



Department of **Planning,  
Lands and Heritage**



Western  
Australian  
Planning  
Commission

*We're working for  
Western Australia.*

# Guilderton to Kalbarri

## Sub-regional Strategy

May 2019







The Department of Planning, Lands and Heritage acknowledges the traditional owners and custodians of this land. We pay our respect to Elders past and present, their descendants who are with us today, and those who will follow in their footsteps.

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Published by the  
Western Australian Planning Commission  
Gordon Stephenson House  
140 William Street  
Perth WA 6000

Locked Bag 2506  
Perth WA 6001

Published May 2019

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# Chairman's foreword



The Guilderton to Kalbarri Sub-regional Strategy outlines the Western Australian Planning Commission's approach to future planning and development of the coastal strip from the northern boundary of the metropolitan region, north to Kalbarri, over the next 20 years.

Consideration of issues affecting the Guilderton to Kalbarri sub-region as a cohesive place will assist the eight local governments that share the coast to implement State strategic issues in a coordinated manner – guiding decision-making and informing local planning strategies and local planning schemes.

A catalyst for the preparation of the Strategy was a perception that there was the potential for Perth's outer northern suburbs to sprawl up the coast beyond Yanchep and the northern boundary of the metropolitan region. Substantial development proximate to, but beyond, the northern coastal extent of the metropolitan region could threaten the successful implementation of Perth and Peel@3.5million and METRONET. The Strategy aims to ensure that the integrity of the Government's plans for the metropolitan region are not compromised.

The Strategy is designed to be read in conjunction with the Wheatbelt and Mid West regional planning and infrastructure frameworks. In particular, it provides a greater level of detail for actions outlined in the frameworks.

Community participation is an important part of the planning process and I extend my appreciation to those who have contributed to this Strategy, including the local governments, WALGA, Mid West Development Commission, Wheatbelt Development Commission, and all those who made submissions.

**David Caddy**

Chairman

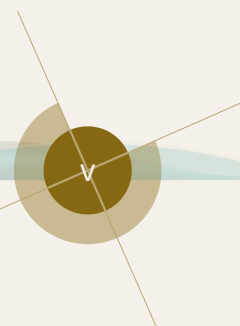
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# Contents

|   |            |  |           |
|---|------------|--|-----------|
| <b>EXECUTIVE SUMMARY</b>                              | <b>VII</b> | <b>PART A: STRATEGY</b>                      | <b>9</b>  |
| <b>INTRODUCTION</b>                                   | <b>1</b>   | 3 Vision                                     | 10        |
| 1 Scope   | 2          | 4 WAPC strategic directions                  | 10        |
| 1.1 Strategy area                                     | 2          | 5 WAPC actions                               | 11        |
| 1.2 Purpose   | 2          | 6 Settlement hierarchy                       | 12        |
| 1.3 Key planning issues                               | 3          | 7 Strategy plan                              | 13        |
| 1.4 Methodology                                       | 4          | 8 Timeframe, monitoring and review           | 13        |
| 2 Governance and context                              | 5          |  |           |
| 2.1 Planning  | 5          | <b>PART B: PROFILE</b>                       | <b>15</b> |
| 2.1.1 State planning policies                         | 5          | 9 Settlement                                 | 16        |
| 2.1.2 Regional planning and infrastructure frameworks | 6          | 9.1 Population                               | 16        |
| 2.1.3 Local planning strategies and schemes           | 6          | 9.2 Settlement and growth                    | 18        |
| 2.2 Regional development and context                  | 7          | 9.2.1 Settlement pattern                     | 18        |
| 2.2.1 Mid West Regional Investment Blueprint          | 7          | 9.2.2 Settlement culture and tourism impacts | 19        |
| 2.2.2 Wheatbelt Regional Investment Blueprint         | 7          | 9.2.3 Holiday homes                          | 19        |
|   |            | 9.3 Aboriginal heritage and native title     | 20        |
|   |            | 9.4 Historic heritage and culture            | 21        |
|   |            | 10 Environment                               | 22        |
|   |            | 10.1 Climate                                 | 22        |
|   |            | 10.2 Biodiversity                            | 23        |
|   |            | 10.2.1 Conservation assets and protection    | 24        |
|   |            | 10.3 Landscape                               | 25        |
|   |            | 10.4 Water resources                         | 26        |
|   |            | 10.4.1 Groundwater                           | 27        |
|   |            | 10.4.2 Surface water                         | 27        |
|   |            | 10.5 Coastal planning                        | 28        |
|   |            | 10.5.1 Responses to coastal erosion          | 28        |
|   |            | 10.6 Bushfire                                | 29        |
|   |            | 10.7 Marine environment                      | 30        |



