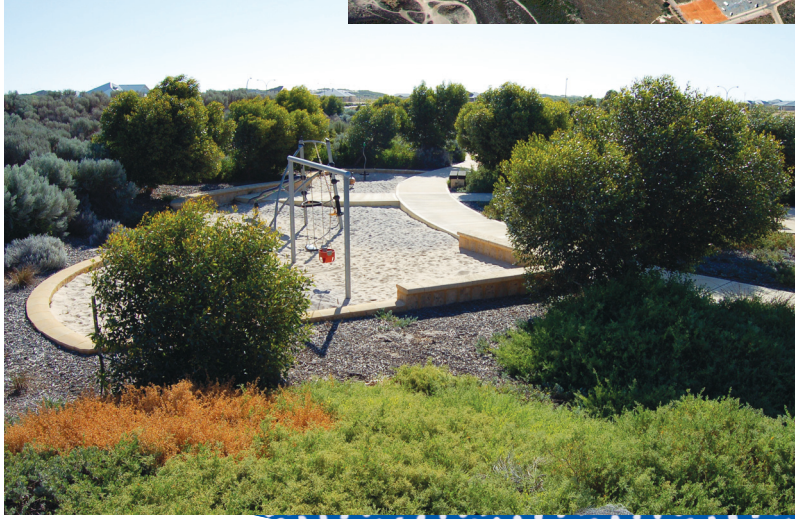
Community Facility or Service	Required site area (ha)	Additional Requirement @ 10,000	Staging in Spatial Growth Plan
Education			
Pre-School	0.25	1	Community purpose site to be identified in Development Plan Area 4 or 5 of Turquoise Coast project
Primary School (Public)	3.5	1	Primary School site already created within Development Plan 1 of Turquoise Coast project
Community Facilities			
Playgroup Centres	0.1	1	Community purpose site to be identified in Development Plan Area 4 or 5 of Turquoise Coast project
Child Care	0.1	4	Commercial or residential premises
Employment Services/Job Networks	0.1	1	Future stage of concept plan for Civic Uses Precinct or Community Uses Precinct in City Centre
Senior Citizens’ Centre	0.5	1	Community purpose site to be identified in Development Plan Area 5 (Booka Valley centre) of Turquoise Coast project
Health			
Doctor	0.05	4	Commercial premises
Dentist	0.05	2	Commercial premises
Child Health Centre	0.5	1	Community purpose site to be identified in Development Plan Area 4 or 5 of Turquoise Coast project
Hospital (beds)	3	3	To be accommodated in future stage of cconcept plan for Health Precinct adjacent the City Centre
Residential Aged Care – High Care (beds)	0.4	23	To be accommodated in future stage of construction of Residential Aged Care within Health Precinct adjacent the City Centre
Residential Aged Care – Low Care (beds)	0.4	23	
HACC (Persons)	20m²/ 200 persons	30m²	To be accommodated in first stage of concept plan for Health Precinct adjacent the City Centre
Local Active Recreation			
Football/Cricket	3.2	2	Sporting field areas and recreation sites to be identified in open space area between Development Plan Areas 1 & 4 and/ or Development Plan Area (Booka Valley centre) of Turquoise Coast project
Soccer	1.2	1	
Hockey	0.3	1	
Tennis/Netball	0.1	8	
Basketball	0.1	5	
Bowls (greens)	0.2	2	
Squash	0.1	2	
Police (officers)			
	0.5	13	Future stage of Community or Civic Uses Precincts in City Centre

Table 13.5 Additional Service Infrastructure Requirements at Population of 10,000

Service Infrastructure Requirement	Additional Requirement @ 10,000	Staging in Spatial Growth Plan
Sewer reticulation	New waste water treatment plant at about 15,000	Site already identified south east of the existing townsite
Water supply	New reservoir at 10,000	To be accommodated outside boundary of Spatial Growth Plan area
Power supply	Installation of a 132kV power line	Power line alignments to be within road/ public reserves and future substation site already identified in Development Plan Area 3 of Turquoise Coast project
Road network	Construction of Indian Ocean Drive link (bypass) at about 10,000	Alignment already identified east of Coalseam Road Industrial Area

Table 13.6 Additional Community Infrastructure Requirements at Population of 20,000

Community Facility or Service	Required site area (ha)	Additional Requirement @ 20,000	Staging in Spatial Growth Plan
Education			
Pre-School	0.25	3	Community purpose site to be identified in Development Plan Areas 5 -8 of Turquoise Coast project
Primary School (Public)	3.5	1	Sites identified in Development Plans Areas 4,5,7 & 8 of Turquoise Coast project
Full High School (Public)	8	1	Site area of existing District High School to be expanded as part of Development Plan 2 of Turquoise Coast project @ about 5,000 population. Second High School site identified in Development Plan Area 6 of Turquoise Coast project
Primary School (Private)	4	1	To be determined – possible acquisition of site within Turquoise Coast project
Community Facilities			
Playgroup Centres	0.1	1	Community purpose site to be identified in Development Plan Area 5 of Turquoise Coast project
Child Care	0.1	8	Commercial or residential premises
Youth Centre	0.2	1	Community purpose sites to be identified in Development Plan Area 5 of Turquoise Coast project
Employment Services/Job Networks	0.1	1	
Senior Citizens’ Centre	0.5	2	Community purpose sites to be identified in Development Plan Areas 5-8 of Turquoise Coast project
Neighbourhood Centre/Hall	0.5	2	
Churches			
Uniting	0.5	1	Two sites currently vested in churches within Community Uses Precinct in City Centre
Health			
Doctor	0.05	10	Commercial premises
Dentist	0.05	4	Commercial premises
Child Health Centre	0.5	2	Community purpose sites to be identified in Development Plan Areas 5-8 of Turquoise Coast project
Community Health Centre	1	1	
Hospital (beds)	3	6	To be accommodated in future stage of concept plan for Health Precinct adjacent the City Centre
Residential Aged Care – High Care (beds)	0.4	46	To be accommodated in future stage of construction of Residential Aged Care within Health Precinct adjacent the City Centre
Residential Aged Care – Low Care (beds)	0.4	46	
Community Care (places)	20m²/ 30 places	25m²	To be included in Community Health Centre in Development Stages 5-8 of Turquoise Coast project
HACC (Persons)	20m²/ 200 persons	60m²	
Local Active Recreation			
Football/Cricket	3.2	4	Sporting field areas and recreation sites to be identified in open space area between Development Plan Areas 7 & 8 and/ or Development Plan Area 5 (Booka Valley centre) of Turquoise Coast project
Rugby League	1.6	1	
Soccer	1.2	2	
Hockey	0.3	4	
Tennis/Netball	0.1	16	
Basketball	0.1	10	
Squash	0.1	4	
Swimming Pool	1	1	Expansion within existing Community Recreation & Sports area in Bashford Street; or within Booka Valley centre; or sporting field areas and recreation sites to be identified in Turquoise Coast project
Police (officers)			
	0.5	25	Future stage of Community or Civic Uses Precincts in City Centre



14 Spatial Growth Plan

14 Spatial Growth Plan

14.1 Introduction

The Spatial Growth Plan is a critical component of the overall Growth Plan as it facilitates the spatial requirements for the range and scale of land uses, movement network and both hard and soft infrastructure to ensure that Jurien Bay develops as a regional city, as it moves towards a population of 20,000. Importantly it must also ensure that development is sustainable and infrastructure requirements are met progressively on a staged basis.

The Spatial Growth Plan study area includes existing and approved future urban areas within and adjacent the Jurien

Bay townsite. The study area boundary is formed by Indian Ocean Drive to the east, Hill River to the south and the northern boundary of the proposed North Head project.

The Spatial Growth Plan has been prepared to respond to the key issues highlighted in the context and analysis and reflect the key spatial elements of the Integrated Strategy. This includes the 'capacity' requirements set out in the Integrated Strategy related to both hard and soft infrastructure to ensure that there are no impediments to growth.

The key elements of the Spatial Growth Plan are set out below and illustrated in Figures 14.1 and 14.2.

Legend - Growth Plan - City Centre

1. Civic Precinct (~1.7ha)

The area has capacity for additional accommodation for state and local government services.

2. Community Uses Precinct (~2.2ha)

This area comprises a number of crown reserves and Unallocated Crown Land which has the potential to accommodate range of community uses. A concept plan is required to ensure that the value of this land for community uses is maximised.

3. Civic Precinct - Police Station (~5,200 m²)

Planning is required to determine future police services for the region.

4. Unallocated Crown Land – Seaward Drive (~5.8ha)

This area is strategically located near the City Centre and opposite the Community Recreation Centre and should be assessed to determine appropriate land uses.

5. Tourism Site – Casuarina Crescent (~4.4ha)

This vacant site provides opportunity for a major tourism development adjacent to the foreshore.

6. Tourism Site – Casuarina Crescent (~1.6ha)

This area of unallocated Crown land provides opportunity for a major tourism development adjacent to the foreshore.

7. Tourism Site – Roberts Street (~2.2 ha)

This vacant site provides opportunity for a major tourism development adjacent to the foreshore.

8. District High School – Hamersley Street

The expansion of the site is provided for as part of the Turquoise Coast structure plan.

9. Future Primary School – York Street

A new primary school site is provided for as part of the Turquoise Coast structure plan.

10. Health Precinct – Whitfield Road (~1.8ha)

The site has capacity for expansion of the existing Health Centre as part of the Health Precinct.

11. Health Precinct – Whitfield Road (~9.5 ha)

This area presents a significant opportunity to develop for an integrated mix of uses related to health, aged care and community wellness.

A concept plan is required to ensure that the value of this land for community uses is maximised.

12. Proposed Sewer Pump Station

A site is required generally in this location to service the unsewered areas within the City Centre.

13. City Centre

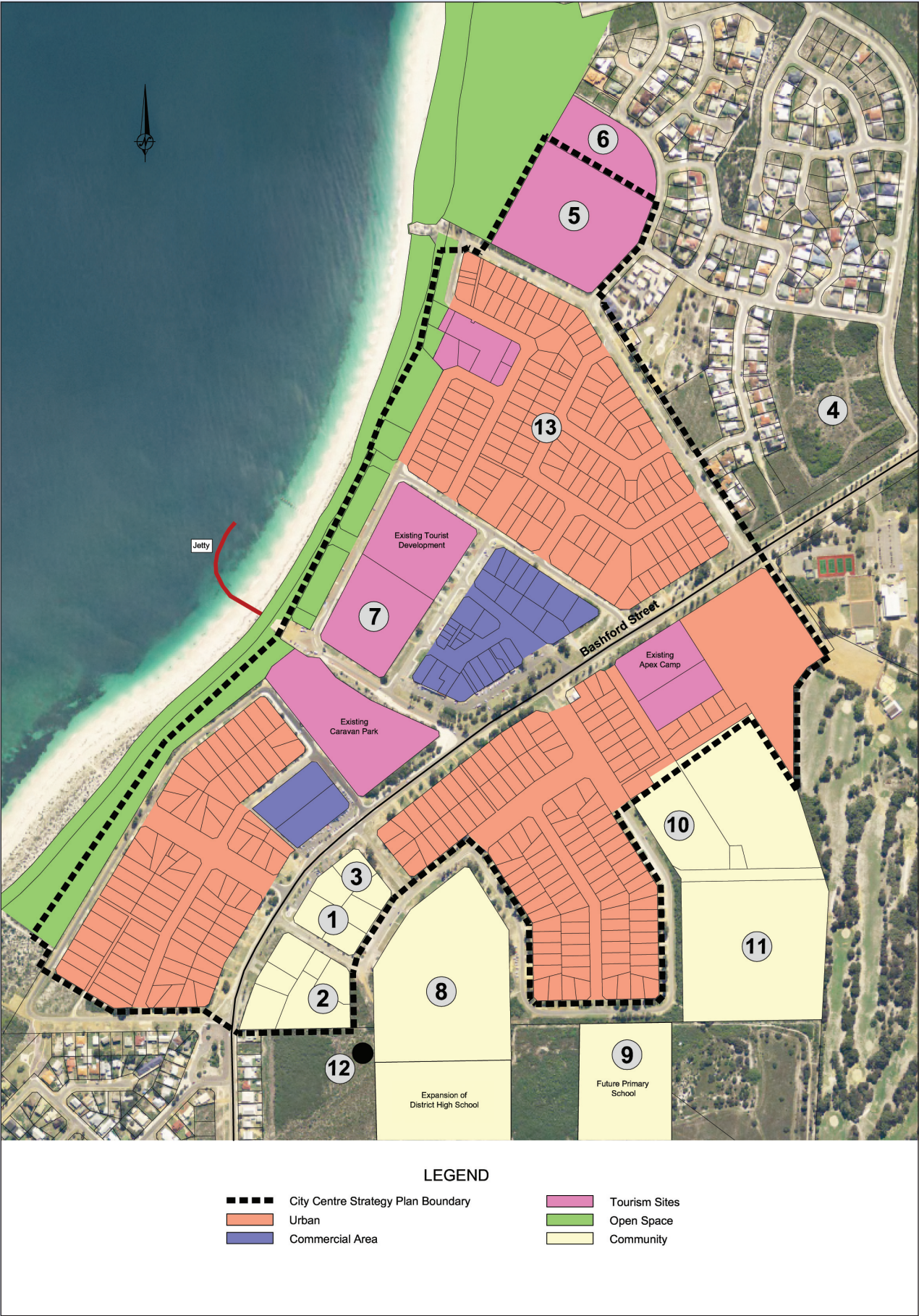
The City Centre will provide facilities and services to the city and the region building on its existing role. Uses will include: government services, retail, commercial uses, community facilities and services, tourism, recreation, mixed use and residential development.

Summary of Estimated Ultimate Development Yield for Key Land Uses

Land Use	Current provision	Ultimate Development Yield	Potential Population
Retail	4,800 m ² nla (approx.)	14,000 m ² nla	
Office & Other Commercial	3,800 m ² nla (approx.)	11,000 m ² nla	
Residential			
• Single houses & grouped dwellings	350	680	1,360
• Multiple dwellings	0	590	1,180
Totals	350	1,270	2,540
Tourism accommodation units	145*	390	

* Excludes Caravan Park and Apex Camp

Figure 14.1 Growth Plan – City Centre



Legend - Growth Plan

14. Other Residential Areas

There are two established residential areas outside of the boundaries of the City Centre and the boundaries of the Turquoise Coast and North Head Structure Plans.

Area Description	Existing Lots	Potential Population
North of Hasting Street	223	513
South of Lindsay Street	465	1070
Totals	688	1,580

15. Unallocated Crown Land north east of Boat Harbour

This land provides the opportunity to consolidate the urban area in the north of the townsite. It should be developed with an appropriate land use mix to support the City Centre and increased use and development of the Boat Harbour.

Detailed assessment is required in relation to native title, environmental values and infrastructure issues as part of consideration of land use and development options.

16. Boat Harbour

The Boat Harbour is an underutilised infrastructure asset with significant potential to accommodate a range of uses including recreation, tourism and marine based industry.

17. Light Industrial Area, Carmella Street

This area is substantially developed and expansion is not proposed as there are other areas identified for future industry.

18. Industrial Area, Coalseam Road (~110ha)

There are 27 lots most of which are developed and 2 stages planned for expansion to provide an additional 45 lots. Assessment regarding native title, environmental assessment and infrastructure is required for future stages.

19. Airport

The airport is used for general aviation, recreation and emergency services. The capacity for additional traffic and potential land use planning constraints requires investigation. Action has been initiated to evaluate alternative sites for an airport to serve the region.

20. Future Waste Water Treatment Plant

This site has been selected for an additional WWTP to service future urban development.

21. Future Substation Site

This sub station site has been identified as part of the infrastructure required to upgrade power supply for future urban development.

22. Future District Centre

The Booka Valley Centre will be developed as a mixed use area including retail and commercial development, tourism accommodation and residential uses.

23. Pedestrian Cycleway Network

The flat terrain and centralised community uses and facilities provide the basis for the network including recreational links through open space with connections to the foreshore.

24. Future Indian Ocean Drive link

An alignment has been established to enable the construction of the link based on the vehicle capacity limits of Bashford Street through the City Centre. It is estimated that this would be required when the population reaches about 10,000.

25. Community Recreation and Sports Area

The area has capacity for expansion to accommodate a range of community and recreational facilities and services.

26. Foreshore

The future management and development of the foreshore reserves needs to ensure that opportunities for tourism and recreational use are optimised.

27. Turquoise Coast Industrial Area

This industrial area provides for industrial uses in addition to composite lots (mixed residential and industrial)

28. Future Public Transport System

The primary and district distributor road network will provide the basis for a future public transport system. This road network would generally provide access within 400metres or a 5 minute walk from most urban areas with the exception of North Head.

29. Wastewater Treatment Plant (WWTP)

The WWTP has some capacity to accommodate further urban development.

30. Turquoise Coast

An approved structure plan guides the development of this area and provides for significant areas to be set aside for conservation and recreation purposes.

Stages Development Plan Area	Residential Lots*	Potential Population*	Other Uses	
1	1300	2,990	200 tourist beds Local commercial	Primary School
2	1050	2,415	200 caravan sites 150 tourist beds Local Commercial	Primary School Part High School
3	75	172	50 tourist beds General Commercial Composite lots 14.1452ha	Light Industry 9.4883ha General Industry 20.2950ha Special Use Site 2.8905ha
4	2000	4,600	General Commercial Primary School	Local Commercial 100 caravan sites
5	Not defined	-	Medium density residential District Centre 400 tourist beds	Primary School Institutional uses
6	1600	3,680	High School	Local commercial
7	1800	4,140	Primary School Local Commercial	300 tourist beds
8	1300	2,990	Primary School Local Commercial	100 tourist beds 200 caravan sites
Totals	7825+	18,000+		

*Lot and population estimates do not account for medium density residential lots and development which will be included in more detailed Outline Development Plans over time and will include a significant medium density component in Development Area 5.

31. North Head

An approved structure plan guides the development of this area and provides for two thirds of the site to protect dune ridges and natural vegetation. It is expected that the stages will be developed in 3 year intervals.

Area Description	Residential Lots	Potential Population
South Head	390	448
The Valley	155	177
North Head	225	257
Pumpkin Hollow	620	713
Beekeepers	835	947
Total	2215	2540

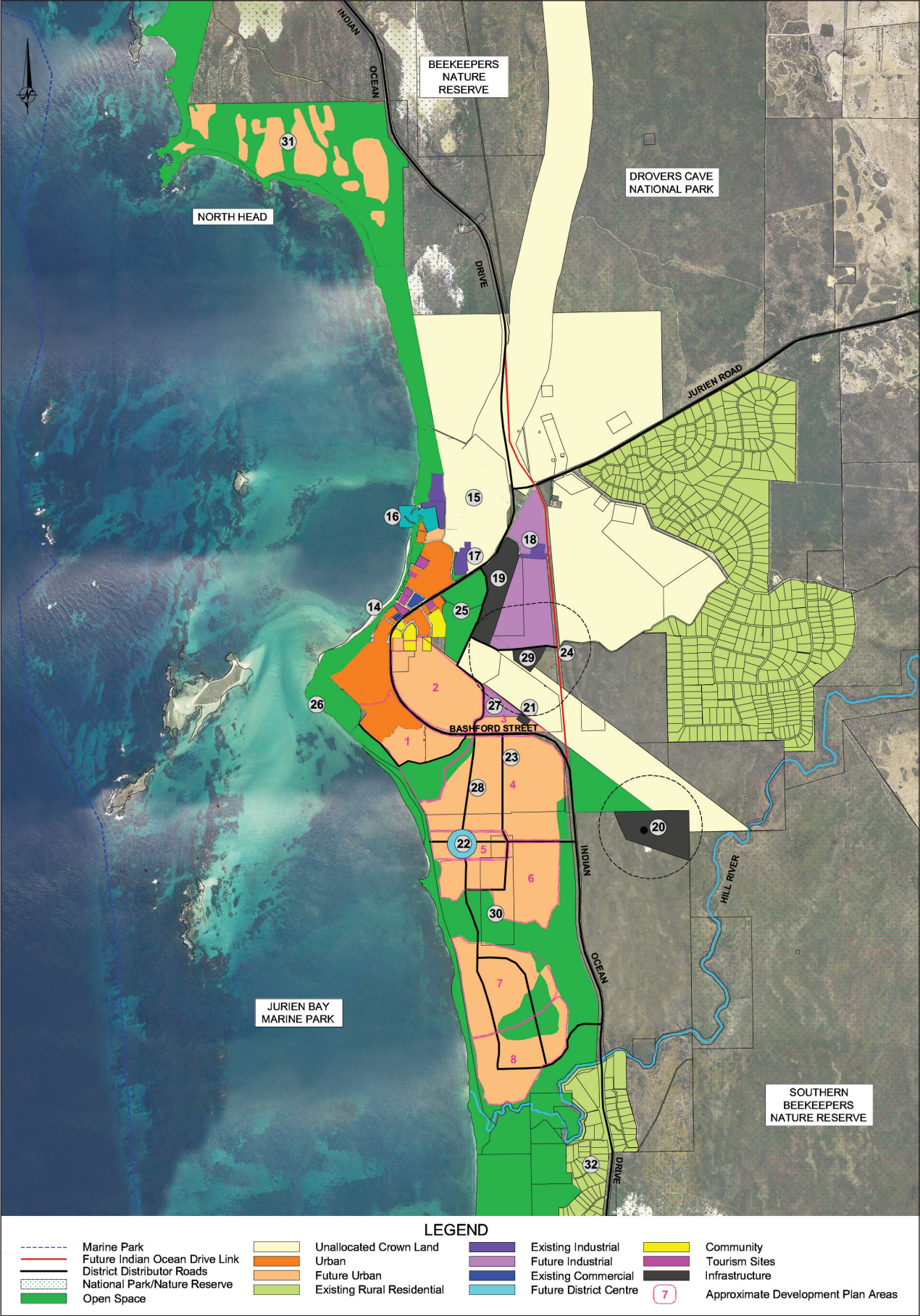
*Assuming 50% of dwellings permanently occupied

Other Uses		
Tourism	550 tourist rooms in 3 areas	Community Hub

32. Rural Residential

Existing and future rural residential areas support and utilise services and facilities provided in Jurien Bay.