|                                       |           |  |           |
|---------------------------------------|-----------|--|-----------|
| <b>11 Economy</b>                     | <b>31</b> | <b>13 Utilities and services</b>             | <b>56</b> |
| 11.1 Employment                       | 33        | 13.1 Water supply                            | 56        |
| 11.2 Tourism                          | 34        | 13.2 Waste water                             | 58        |
| 11.2.1 Tourism assets and events      | 36        | 13.3 Electricity                             | 59        |
| 11.2.2 Wedge and Grey                 | 37        | 13.4 Gas                                     | 61        |
| 11.2.3 Trails and cultural tourism    | 38        | 13.5 Telecommunications                      | 61        |
| 11.2.4 Tourism land supply            | 40        | 13.6 Waste management                        | 62        |
| 11.2.5 Caravan parks                  | 41        | 13.7 Public health and adaptive technologies | 63        |
| 11.2.6 Peak tourism                   | 42        | 13.8 Health and education services           | 64        |
| 11.2.7 Recreational boating           | 42        | <b>Profile maps</b>                          | <b>68</b> |
| 11.2.8 Tourism signage and promotion  | 46        | <b>References</b>                            | <b>77</b> |
| 11.3 Mining and gas extraction        | 47        | <b>Appendix 1</b>                            |           |
| 11.4 Basic raw materials              | 48        | <b>– Local government planning</b>           | <b>80</b> |
| 11.5 Agriculture                      | 50        |  |           |
| <b>12 Transport</b>                   | <b>52</b> |  |           |
| 12.1 Roads                            | 52        |  |           |
| 12.1.1 Indian Ocean Drive             | 52        |  |           |
| 12.1.2 Greater Geraldton road network | 53        |  |           |
| 12.1.3 Agricultural lime routes       | 53        |  |           |
| 12.2 Rail                             | 54        |  |           |
| 12.3 Aviation                         | 54        |  |           |
| 12.4 Ports                            | 55        |  |           |



## PLAN, FIGURES, TABLES and MAPS

|   |    |   |    |
|---|----|---|----|
| Strategy Plan   | 14 | Table 3: National parks in the strategy area                  | 24 |
| Figure 1: Western Australian Planning Framework   | 5  | Table 4: Land zoned for tourism purposes                      | 39 |
| Figure 2: Settlement hierarchy  | 12 | Table 5: Existing boating facilities                          | 45 |
| Figure 3: Anticipated population growth of local governments                                  | 17 | Table 6: Designated agricultural lime routes                  | 54 |
| Figure 4: Land identified for possible conservation reserves                                  | 25 | Table 7: Water sources and supply schemes                     | 57 |
| Figure 5: Risk management and adaptation hierarchy  | 28 | Table 8: Current and proposed wastewater treatment facilities | 59 |
| Figure 6: Employment by industry  | 31 | Table 9: Current and proposed electricity generation          | 60 |
| Figure 7: Percentage of total visitors to Western Australia by Tourism WA region              | 34 | Table 10: Waste management facilities                         | 62 |
| Figure 8: Number of recreational vessels  | 43 | Table 11: Health facilities                                   | 64 |
| Figure 9: Percentages of recreational vessels   | 43 | Table 12: Education facilities and enrolments                 | 65 |
| Figure 10: Sedimentary basins of Western Australia and potential shale gas resource locations | 47 | Map 1: Context  | 8  |
| Figure 11: Basic raw materials extraction on Crown land in Western Australia                  | 48 | Map 2: Settlement and transport                               | 68 |
| Table 1: Settlement population  | 18 | Map 3: Native Title settlement proposals                      | 69 |
| Table 2: Dwelling occupancy rates of settlements  | 19 | Map 4: Historic and Aboriginal heritage                       | 70 |
|   |    | Map 5: Natural environment                                    | 71 |
|   |    | Map 6: Sewage sensitive policy areas                          | 72 |
|   |    | Map 7: Coastal planning                                       | 73 |
|   |    | Map 8: Tourism  | 74 |
|   |    | Map 9: Mineral resources and mineral resources activity       | 75 |
|   |    | Map 10: Basic raw materials                                   | 76 |



# Executive summary

The Guilderton to Kalbarri Sub-regional Strategy is an overarching planning document that outlines the Western Australian Planning Commission's (WAPC) approach to future planning and development of the coastal strip broadly from the Moore River to the Murchison River. The Strategy provides a greater level of detail for actions previously outlined in the WAPC's State Planning Strategy and the Wheatbelt and Mid West regional planning and infrastructure frameworks.

The Strategy seeks to address a range of issues that are experienced throughout the coastal area from Guilderton to Kalbarri. These include:-

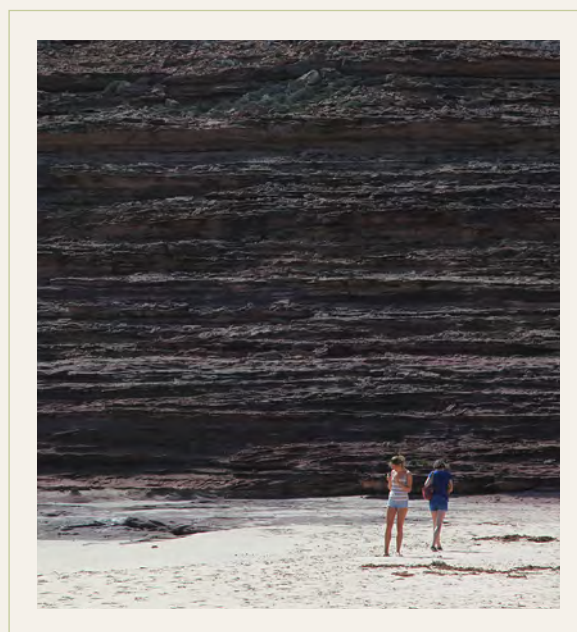
- the perceived potential for Perth's outer suburbs to sprawl up the coast, increasing the need to protect large tracts of pristine remnant vegetation and increasing infrastructure servicing demands on the State;
- balancing urban growth with the protection of areas with high biodiversity significance, other recognised natural assets and known economic resources, and addressing the heightened risk of bushfire hazard;
- the need to address impacts on the coastal and marine environment from coastal processes and climate change including rising sea levels and from increased competition and demand for coastal access for recreation, industry and tourism;
- Indian Ocean Drive is an important tourist route that could be compromised if used for major freight;
- increasing competition and demand for coastal access for recreation, industry and tourist use including increasing economic and recreational demand for new marine facilities in the sub-region;
- the need to reflect the sub-region's distinct sense of place, culture and lifestyle.

Preparation of the Strategy has been guided by a steering group with representation from the WAPC, the Mid West and Wheatbelt Development Commissions, and local governments in the sub-region.

The Strategy sets 14 strategic directions to be implemented through WAPC decision-making. These clarify the WAPC's position on matters such as settlement hierarchy and promoting urban growth in and adjacent to established settlements; adoption of a general presumption against new development in areas to be affected by coastal hazards and proposals that may impact matters of environmental significance; designation of Indian Ocean Drive as a coastal tourist route and support of proposed aglime heavy haulage routes to Brand Highway.

The Strategy also outlines actions to be undertaken as part of future projects and decision-making including providing assistance to local government to implement options for coastal retreat; assisting in the preparation of tourism strategies; researching into impacts of seasonal tourism and assisting in the investigation of land uses associated with boating facilities.

A draft iteration of the strategy was publicly advertised in between November 2017 and February 2018 and 1,402 submissions were received, of which 1,393 were concerned with the elements of the draft Strategy that contemplated the future of Wedge and Grey. In response, the WAPC reviewed the arrangements governing Wedge and Grey, consequently the Strategy affirms the responsibilities and processes being undertaken by the land manager, the Department of Biodiversity, Conservation and Attractions.