Figure 14.2 Growth Plan – Jurien Bay



14.2 Movement and Connectivity

14.2.1 Roads

Indian Ocean Drive forms part of the regional road network and is the primary road for the existing and proposed urban areas. Construction of the Indian Ocean Drive bypass will be triggered by traffic volumes on Bashford Street, which notionally has the capacity for 20,000 vehicles per day as a two lane road. That vehicle capacity would equate to a population of about 10,000 people.

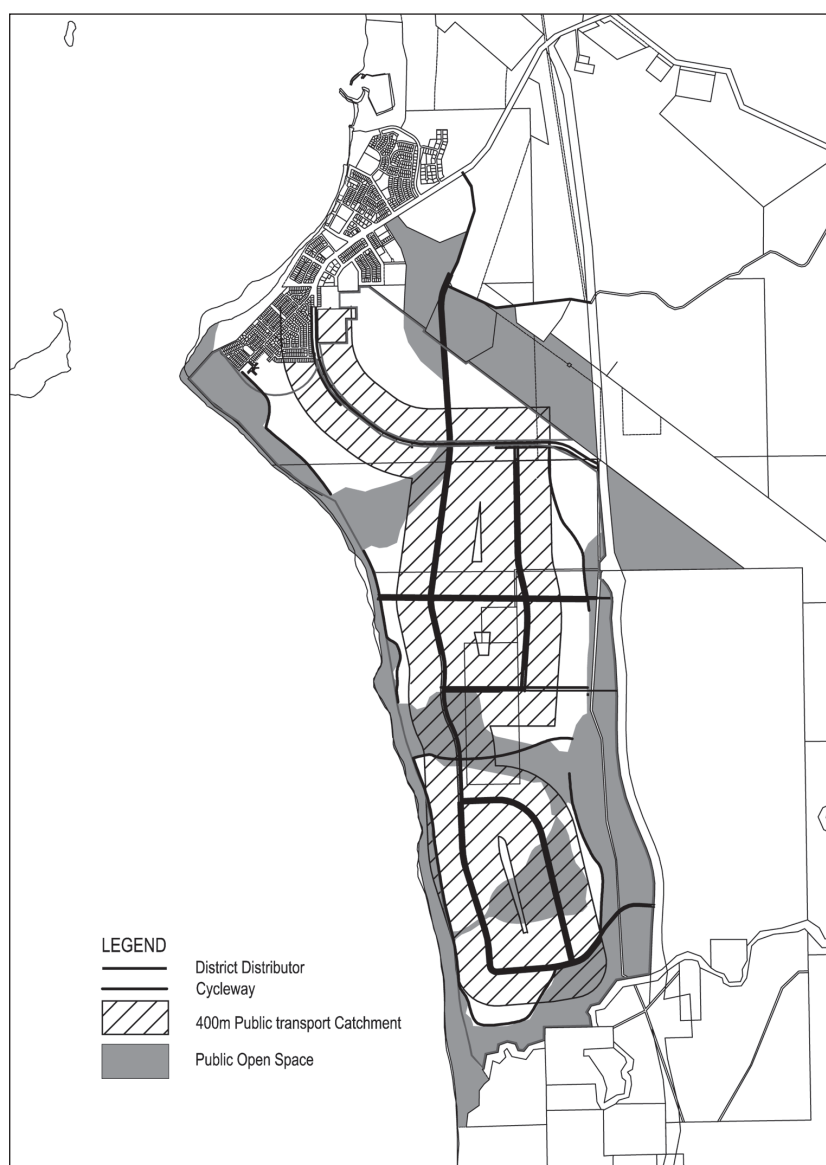
Within the City Centre, Bashford Street will remain the primary road with modifications to the treatments to existing intersections from Lindsay Street in the south to Seaward Drive in the north, as recommended in the City Centre Strategy Plan. The road pattern within the City Centre reflects the importance of a number of key streets connecting Bashford Street to the foreshore particularly White, Roberts and Doust Streets. On the opposite side of Bashford Street, Whitfield Road and Bayliss Street provide important links to existing and proposed community facilities as well as connections with the Turquoise Coast urban area. The recommended design for Bashford Street is based upon a two lane road with a wide landscaped median incorporating a swale drain, provision for dual use paths, landscaping, underground power, lighting and streetscape elements.

The Turquoise Coast Structure Plan district distributor road system includes a future road link which parallels the coast and extends north along the western edge of the airport reconnecting with Bashford Street east of the golf course and recreation area. The system also includes three east west connections to Indian Ocean Drive and two north south connections with Bashford Street.

In the northern part of the existing townsite, Seaward Drive performs a distributor road function for access to the Boat Harbour and to the Carmella Street industrial area. It also provides road frontage to unallocated Crown land between the industrial area and Harbour Precinct and will logically form part of the distributor road and public transport network. There are local roads which provide access from Bashford Street to the golf course and recreation area, the airport and the industrial areas. Jurien Road intersects with Indian Ocean Drive north east of the townsite, providing access to rural smallholdings and the rural hinterland.

Figure 14.3 Turquoise Coast Structure Plan Bus Routes and Cycleways

Source: MGA Town Planners, 2003



14.2.2 Public Transport

The primary and district distributor road system will provide the basis for a bus public transport system. The network proposed for the Turquoise Coast area is indicated on Figure 14.3 and will generally provide access within 400metres or a 5 minute walk from adjacent urban areas.

The dispersed pattern of development within the urban area and the settlements in the hinterland emphasise the need for public transport to connect communities, particularly the nearby community of Cervantes. The trigger and mechanism for developing a public transport system requires investigation. The existing school bus system operated by the Public Transport Authority may provide an option for consideration.

14.2.3 Pedestrian Cycle Network

A pedestrian cycle route is constructed along the foreshore from the Boat Harbour to Island Point, about 2km south of the jetty. The City Centre Strategy Plan proposes a primary pedestrian cycle route along both sides of Bashford Street and with a connection between Bashford Street and the foreshore along Roberts Street. The primary route is also proposed to extend along Whitfield Road connecting the City Centre with the Turquoise Coast urban area.

Within the Turquoise Coast urban area, the primary pedestrian cycle will follow the distributor roads, the coastline, the Hill River foreshore reserve and major open spaces.

14.3 Residential

Land currently zoned for future residential development will accommodate in excess of 20,000 people.

14.3.1 North of Hastings Street

This area includes residential land between Hasting Street and Seaward Drive which was Crown land subdivided around the time the Boat Harbour was constructed.

This land is predominantly coded R12.5 with lot sizes averaging about 800 m² and developed with relatively large single dwellings. There are 61 vacant lots providing the opportunity for additional development.

Given the number of vacant lots and the location, some consideration should be given to increased density on at least some lots or groups of lots. This will be examined as part of the Coastal Settlement Strategy. There is a group of lots at the south west corner of the Boat Harbour which are coded R30

with an average lot size of about 400m² and 52 are vacant providing an opportunity for additional development.

14.3.2 City Centre

There are three residential key areas defined in the City Centre Strategy Plan and there is opportunity to almost double the number of existing dwellings from 350 to 680 dwellings, based on the recommendations of the Strategy Plan.

Doust to Hasting Street

This area contains predominantly older single houses and some tourist accommodation. The predominant lot size is approximately 800m² and most of the lots are unsewered. The City Centre Strategy Plan proposes mixed used zoning along Bashford Street, Doust Street and Heaton Street given the interface with non residential uses and the opportunity to provide increased density and different housing forms. The mixed use density proposes a coding of R80. The balance of the residential sites are to be recoded from R12.5 to R25, which would in most cases permit two dwelling units on sites which can currently only accommodate a single house, on the basis of sewer being provided to these sites.

White to Lindsay Street

The area south of White Street to Lindsay Street includes older residential houses on large lots with a predominant lot size of about 1200m² and the area is unsewered.

There are a number of large mature trees through this area. The City Centre Strategy Plan proposes mixed use office residential development on Cook Street between Padbury Street and Bashford Street, to reflect existing additional use provisions in the Town Planning Scheme. In addition mixed use development is proposed along White Street and also Padbury Street (between Cook Street and White Street) to allow tourism and/or residential development at an increased density of R80. The balance of the residential area is proposed to be recoded from R12.5 to R25 which would permit three grouped dwellings on most sites, on the basis of sewer being provided to these sites.

East of Bashford Street

The area includes the small established residential area between the District High School and the Health Centre. This area contains older style houses and there are a significant number of large mature trees. The area is unsewered. The City Centre Strategy Plan proposes mixed use development for lots along Bashford Street with the balance of the residential area

to be recoded from R12.5 to R25. The average lot size is in the order of 900m² which will allow for two grouped dwelling on sites which can currently only accommodate a single house, on the basis of sewer being provided to these sites.

The location of this relatively small area will become increasingly important as Jurien Bay develops, given its location within the City Centre and adjacent to the District High School, Health Centre and other existing and future community facilities and services.

14.3.3 South of Lindsay Street

The area south of Lindsay Street to an area near Dryandra Boulevard forms part of the Ardross Estates development subdivided prior to the preparation and approval of the Turquoise Coast Structure Plan. This area is coded R12.5, is unsewered and there are 49 vacant lots.

Subdivided land further to the south forms part of the Turquoise Coast Structure Plan and provides for smaller sewerred lots and is based on better urban water management principles. In addition design guidelines relating to building design and materials and landscaping within street setbacks reflect a form of development and streetscapes that is sympathetic to the coastal setting.

14.3.4 Future Residential

Turquoise Coast

The Turquoise Coast Structure Plan includes land at the southern end of the Jurien Bay townsite to Hill River west of Indian Ocean Drive. The total area comprises about 2,000ha and can accommodate a residential lot yield in the order of 9,000 lots within defined Development Plan areas.

Table 14.1 Turquoise Coast - Development Plan Area Stages

Source: Ardross Estates, 2012

Stages	Residential Lots	Other Uses	
Development Plan 1	1300 lots	200 tourist beds Local commercial	Primary School
Development Plan 2	1050 lots	200 caravan sites 150 tourist beds Local Commercial	Primary School Part High School
Development Plan 3	75 lots	50 tourist beds General Commercial Composite lots 14.1452ha	Light Industry 9.4883ha General Industry 20.2950ha Special Use Site 2.8905ha
Development Plan 4	2000 lots	General Commercial Primary School	Local Commercial 100 caravan sites
Development Plan 5		Medium density residential District Centre 400 tourist beds	Primary School Institutional uses
Development Plan 6	1600 lots	High School	Local commercial
Development Plan 7	1800 lots	Primary School Local Commercial	300 tourist beds
Development Plan 8	1300 lots	Primary School Local Commercial	100 tourist beds 200 caravan sites

Development undertaken to date has occurred in Development Plan Area 1 with about 620 lots created of which about 80% are vacant. Development Plan Area 2 on the north eastern side of Bashford Street accommodates the expansion of the District High School site and the creation of a new separate primary school site. The residential coding in Area 1 is a combination of R15 and R20 providing for single house lots. Area 2 proposes a range of residential codes including R20 and R30 as well as a large area of R100 adjacent a proposed lagoon feature. These codings together with a designated aged residential village site will provide for a range of housing types and specialised housing.

The Outline Development Plan for Area 2 identifies Whitfield Road and Hamersley Street as Distributor Roads supporting Bashford Street by providing additional connections between the future residential areas, the City Centre, community and recreation facilities. Whitfield Road and Hamersley Street will be important links for the pedestrian and cycleway network given the location of community and commercial attractors adjacent to these roads.

North Head

The North Head site comprises 650ha to be developed as residential/tourism precincts with an estimated yield of 2,215 single residential lots, based on staged development.

14.3.5 Staging

The Turquoise Coast Structure Plan and the North Head Structure Plan are large projects which involve staged development. Figure 14.4 and Table 14.1 illustrate the staging details for the Turquoise Coast project.

Figure 14.4 Turquoise Coast Development Plan Areas

Source: MGA Planners, 2012

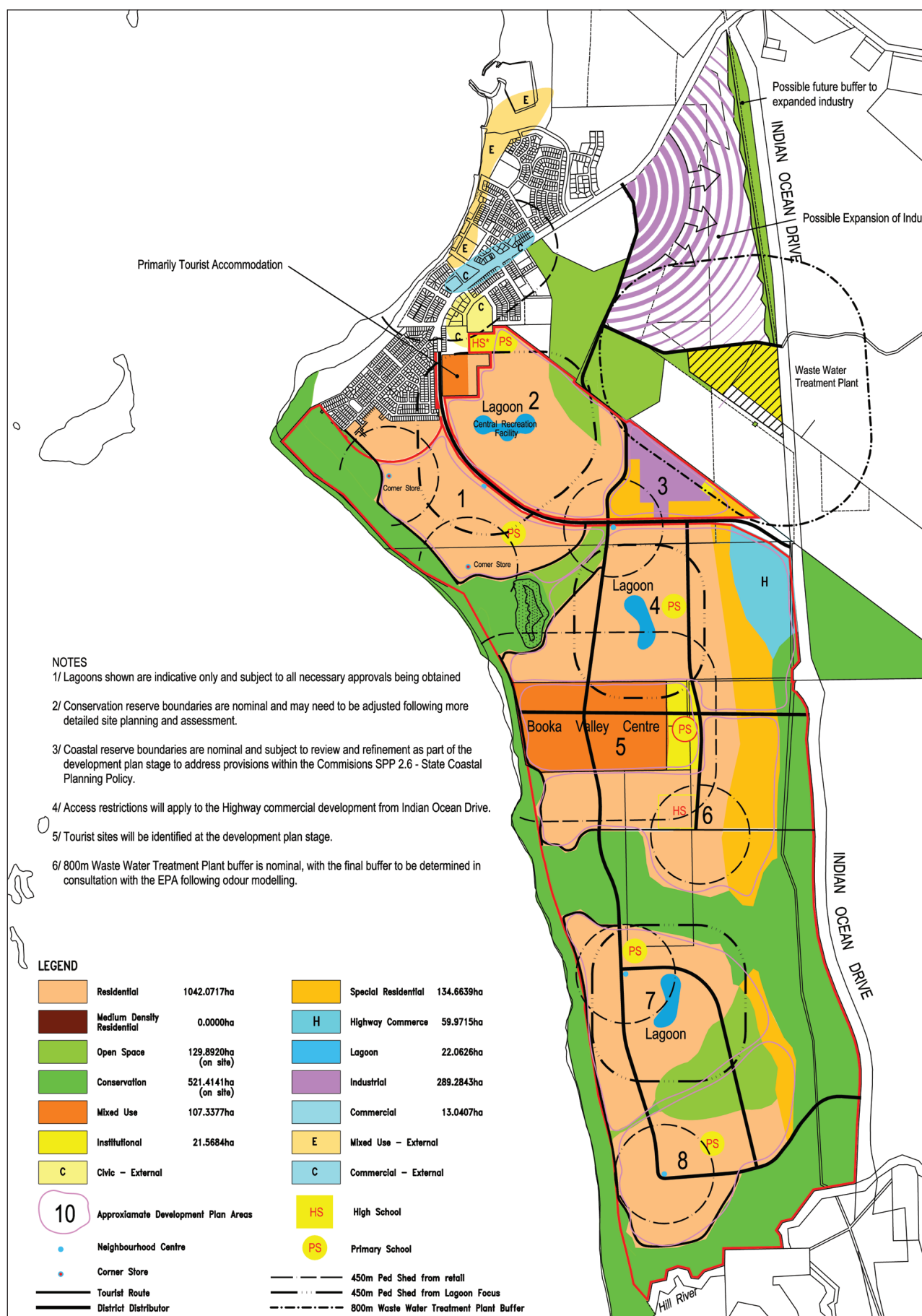
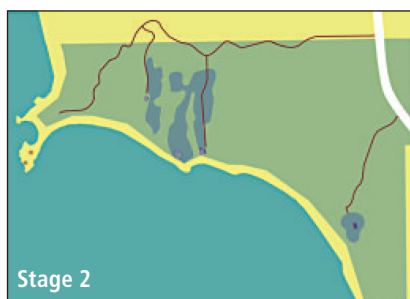
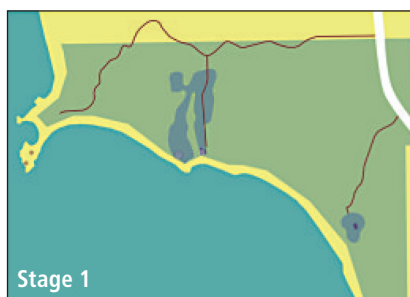


Table 14.2 and Figure 14.5 illustrate the staging details for the North Head project.

Figure 14.5 North Head Structure Plan Stages

Source: Roberts Day, 2007



14.4 Activity Centres

Activity Centres are community focal points. They include activities such as commercial, retail, higher density housing, entertainment, tourism, civic/community, higher education, and medical services. Activity centres vary in size and diversity and are design to be well serviced by public transport.

(WAPC State Planning Policy 4.2. August 2010)

A hierarchy of activity centres will provide levels of commercial and community facilities and services appropriate for their respective catchments. It is important to have a clear strategy to ensure that the role of the City Centre is reinforced and not undermined by other proposed centres and commercial areas. For instance the Turquoise Coast Structure Plan proposes 50 ha of land for highway commercial purposes designated where Indian Ocean Drive currently deviates into Bashford Street to be developed for "wholesale trades".

Approved structure plans for Turquoise Coast and North Head and studies for the Boat Harbour recognise the City Centre as the primary centre to serve the region. This matter will be considered in the Coastal Settlement Strategy for the area between Cervantes to the northern boundary of the Shire.

14.4.1 City Centre

The City Centre has a critical role to play in providing the key government and community services for the City and the wider region. In addition it has an important role in providing significant retail and commercial uses and tourism accommodation as well as diversity in housing types. This combination of roles highlights the need for a more intensive development form and a public realm that will provide a high level of function and amenity.

Table 14.2 North Head Structure Plan Stages

Source: Roberts Day, 2007

Stages	Residential Lots
South Head	390
The Valley	155
North Head	225
Pumpkin Hollow	620
Beekeepers	835
Total	2215

Other Uses	Details
Tourism	550 tourist rooms in 3 areas
Community Hub	

Figure 14.1 illustrates some of the basic elements proposed for the City Centre area. A more detailed explanation and illustration of the proposals are set out in the City Centre Strategy Plan section of the Growth Plan.

The analysis undertaken by Pracsys in relation to demand for retail and office floor space based on population thresholds is shown in Table 14.3.

A summary of the development yields for key land uses as proposed in the City Centre Strategy Plan is set out in Table 14.4.

14.4.2 District Centre

The proposed Booka Valley Centre is located about 3.5 km. south of the City Centre. The Turquoise Coast Structure Plan identifies the Jurien Bay City Centre as the 'Regional Centre' and Booka Valley as a 'District Centre'. It is envisaged that the Booka Valley Centre would accommodate tourist accommodation, commercial development and residential uses.

The analysis undertaken for Turquoise Coast of demand suggests "up to 40,000m² of retail floor space may ultimately

be required with a substantial proportion of this potentially being added to the existing town centre." The Structure Plan suggests that retail floor space within the Turquoise Coast Development may ultimately be as much as 30,000m².

Importantly the implementation section of the Structure Plan refers to the staged development of Booka Valley and states "... development as a mixed use area incorporating a district centre will have to be staged to reflect population growth. Development of this centre is unlikely to be justified until Jurien Bay's population approaches 12,500 persons."

The timing and staging of the development of the Booka Valley Centre needs to be considered in the context of the capacity and staged development of retail and commercial floor space within the City Centre. This is both to ensure that the long term viability of the commercial role of the City Centre is not compromised, but also that there is no lag in the provision of retail and commercial floor space to serve the demands of the regional population.

Table 14.3 Projected Population Driven Demand for Floor Space (net lettable area)

Source: HHES 2009/2010 and Pracsys Analysis 2011

Population	1,173	2,500	5,000	10,000	20,000
Convenience Retail	833	1,782	3,580	7,192	14,448
Comparison Retail	1,370	2,932	5,889	11,830	23,766
Population-Driven Office	565	1,210	2,431	4,883	9,810

Table 14.4 Summary of Estimated Ultimate Development Yield for Key Land Uses

Source: HHES 2009/2010 and Pracsys Analysis 2011

Land Use	Current provision	Ultimate Development Yield
Retail	4,800 m ² nla (approx.)	14,000 m ² nla
Office & Other Commercial	3,800 m ² nla (approx.)	11,000 m ² nla
Residential		
• Single houses & grouped dwellings	350	680
• Multiple dwellings	0	590
Total dwellings	350	1,270
Tourism accommodation units	145*	390

* Excludes Caravan Park and Apex Camp

14.4.3 Local Centres

The City Centre and District Centre will be supplemented by a number of smaller 'Neighbourhood Centres' within walking distance of their residential catchments.

It is anticipated that there would be a number of centres developed in the Turquoise Coast urban areas as indicated on the Turquoise Coast Structure Plan.

The North Head Structure Plan proposes that commercial facilities in the North Head proposal would be limited to those that service the day to day needs of residents and tourists with other needs provided by the City Centre.

14.5 Community Uses

Community facilities and services have generally been developed on Crown land. The potential location for additional community services and facilities is discussed in the City Centre Strategy Plan. A number of key areas are identified including the Civic Uses Precinct which has an area of about 1.7 ha. This area can build on the existing Council Administration Centre and Family Resource Centre to include accommodation for Local and State Government facilities and services.

There is an area of about 2.2ha of unallocated Crown land and Crown reserves located on the corner of Bashford and Bayliss Streets which has the potential to accommodate additional services and facilities opposite the existing Council Administration Centre.

Other areas earmarked for key government facilities and services include the extension of the District High School and a primary school site (as indicated on Outline Development Plan 2A - Turquoise Coast Structure Plan).

An area of over 9 ha of unallocated Crown Land adjacent to the existing Health Centre provides an important opportunity for expanded health and aged care facilities and services for the region. In addition to the major community facilities, local community services and facilities are proposed as part of the Turquoise Coast and North Head projects.

All of the areas of unallocated Crown land need to be secured for public/community purposes which will involve seeking approvals relating to native title.

14.6 Open Space

The natural setting for Jurien Bay is made up of a combination of unique marine and terrestrial national parks and nature reserves. The natural environment provides considerable potential for private recreation and tourism.

Conservation

The coastal foreshore is a significant conservation area extending from North Head to Hill River. In addition to a portion of the Beekeepers Nature Reserve west of Indian Ocean Drive there are areas identified within the structure plans for both Turquoise Coast and North Head to protect features and areas of high conservation value. These conservation areas form part of a connected network providing opportunities to experience the unique environment while enjoying other leisure or day to day activities.

Active

Jurien Bay's major recreation facilities are concentrated on the area of open space with frontage to Bashford Street adjacent to the RSL Lifestyle Village and east of the Health Centre. The recreation area has capacity for further expansion of facilities and integration with the adjoining community uses. Horse riding and karts have also established in locations on the outskirts of the existing urban area. The Boat Harbour provides an additional location for recreational activity.

Passive

Areas of passive open space present significant opportunities to improve the quality of public spaces and streetscape character. Public spaces and streets should reflect the coastal setting using street trees, native and indigenous vegetation types to reduce the impact of heat and wind.

Open spaces also have the significant ability to influence and create a sense of place. There are small parks located throughout the urban area for community use. The development of linkages between parks, public places, streetscapes and activity centres can assist in bringing elements together to create a sense of place.

14.7 Tourism

Jurien Bay's attractive natural and physical environment established the popularity of the town and the region as a holiday and leisure destination. Current tourism sites are concentrated in the City Centre on sites with high amenity and close proximity to the foreshore. Tourism has the potential to become increasingly important in the future but can be subject to pressure from other land use activities which have less financial risk. The Shire of Dandaragan Draft Local Tourism Planning Strategy identified the need to retain tourist zoned sites.

Key tourism sites in Jurien Bay include:

- The Caravan Park is a key tourism accommodation facility within Jurien Bay in a prime location being directly on the beach and in the City centre. The caravan park site is a Crown land title vested for the specific purpose of a caravan park, with power to lease for a maximum period of 21 years. The current lease of the caravan park site runs until October 2027 and the sub lease for the café runs to June 2011 with two five year options.

There is the opportunity in the future development of the caravan park to focus some commercial element of the use on the portion of the site on the corner of Bashford and Roberts Street, to provide some activation of the Bashford Street frontage of the site. In the long term if the vesting is lifted, the land use options for the site should be reviewed. Redevelopment of the site should acknowledge both the tourism value of the site and its potential to connect the commercial areas along Bashford Street.

- The large vacant tourist on the corner of Heaton and Roberts Streets, which has an approval in principle for a major tourism accommodation development in conjunction with residential and other commercial uses.
- Two adjoining sites at the intersection of Casuarina Crescent and Hasting Street adjacent to the foreshore. These are large areas of land in prime locations adjacent to Memorial Park on the coast.
- The Boat Harbour has a vacant tourism site on the southern end of the Harbour. Land in the Harbour Precinct is substantially underutilised and there is significant potential for tourism development in this area.
- The Apex Camp on Bashford Street opposite Doust Street is an important community based tourism facility. Apex is currently investigating options for redevelopment of the site on the basis of it maintaining a community based element but increasing the financial viability of the facility.

In addition to the City Centre and Harbour Precinct, there are other substantial tourism projects proposed in the Turquoise Coast and North Head projects.

Currently it is considered that Jurien Bay is adequately supplied with affordable accommodation but lacks high quality and branded short stay accommodation. The Turquoise Coast Structure Plan proposes 1,400 tourist beds and 500 caravan park sites and the North Head proposal comprises 550 tourist rooms (located in three strategic areas set aside for tourism uses). However an additional site for a caravan park should be considered as part of the assessment of areas of Crown land to ensure that an adequate supply of this form of accommodation is provided in the future.

14.8 Industry

There are substantial areas of land available for future industrial development. The Coalseam Road Industrial area is located south east of Bashford and east of the airport on unallocated Crown land. The total zoned area for industrial development in this area including the existing developed area is approximately 110ha.

Matters that need to be addressed to enable future expansion of the Coalseam Road Industrial Area are the need for:

- Native title clearance
- Environmental assessment
- Extension of services

The Carmella Street light industrial area has access from Bashford Street and Seaward Drive. The potential for expansion of this area is constrained by the proximity of the City Centre and the potential for development of the land adjacent to the Boat Harbour for residential and tourist development. There are landscape buffers along Seaward Drive and Bashford Street. Any future development to the north or east would need to provide similar buffers.

In addition to the Carmella Street and Coalseam Road areas there are substantial areas identified for marine industry in the Harbour Precinct.

The Turquoise Coast Structure Plan provides for 46 composite industrial residential lots adjacent to Bashford Street and 24 lots proposed for light industrial purposes located at the rear of the composite industrial lots, abutting the waste water treatment plant buffer.

14.9 Infrastructure

Airport

The airport provides for existing demands including recreational use including skydiving and scenic flights and emergency services including Royal Flying Doctor Service and water bombing associated with fire fighting.

The airport is situated in close proximity to established and future urban areas. As aircraft activity increases there is potential for noise issues to arise. The Council is pursuing a study under the Regional Airports Development Scheme to consider alternative sites for developing a Regional Airport.

Boat Harbour

The Boat Harbour is a strategic infrastructure asset with significant potential to contribute to the development of Jurien Bay. The Boat Harbour has a broad range of community benefits eg. recreation, tourism, commercial and industrial development and is a fully integrated boat harbour with land backed facilities.

The Boat Harbour is an underutilised infrastructure asset. Various assessments of development options for the land have recognised the potential for a range of uses including housing, resort, retail, recreation and marine industry.

Wastewater, Drainage and Power

The Growth Plan identifies the importance of extending sewer through the City Centre area, much of which is currently unsewered. This would facilitate both new development and intensification of currently underdeveloped sites. This would require the installation of a new sewer pump station and associated reticulation.

The existing wastewater treatment plant and associated 500m buffer are located south east of the airport. An additional Wastewater Treatment Plant site has been identified with the capacity to accommodate future development.

There is limited drainage within the City Centre area and upgrading of roads and public places should be accompanied by drainage facilities based on better urban water management principles.

A sub station site has been identified to support upgrading of power supplies which is dependent on infrastructure works outside of the immediate Jurien Bay area.

14.10 Areas for Further Investigation

There are four particular areas of unallocated Crown land that require further investigation. These significantly located sites could play an important role in the future development of the regional city. Matters that may need to be addressed to enable development of these areas include:

- Native title clearance for unallocated Crown land
- Environmental assessment
- Provision of services

Whitfield Road

There is a large area of crown land between Whitfield Road and the golf course which is undeveloped except for the Health Centre. This area includes undeveloped land with frontage to Ackland Street (unconstructed) extending from Bashford Street.

This area combined with the Council Administration Centre and other government offices establishes a large and significant centralised community services area for the regional city. The Growth Plan identifies this land as a Health Precinct to provide a range of services to serve the region. This area would be a focal point for the pedestrian and cycleway networks and public transport.

Bayliss Street

The area described as the Community Uses Precinct in the City Centre Strategy Plan comprises unallocated Crown land and a number of Crown Reserves with various vesting arrangements, with a combined area of about 2.2ha.

The City Centre Strategy Plan proposes a development concept of buildings in a parkland setting with connected vehicle and pedestrian access, providing efficiency of shared parking areas. A key part of this concept is the creation of a public space at the corner of Bashford and Bayliss Streets, with community buildings set around this space. The Strategy Plan recommends that concepts be discussed with stakeholders to progress future planning for this area.

The intention is to provide an attractive meeting place for formal and informal gatherings of the community in an alternative location to the foreshore or the sport and recreation area. The area has the potential to attract activity and use as a result of its proximity to the Council Administration Centre, District High School, the Family Resource Centre, CWA and other community uses which will develop over time.

This area can provide a significant grouping of community buildings set around a key public space as part of the Bashford Street entry into the City Centre.

East of Harbour Drive and Seaward Drive

There is a significant area of unallocated Crown land east of the existing Boat Harbour at the northern end of the townsite. This area is relatively close to the City Centre and provides an opportunity for consolidation of the urban area based on a consideration of an appropriate land use mix to support the City Centre and improve the utilisation of the Boat Harbour.

Investigation of the area is recommended to determine environmental issues and potential infrastructure issues, as the basis for the development of options and integration of the movement network.

Seaward Drive and Aquilla Street

The vacant land bounded by Bashford Street, Seaward Drive, Whitlock Loop and Aquilla Street has an area of about 5.8 ha and is not subdivided. This land is well located adjacent to established residential areas, close to the City Centre, the foreshore and adjacent to Bashford Street. This land is unallocated Crown land and would be subject to native title processes before it could be developed. The zoning of this land should be reviewed as part of the preparation of the Coastal Planning Strategy, given its strategic location and proximity to the City Centre.





15 City Centre Strategy Plan

15 City Centre Strategy Plan

15.1 Introduction

The Jurien Bay City Centre Strategy Plan was prepared during 2011- 12 with the principal aim to establish a clear direction for the future planning, development and management of the broader Jurien Bay city centre. The Strategy Plan was considered in the context of the Growth Plan February 2012, recognising the future role of Jurien Bay as a regional city.

The City Centre has a critical role to play in providing the key government and community services for the City and the wider region. In addition it has an important role in providing significant retail and commercial uses and tourism accommodation as well as diversity in housing types. This combination of roles highlights the need for a more intensive development form and a public realm that will provide a high level of function and amenity.

15.2 Process

The main steps undertaken for the project were as follows:

1. Literature Review
2. Site Investigation
3. Public Consultation/Workshops
4. Preparation of the Draft Strategy Plan
5. Public Comment and Review
6. Consideration of Comments and Review in the Context of the Jurien Bay Growth Plan – February 2012
7. Preparation of the Final Strategy Plan

The project was guided by a Steering Group comprising the following membership:

- Shire of Dandaragan – Councillors (Chairperson) and officers
- Department of Planning
- Tourism Western Australia
- Department of Conservation and Environment
- Jurien Bay Chamber of Commerce
- Jurien Bay Rate Payers Association
- Local Indigenous/Native Title Group

- Central West Senior Citizens Association
- Jurien Bay District High School P & C
- Jurien Bay Community Member

15.3 Consultation

Public consultation for the Strategy Plan has included stakeholder consultation and two workshops. In addition, workshops were undertaken by school staff with students from years 8-12 of the Jurien Bay District High School.

Workshop One was attended by about seventy members of the public including landowners, the business community, Councillors and the broader community. The purpose was to:

- Present background and technical information on the purpose and key objectives of the strategy.
- Ask questions about existing and future opportunities and constraints.

Twenty four participants were involved in Workshop Two and the purpose was to:

- Present initial concepts and ideas for the strategy from Workshop One.
- Review key objectives discussed in Workshop One.
- Work in groups on the evolving plans.

Table 15.1 outlines the key outcomes and issues derived from the two public workshops, the workshops with students and discussions with stakeholders. The Future Characteristics of Jurien Bay were taken from the main themes from Workshop One.

15.4 Land Use

15.4.1 Government Services and Community Uses

Crown reserves in the superblock bounded by Bashford, Batt, Hamersley and Bayliss Streets, have a combined area of about 1.7 ha and provide opportunities for development to expand the range of local and state government facilities and services. Development should be based on the preparation of a concept plan to accommodate staging. Of the 1.7 ha the Shire has use of 1.2 ha and the Police 5200m².

In addition, a group of Crown reserves in the area bounded by Bashford, Bayliss and Hamersley Streets and an area of unallocated Crown land, with a combined area of about 2.2 ha, provides opportunities for a range of community uses. 3,500 m² has been developed with the CWA facility and the

Fire Station, 8,000 m² has been set aside for two churches, 3,000 m² is vested in the Shire and 7,700m² is unallocated Crown land. It is important that the unallocated Crown land is secured for public purposes and a concept plan is prepared to accommodate staged development of this area.

Table 15.1 Key Outcomes and Issues from Public Workshops

Future Characteristics of Jurien Bay	Key Outcomes and Issues
1 A consolidated town centre	<ol style="list-style-type: none"> 1. Generally consolidate and intensify commercial uses within the core area bounded by Bashford, Roberts Heaton and Doust Streets. 2. Consider some peripheral mixed use development around the core area. 3. Strengthen the connections between Bashford Street and the foreshore along Roberts and Doust Streets to bring the beach, bay, coast and wind into the town centre. 4. Identify a community space within the core area.
2 Unique town character and urban style	<ol style="list-style-type: none"> 1. Identify building styles and character for the town centre. 2. Identify building styles and character for public buildings and spaces. 3. Investigate designs for Bashford Street to create a sense of arrival. 4. Consider appropriate building heights and forms including the potential location of landmark buildings and features. 5. Consider the function and form of open spaces including streets, public open space and the foreshore as part of establishing the character of the town centre.
3 A seaside community that is relaxed, vibrant, inviting and fun.	<ol style="list-style-type: none"> 1. Provide for significant tourist development including accommodation, attractions and services. 2. Consolidate and intensify the community/civic precinct in the area generally bounded by Bashford, Batt, Hammersley Streets and the southern boundary of the town centre study area, and have regard to the adjacent District High School.
4 Sustainable community	<ol style="list-style-type: none"> 1. Encourage a diverse range of housing types. 2. Encourage a diverse range of commercial uses. 3. Consider a land use mix that will facilitate employment growth. 4. Maintain opportunities for tourism on key sites. 5. Ensure that the community/civic precinct can accommodate important services and facilities. 6. Recognise the relationships and importance of education and health as key activities adjacent to the town centre.
5 Improved and maintained natural environment	<ol style="list-style-type: none"> 1. Protect and enhance the natural values of the foreshore. 2. Ensuring that development on or adjacent to the foreshore is sympathetic to the natural attributes. 3. Recognise the value of important vegetation and in particular mature trees in creating the character of the town centre. 4. Adopt efficient water use and management principles as the basis for development and maintenance of public spaces including streets and parks.
6 Safe attractive open spaces with activities for adults and children	<ol style="list-style-type: none"> 1. Identify a landscaping theme and character for public spaces including streets and parks. 2. Consider the function of structures and landscaping in responding to climate including the need to provide shade and protection from wind. 3. Consider the creation and/or development of public spaces that will facilitate activities for adults and children.
7 Improved transport and accessways	<ol style="list-style-type: none"> 1. Develop a clearly defined movement network for vehicles, bicycles and pedestrians having regard to Jurien Bay's future role as a regional centre. 2. Ensure that the design of streets including the provision of pedestrian/cycle movements, parking and landscaping is responsive to the adjoining land uses and the function of the street. 3. Ensure that the design of Bashford Street integrates rather than divides land uses on either side. 4. Ensure that Bashford Street is designed to contribute to the character of the town centre and provides better amenity and safety for users.
8 Increased diversity in residential and tourist development	<ol style="list-style-type: none"> 1. Consider opportunities for increased density and incentives for more diverse and specialised forms of housing. 2. Provide for a range of tourist accommodation through the retention of key sites and mechanisms to facilitate a range of accommodation forms e.g. bed and breakfast, serviced apartments. 3. Consider different housing types and building forms to provide a wider housing choice.
9 Improved infrastructure	<ol style="list-style-type: none"> 1. Identify requirements for essential services to accommodate future development.

Concept planning for the above two areas should ideally occur at the same time with the involvement of all stakeholders, to achieve the best outcome in terms of the mix and relationship of uses on each of the sites and to ensure an integrated development of the sites.

There is an area of Crown land extending between Bashford Street (from Lot 419 and Lot 438 - Apex Club site) and the lot housing the Jurien Bay Health Centre. Previous proposals have suggested the subdivision of this land into 15 residential lots including the creation of two new streets (Ackland and Whitburn Streets). Given that the land is in Crown ownership it is considered that the future use and development of this land should be reviewed as part of an overall concept plan for the adjacent Jurien Bay Health Centre and Health Precinct in Whitfield Road.

Immediately outside the boundaries of the City Centre, sites for key government facilities and services are identified. Expansion of the District High School into separate sites for a primary and high school is accommodated in the approved Outline Development Plan 2A as part of the Turquoise Coast Structure Plan. An area of over 9 ha of unallocated Crown Land adjacent to the existing Health Centre provides an important opportunity for expanded health and aged care facilities and services for the region. Action has been initiated to secure the unallocated Crown land for public purposes, based on the development of this area as a Health Precinct.

15.4.2 Tourism

The importance of retaining key sites for tourism accommodation is set out in the Shire of Dandaragan Draft Local Tourism Planning Strategy (modified Jan. 2011), and the sites are defined in that Strategy. It is important to identify sites to accommodate smaller scale development in secondary locations which will ensure a wide range of types and costs of accommodation.

The Strategy Plan supports the protection of sites identified in the Draft Local Tourism Planning Strategy for tourism purposes.

The Strategy Plan supports the recommendation that “the maximum proportion of residential restriction units shall be such that the site retains a dominant tourism function and character as determined by the Council”. In addition tourism components should be located on the area of sites with the highest tourism amenity.

15.4.3 Retail and Commercial

The City Centre already accommodates almost all of the retail and commercial floor space within Jurien Bay. An alternative major centre has been identified in the Turquoise Coast Development Structure Plan known as the ‘Booka Valley Centre’. This centre is about 3.5 km. south of the City Centre and envisages tourist accommodation, commercial development and residential uses.

It is clear that based on the proposals contained in the Wheatbelt Land Use Planning Strategy 2011 and the approved structure plan for the Turquoise Coast Development that a ‘Regional Centre’ and ‘District Centre’ hierarchy can be applied to the City Centre and Booka Valley Centre respectively.

As a regional city, Jurien Bay will serve a wider coastal and hinterland catchment, particularly in terms of government facilities and services. Therefore as a general principle the retail and commercial floor space within the City Centre should not be limited beyond what can be practically developed, based on the capacity of suitably zoned sites and related development controls.

The analysis undertaken by Pracsys in relation to demand for retail and office floor space based on population thresholds is shown in Table 15.2

The Turquoise Coast structure plan suggests that the population trigger for the development of the Booka Valley Centre would be 12,500. As such the capacity of the City Centre needs to be adequate to accommodate retail and office floor space up to that point, acknowledging that smaller neighbourhood centres would also develop within this timeframe.

Table 15.2 Projected Population Driven Demand for Floor Space (sqm/net lettable area)

Source: HHES 2009/2010 and Pracsys Analysis, 2011

Population	1,173	2,500	5,000	10,000	20,000
Convenience Retail	833	1,782	3,580	7,192	14,448
Comparison Retail	1,370	2,932	5,889	11,830	23,766
Population-Driven Office	565	1,210	2,431	4,883	9,810

The estimated ultimate floor space capacity for retail and commercial uses of the proposed commercial land and the mixed use land under the City Centre Strategy Plan is shown in Table 15.3.

Table 15.3 Summary of Ultimate Development Yield for Retail and Commercial Uses

Land Use	Ultimate Development Yield
Retail	14,000 m ² nla
Office & Other Commercial	11,000 m ² nla

It is possible that there could be a shortage in the supply of retail floor space to meet the estimated demand as the population exceeds 5,000. In addition, the absence of a large parcel of land in single ownership will inhibit the provision of a large supermarket retailer locating within the City Centre, which would normally be triggered by a retail catchment population of about 5,000. The matter of a supermarket was considered in the public workshops held during the development of the City Centre Strategy Plan. While it was acknowledged that a conventional large format supermarket retailer would be unlikely to secure a large site, the general view expressed was that this form of development would be inconsistent with the scale and form of development being sought within the core commercial areas.

15.4.4 Residential

The diversity of residential dwellings is currently very limited in the City Centre and is influenced by low residential densities and compounded by a lack of sewer to a large part of the residential area. Increased density and provision for mixed use residential development will increase and diversify housing stock within the City Centre. Housing in the City Centre will increasingly need to cater for a wider range of household types and demand for specialised forms of housing.

15.4.5 Caravan Park

The Caravan Park is a key tourism accommodation facility within Jurien Bay in a prime location being directly on the beach and in the City centre. The caravan park site is a Crown land title vested for the specific purpose of a caravan park, with power to lease for a maximum period of 21 years.

The current lease of the caravan park site runs until October 2027 and the sub lease for the café runs to June 2011 with two five year options.

There is the opportunity in the future development of the caravan park to focus some commercial element of the use on the portion of the site on the corner of Bashford and Roberts Street, to provide some activation of the Bashford Street frontage of the site.

In the long term if the vesting is lifted, the land use options for the site should be reviewed. Redevelopment of the site should acknowledge both the tourism value of the site and its potential to connect the commercial areas along Bashford Street. The following scenario could be considered:

1. A substantial portion of the site adjacent the foreshore should be retained for a tourism related use, either an attraction or accommodation;
2. The Interpretative Centre site should be expanded to provide for expansion of that use and/or other related activities in that location; and
3. A road connection should be provided through the site to connect White and Roberts Streets to improve the road and pedestrian network of the City Centre.

The proposals for the City Centre are shown in Figure 15.1 Structural Elements, Figure 15.2 Land Use, and Figure 15.3 Indicative Built Form.









15.5 Precincts-Land Use

The City Centre has been divided into six precincts for the purposes of defining the proposed roles, land use and character for these areas. Land uses are shown on the Land Use Plan – Figure 15.2. The land use descriptions could form the basis for zones under the Local Planning Scheme.

The role of the precincts is outlined below as well as an indicative land use table for the land use classifications proposed. Table 15.4 contains an estimate of ultimate development yield for key lands uses and Table 15.5 is a summary for the whole City Centre area.

Figure 15.1 City Centre - Structural Elements



Pedestrian/Cyclist Hierarchy: Primary Route		Secondary Route	
 Residential	 Public Purposes/Community Uses	 Tourism	 Office/Residential
 Tourism/Residential	 Public purposes/Civic Uses	 Commercial	 Commercial/Residential

1. Develop Interpretative Centre at end of Roberts Street
2. Develop Bashford Street as a dual carriageway with a landscaped median to provide safe crossing points for pedestrians and cyclists. Underground overhead power lines
3. Intensify landscape and parkland along Bashford Street within the study area
4. Focus civic and government office development within the superblock bounded by Bashford Street, Bayliss Street, Hamersley Street and Batt Street
5. Develop a community use area bounded by Bashford Street, Bayliss Street, Hamersley Street and the southern boundary of the City Centre
6. Create a shopping street environment along Sandpiper and Andrews Streets with shops built up to the street boundaries
7. Provide a 5.0m. wide pedestrian accessway between Heaton Street and Sandpiper Street
8. Intensify landscaping in the form of tall shade trees along Roberts Street, Doust Street, White Street and Sandpiper Street
9. Commercial properties facing Doust Street to be focussed on market-style retail
10. Provide road link between Murray and Doust Streets with short term parking for long vehicles
11. Extend sewer infrastructure through the City Centre
12. Allow for mixed use residential and commercial uses along Bashford and Doust Streets
13. Provide mixed use residential and office uses adjacent to Cook Street between Bashford and Padbury Streets
14. Edges and verges to caravan park to be improved through landscaping and appropriate fencing treatments
15. Allow tourist accommodation along parts of Heaton, Bashford, White and Padbury Streets
16. Residential areas to be recoded to allow more intensive development with guidelines requiring the retention of existing mature trees
17. Provide improved entry to existing sport and recreation area
18. Focus formalised foreshore treatments adjacent to the new jetty and the end of Roberts Street

Table 15.4 Estimates of Development Yield by Land Use Area

Land Use Classification	General Description of Preferred Land Uses ¹	Estimated Ultimate Development Yield for Key Land Uses
Commercial	Shops, restaurants, fast food outlets, licensed premises, markets and offices. Residential units and tourist accommodation generally to be permitted above ground level only.	Retail – 9,800 m ² nla Commercial – 2,600 m ² nla
Commercial/Residential	Shops, restaurants, markets and offices as well as residential units and tourist accommodation. Uses can occur independently or in combination.	Retail – 1,600 m ² nla Commercial – 3,800 m ² nla Residential Dwellings – 170
Office/Residential	Offices and residential development. These uses can occur independently or in combination.	Commercial – 2,200 m ² nla Residential Dwellings – 50
Tourism/Residential	Residential units and tourist accommodation. These uses can occur independently or in combination.	Tourism Units – 80 Residential Dwellings – 230
Tourism	Tourist accommodation and related uses such as shops, restaurants, fast food outlets and licensed premises. Inclusion of residential units for permanent occupancy should only be permitted on the basis that the site retains a dominant tourism function and character as determined by the Council.	Retail – 2,400 m ² nla Commercial – 2,300 m ² nla Tourism Units – 310 Residential Dwellings – 140
Residential	Residential dwellings and compatible uses normally provided within residential areas.	Single Houses, Grouped Dwellings & Aged & Dependent Persons Dwellings – 680

¹ The acceptability of specific uses and their location needs to be site specific in some instances.

Table 15.5 Summary of Development Yield for Key Land Uses for City Centre

Land Use	Current provision	Ultimate Development Yield
Retail	4,800 m ² nla (approx.)	14,000 m ² nla
Office & Other Commercial	3,800 m ² nla (approx.)	11,000 m ² nla
Residential		
• Single houses & grouped dwellings	350	680
• Multiple dwellings	0	590
Total dwellings	350	1,270
Tourism accommodation units	145*	390

* Excludes Caravan Park and Apex Camp

15.6 Urban Design and Planning Principles

15.6.1 Using the natural landscape

The following design and planning principles should apply with respect to using or responding to the natural landscape:

- The existing landscape character of the foreshore and beachfront should be respected and enhanced by any future development.
- In general the visual landscape should be preserved by ensuring new buildings do not dominate in scale or character, other than specific focal points.
- Buildings should be stepped relative to topography and not introduce artificial ground levels that unduly alter the natural landform.
- Visual corridors to the foreshore should be maintained and reinforced along White Street, Roberts Street and Doust Street.

15.6.2 Built Form Character

Non-residential and mixed use development

The following general design and planning principles should apply with respect to non-residential and mixed use development within the City Centre.

- Development should be located and designed to respond to the effects of coastal processes.
- A high quality, active commercial and retail street edge should include awnings, verandahs or colonnades with shopfront openings, terraces and other design elements that provide pedestrian comfort and a good interface with the street and footpath.
- Appropriately scaled and segmented street frontages should be provided with pedestrian openings and access ways into and in some cases through the development.

- Buildings should have clear delineation and separation of public and private entrances.
- New development should be designed to improve the use of night time amenity and increase the sense of safety and security.
- Overshadowing of the public realm should be minimised.
- Landscape should be used to soften the effects of parking and roadways.
- Buildings should be designed to minimise impacting on views along and from the foreshore.
- Building character, scale and setting should complement and add visual value to the surroundings and buildings should be contemporary in design.
- Buildings should be well modulated to avoid them appearing as a single overbearing mass.
- Materials and details should reflect the Jurien Bay character through use of natural durable materials and colours.
- Courtyards, walkways and other openings and entrances into sites should be provided with views through the site.
- Buildings should be arranged to enable an appropriate response to climate and the surrounding context.

Figure 15.2 City Centre - Land Use



Precinct

A Northern

Primarily residential with the retention of designated tourist sites and include mixed tourism/residential areas.

B Central

Major commercial and tourism area for the City Centre building on the existing pattern of land use within the area.

C Southern

Primarily residential in nature providing a range of uses based on the land use pattern and the need to provide suitable land use transitions along streets.

D Eastern

Mixed use development along Bashford Street, a residential area and two large specific use sites.

E Civic Uses

Council and State Government offices, services and facilities.

F Community Uses

Community facilities and services provided by State and Local Government and Non Government Organisations.

Residential development

The following general design and planning principles should apply to residential development in the prominent streets within the City Centre, being properties with boundaries to Bashford Street and the core streets being Roberts, Heaton, Doust, Sandpiper, Murray and Andrews Streets.

- An appropriate residential interface should be provided by avoiding solid courtyard walls and major level changes at the street boundary.
- Roofs should be simple and either planar mono- pitch or low pitch gables.

- Multiple, steep pitched roofs should be avoided and roof tiles should not be used.
- Roofs should have good overhangs.
- Simple verandah forms should be used where possible on front elevations.
- Upper storeys should be constructed using lightweight cladding materials.

The desired built form character is illustrated in Figure 15.3 and Table 15.6.

Figure 15.3 City Centre - Indicative Built Form



Table 15.6 Key Development Standards and Indicative Built Form

Land Use Classification	Key Development Standards and Indicative Built Form ¹
Commercial	<p>3 storey maximum height. Plot ratio 1.5 maximum. R80 coding for residential.</p> <div>   </div> <p>Development needs to ensure activities occur at ground level which create interest, surveillance and a comfortable human scale, with a sheltered environment for pedestrians.</p>

Land Use Classification	Key Development Standards and Indicative Built Form ¹
Tourism	<p>Site specific height controls with 3 storey maximum height at street boundaries. R80 coding for residential.</p> <div>  </div> <ul style="list-style-type: none"> • Building character, scale and setting should complement and add visual value to the surroundings. • Buildings should be contemporary in design and well modulated to avoid them appearing as a single overbearing mass. • Street level should include activities which create interest, surveillance and a comfortable human scale, with a sheltered environment for pedestrians.

Land Use Classification	Key Development Standards and Indicative Built Form ¹
Public Purposes – Civic Uses	<p>Development of this site needs to be guided by the preparation of concept plan based on buildings in a parkland setting with connected vehicle and pedestrian access, providing efficiency of shared parking areas. This area can provide a significant grouping of key public buildings as part of the Bashford Street entry into the City Centre.</p>

¹ Site specific variations to development standards need to apply in some instances.

Land Use Classification	Key Development Standards and Indicative Built Form ¹
Public Purposes – Community Uses	<ul style="list-style-type: none"> Development of this site needs to be guided by the preparation of concept plan based on buildings in a parkland setting with connected vehicle and pedestrian access, providing efficiency of shared parking areas. A key part of this concept is the creation of a public space at the corner of Bashford and Bayliss Streets, with community buildings set around this space. The intention is to provide an attractive meeting place for formal and informal gatherings of the town community in an alternative location to the foreshore or the sport and recreation area. It can attract activity and use as a result of it's proximity to the Council Administration Centre, District High School, the Family Resource Centre, CWA and other community uses which will develop around the space over time. It is important that one of these uses include a kiosk/ café to enhance the function of this area as a community meeting place.

Land Use Classification	Key Development Standards and Indicative Built Form ¹
Commercial/Residential	3 storey maximum height. Plot ratio 1.0 maximum. R80 coding for residential.
Office/Residential	
Tourism/Residential	



Building forms should have flat or low pitched roofs with awnings or verandahs over the footpath and can reflect more contemporary design and materials.



Residential development in the core area – Bashford, Roberts, Heaton, Doust, Sandpiper, Murray and Andrews Streets should have flat or low pitched roofs with eaves, using lightweight cladding construction for upper storeys.

¹ Site specific variations to development standards need to apply in some instances.

15.6.3 Public Realm

While it may be considered that built form alone creates most of the character of a place, public spaces and streetscape character have the significant ability to influence a sense of place. Importantly the decision making authority (in this instance the Shire of Dandaragan) has largely complete control in relation to public spaces and streetscape, but lesser control over built form on privately owned land, through the planning approval process.

Appropriate treatment of public spaces and streetscape can do much to remediate the climatic conditions of wind and heat. Streetscape amenity and visual appeal of streets and public spaces is more important than maximising on street car parking. The amount of on street car parking should be determined in conjunction with decisions about desired streetscape character and amenity. In addition targeted and appropriate treatment of the public realm can create formal and informal meeting places to activate spaces and provide community interaction and amenity.

Given the coastal context of the City Centre, appropriate choices of vegetation types are important, both in terms of establishing the seaside character and ensuring the durability of vegetation types given the climate. For instance, the established pattern of Norfolk Island pines in parts of Jurien Bay is a useful element to be carried through the City Centre, as it has a common association with coastal locations. Beyond this the vegetation types within streets and public spaces within the Turquoise Coast project could provide a useful guide to developing a landscaping concept and theme for the City Centre and also determining what plant species may be most successful in this environment.

The above considerations should form the basis for any brief for the preparation of concept plans for the public realm.



15.6.4 Water Management

The WAPC State Planning Policy 2.9 – Water Resources recognises that land use planning together with other mechanisms can assist conservation and management of water resources. The objectives of urban water management set out in Liveable Neighbourhoods include, to encourage water conservation by maximising the retention, detention and re-use of stormwater, by maximising local recharge of groundwater and by waste water re-use and water harvesting.

In the context of the City Centre this is most relevant to stormwater drainage management within roads and other public spaces and particularly for any future development or retrofitting within these areas. The City Centre should adopt better urban water management principles and practice. The opportunity exists particularly given the wide road reserves within the City Centre, allowing for vegetated swale drains. These would have the benefit of both nutrient reduction and providing for more substantial vegetation and greening to improve the amenity of these public spaces.

15.7 Movement and Connectivity

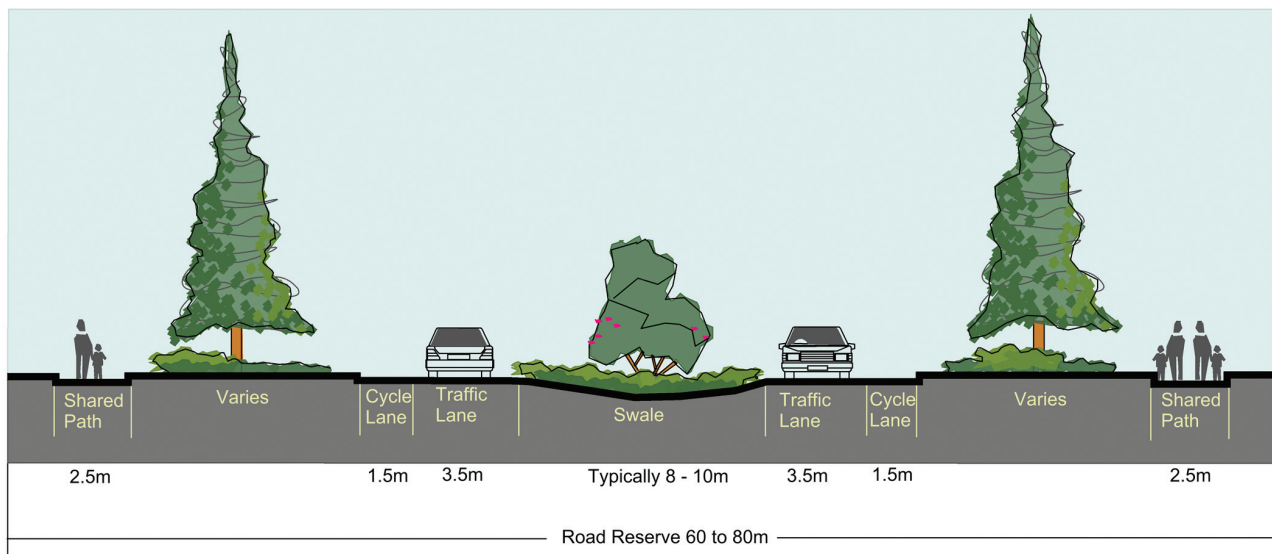
Bashford Street

The typical road reserve width of Bashford Street through the town is 60m, which increases to 80m between Roberts Street and Doust Street. This wide road reserve gives potential to modify the road's cross-section and enhance the streetscape to emphasise to users that whilst Bashford Street is a regional distributor, this portion of the road is within a City Centre. This signals that motorists should adhere to lower speed limits and expect a greater level of activity from pedestrians, cyclists and slowing/turning/parking vehicles.

To define Bashford Street as a main street through Jurien Bay and differentiate it from the form of Indian Ocean Drive outside of the built up area, it is proposed to remodel Bashford Street to become a dual carriageway providing one travel lane in either direction.

A conceptual cross-section for the road is shown in Figure 15.4. The median width is sufficient to allow for staged crossing by a right turning vehicle, for vehicle stacking, installation of right turn pockets and to facilitate better urban water management treatments. Allowing provision for left turn pockets at cross streets is recommended to cater for future traffic demands.

Figure 15.4 Indicative cross section proposed for Bashford Street



The full movement intersections will need to be designed to facilitate U turn movements. This is necessary as the dual carriageway will limit the access/egress direction for properties facing Bashford Street to left-in left-out and motorists will need to be provided with the opportunity to alter their direction of travel if required. The design of the intersections should also consider the need to allow staged crossing of Bashford Street and give consideration to providing right turn pockets if the volume of traffic expected to make right turns or U turns warrants this. This will ensure traffic movements along Bashford Street are not unduly delayed.

15.8 Carparking

The provision of car parking is something that should be carefully controlled and managed as the City Centre evolves. There are opportunities to improve the layout of existing car parking areas and supplement them with signage to separate vehicle types, as well as management of car parking. At some point, management of car parking through time restricted lots in key locations and peak periods will need to be considered. This can improve the efficiency of car parking and assist in turnover of car parking adjacent business premises, avoiding the use of these areas for long term parking.

When the development of the land bounded by Sandpiper, Murray and Andrews Streets occurs, provision of on-street car parking on Sandpiper Street and Murray Street is recommended. The existing layout of parking within the City Centre could be

reviewed in order to increase the quantity provided and ninety degree parking could replace the existing angled parking.

Specific provision needs to be made for short term parking for long vehicles as this is a current problem, particularly during peak tourist periods. Part of the solution lies in providing information bays on Indian Ocean Drive/Bashford Street both north and south of the town to provide information to supplement the tourist information and parking arrangements at the Shire's Administration Centre in Bashford Street.

Dedicated short term parking for long vehicles could be accommodated along the proposed road link to extend between Murray Street and Doust Street. As Murray Street and Doust Street are proposed to remain full movement intersections with Bashford Street, this allows easy access for vehicles either north or south. This parking would be in addition to the parking currently available adjacent to Bashford Street or within the Shire's Administration Centre. Parking areas for long vehicles should include signage that is obvious to drivers who may not be familiar with Jurien Bay.

15.9 Pedestrians and Cyclists

Residents and visitors to Jurien Bay should be provided with a walking and cycling network that is safe and efficient. From a transport perspective, this involves provision of a network that allows people to access key destinations. Increasing the proportion of trips made by these travel modes will assist in reducing the level of car-dependence in Jurien Bay.

Bashford Street is the main road within Jurien Bay and this road allows efficient movement by motorists travelling north-south. Similarly, a 'backbone' pedestrian and cyclist route should be provided along this route.

It is recommended that parking facilities for bicycles are installed in the commercial area and also along the foreshore/beach areas. The development of a Local Bicycle Network Plan would aid the Shire in identifying and prioritising works to be undertaken in relation to network improvements for cyclists, and also how strategies of encouragement, enforcement, and education can be used to increase the mode share of cycling.

15.10 Activation

The Strategy Plan identifies two major opportunities for activation of the public realm. Others would be considered in the preparation of a concept plan for development and activation of the public realm and as part of a community development plan.

Foreshore access for vehicle, cyclists and pedestrians is already well established. The Dobbyn Park area at the end of Roberts Street has recently undergone major enhancement with the construction of a new curved jetty and pontoon as part of a plan for the redevelopment of this section of the foreshore, based on the Jurien Bay Foreshore Plan 2008. Further works are required to be undertaken to complete this development of the foreshore.

Dobbyn Park is currently one of the community focal points for Jurien Bay and is the site for an annual festival now known as the Indian Ocean Drive Festival and includes the traditional 'Blessing of the Fleet', which was the name previously given to this event.

The Strategy Plan proposes the activation of this area further by the creation of a site for the purpose of an Interpretative Centre and associated café. Development of this site would complement the proposed development on Lot 62 on the

corner of Robert and Heaton Streets and in particular the building proposed adjacent the foreshore. These two buildings would 'bookend' and frame the view looking to the coast along Roberts Street, and about the pedestrian link from Roberts Street to the foreshore and jetty.

The Interpretative Centre could comprise a centre related to the natural features of the region (national parks and nature reserves) and history (Indigenous and European) and a commercial café with an alfresco area, that would assist in the financial feasibility of the project. In addition the Centre could provide tourist information.

The area identified for Public Purposes – Community Uses in the Strategy Plan which is bounded by Bashford, Bayliss and Hamersley Streets comprises a number of Crown Reserves with various vesting arrangements.

The Strategy Plan proposes a concept of buildings in a park land setting with connected vehicle and pedestrian access, providing efficiency of shared parking areas. A key part of this concept is the creation of a public space at the corner of Bashford and Bayliss Streets, with community buildings set around this space.

The intention is to provide an attractive meeting place for formal and informal gatherings of the community in an alternative location to the foreshore or the sport and recreation area. It can attract activity and use as a result of its proximity to the Council Administration Centre, District High School, the Family Resource Centre, CWA and other community uses which will develop around the space over time. It is important that one of these uses include a kiosk/ café to enhance the function of this area as a community meeting place.

The success of this proposal relies on support for the concept plan. Initially Council should hold discussions with the stakeholders to determine whether there is a level of commitment to the concept as a basis to progress this matter.

A further opportunity relating to activation of the public realm is to build upon the Jurien Bay Sunday Markets which are held on the southern part of Pioneer Park, near the corner of Roberts and Bashford Streets. The markets are currently held on nine days and are generally scheduled to coincide with holiday periods as the success depends on visitors as well as residents. The markets also draw people from the hinterland and neighbouring Shires and rely on the support of the Lions Club.



15.11 Staged Implementation

Table 15.7 lists the actions recommended to progress the staged development of the City Centre. The timeframes for staging are as follows:

- Short Term: 0-5 years
- Medium Term: 5-10 years
- Long Term: 10-20 years

Table 15.7 Implementation Actions for Staged Development of the City Centre

No.	Action	Lead Stakeholder and Stakeholders	Staging	Comments
1	Secure unallocated Crown Land for Public Purposes	Shire of Dandaragan Department of Regional Development and Lands	Short Term	Council needs to seek the necessary approvals (native title etc.) for existing areas of unallocated Crown Land within and adjacent the City Centre to be secured for purposes identified in the Strategy Plan.
2	Sewer Extension and Upgrade	Shire of Dandaragan Water Corporation	Short Term	Council should prepare a submission to the Water Corporation supported by a civil engineering feasibility and costing, based on staged implementation.
3	Power Upgrades	Shire of Dandaragan Western Power	Short Term	Council should liaise with Western Power to secure commitments for upgrading power infrastructure to facilitate growth.
4	Bashford Street	Shire of Dandaragan Main Roads WA	Short Term	Council, in consultation with Main Roads WA should prepare a preliminary design and costing for the Bashford Street project including consideration of landscaping, drainage, underground power, lighting and staging.
5	Civic Uses Precinct	Shire of Dandaragan Department of Environment and Conservation, Police	Short Term	Council should prepare a concept plan (considering landscaping, parking, pedestrian access) in consultation with stakeholders to guide future development of the superblock.
6	Community Uses Precinct	Shire of Dandaragan Churches, CWA, Fire and Emergency Services.	Short Term	Council should prepare a concept plan (considering landscaping, parking, pedestrian access) in consultation with stakeholders to guide future development of the superblock.
7	Public Realm Concept Plan	Shire of Dandaragan	Short Term	Council should prepare a concept plan for development and activation of the public realm. The plan would need to consider servicing such as drainage and underground power as well as pedestrian/cycle paths, disability access, parking, landscaping, streetscape and staging.
8	Design Guidelines	Shire of Dandaragan	Short Term	In conjunction with the preparation of a concept plan for the public realm, location and site specific design guidelines should be prepared to guide development within the City Centre.
9	Completion of Dobbyn Park project	Shire of Dandaragan	Short Term	In addition to the construction of the jetty, the concept plan for Dobbyn Park identified other improvements to the foreshore area.
10	Caravan Park Lease	Shire of Dandaragan Caravan Park lessee, Department of Regional Development and Lands	Short Term	Council should pursue negotiations with the Caravan Park lessee in relation to the lease arrangements and the outcomes sought in relation to future development of the caravan park.
11	Public realm development	Shire of Dandaragan	Short Term to Medium Term	Council should undertake the staged development of the public realm based on the following priority of streets: <ul style="list-style-type: none"> • Roberts Street • Doust Street • Murray to Doust Street Link • Murray Street • White Street • Sandpiper Street
12	Zoning Changes	Shire of Dandaragan	Short Term	Council should initiate amendments to the current scheme to reflect changes to zoning and development standards based on the Strategy Plan.
13	Civic Uses Precinct	Shire of Dandaragan Government Agencies	Short Term to Long Term	Staged development based on approved concept plan.
14	Community Uses Precinct	Shire of Dandaragan Government and Non-Government Agencies	Short Term to Long Term	Staged development based on approved concept plan.
15	Interpretative Centre	Shire of Dandaragan Department of Environment and Conservation, Caravan Park Lessee, Department of Regional Development and Lands	Medium Term	Council and DEC should undertake a feasibility study into development of the Interpretative Centre adjacent the jetty.



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16 References and Bibliography

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