# Introduction

The Guilderton to Kalbarri Sub-regional Strategy (the Strategy) has been prepared for the coastal area between Guilderton and Kalbarri. The sub-region is administered by eight local governments, and the Mid West and Wheatbelt Development Commissions coordinate and promote economic development in their respective regions.

Historically, the sub-region has been characterised by small fishing and tourist towns located on protected areas of coastline, with the regional city of Geraldton anchoring economic and social service provision. The sub-region is now experiencing pressure to change due to a number of factors.

The purpose of the Strategy is to manage this change by ensuring that growth and development delivers positive social, economic and environmental outcomes.

Strategic planning is the cornerstone of the planning system. The Strategy is a part of the Western Australian Planning Commission's (WAPC) intentions to develop a planning system that is legible, transparent, efficient and delivers smart growth. The Strategy takes a long term view to planning for the sub-region.

The Strategy provides guidance to assist local governments to implement State strategic priorities, and to inform local planning strategies and schemes so that robust planning decisions are made.

## This Strategy comprises two parts:

### Part A: Strategy

Articulates the strategic directions and actions to achieve the vision for the sub-region.

### Part B: Profile

Contains an overview of the study area's economy, environment and infrastructure to provide a general context for Part A.

## Planning Issues



Perceived potential for Perth's north west corridor to expand along the coastline and beyond the northern boundary of the Perth Metropolitan Region into the sub-region.



The sub-region has valued natural landscapes that include recognised biodiversity values. Bushfire hazard is a risk that is of particular relevance to the sub-region. Changing coastal processes are expected to require active management and adaption planning of coastal hazard risk into the future.



Tourism is expected to be an increasing contributor to the sub-region's economy. The natural environment and attractions of the sub-region underpin its economy.



An efficient regional road network is critical to the economic and social viability of the sub-region. Indian Ocean Drive is a regionally significant tourist route. Boating facilities are critical to the sub-region's economic and social vitality.

# 1. Scope

## 1.1 Strategy area

The area covered by the Guilderton to Kalbarri Sub-regional Strategy is not bounded by a defined strategy area but may broadly be described as the coastal strip between Guilderton and Kalbarri including the Abrolhos Islands.

## 1.2 Purpose

The Western Australian Planning Commission (WAPC) has identified a range of issues consistently experienced throughout the coastal area from Guilderton to Kalbarri, particularly in the coastal settlements. These include urban growth pressure, coastal erosion and inundation, tourism pressures, protection of biodiversity and landscape values, and bushfire planning.

The WAPC has identified the need to assist local governments to implement State strategic issues in a sub-regional context by guiding decision-making, and informing local planning documents such as local planning strategies and local planning schemes.

The primary purpose of this Strategy is to guide growth in the sub-region and outline the WAPC's approach to future planning and development within the Guilderton to Kalbarri sub-region.

Other purposes include:

- to integrate local and regional land use planning to provide for population and economic growth;
- to respond to the protection of environmental values and coastal landform change; and
- to guide planning for the development of urban and tourist land-uses and associated infrastructure.

Significant planning has been undertaken for the Geraldton urban area. Consequently, the Strategy is limited in its scope regards the Geraldton urban area.

The Strategy provides a greater level of detail for actions previously outlined in the WAPC's State Planning Strategy and the Wheatbelt and Mid West regional planning and infrastructure frameworks. By doing so, it provides a clear

line of sight between the WAPC's high order planning strategies and the more detailed local planning strategies.

The Strategy forms a part of the WAPC's State Planning Framework.





## 1.3 Key planning issues

Key planning issues evident in the sub-region are:

### Settlement

- Recognition that the sub-region's settlements each have a distinct sense of place, culture and lifestyle.
- The settlement hierarchy prescribed in the regional planning and infrastructure frameworks requires further detail.
- There is a perception that there is potential for Perth's outer suburbs to sprawl up the coast, increasing the need for protection of large tracts of pristine remnant vegetation and increasing infrastructure servicing demands on the State.
- The influence of 'holiday homes' on community growth and development.

### Environment

- Balancing urban growth with the protection of areas with high biodiversity significance and other recognised natural assets.
- The impacts on the coastal and marine environment from coastal processes and climate change including rising sea levels and from increased competition and demand for coastal access for recreation, industry and tourism, need to be addressed.

- The heightened risk of bushfire hazard due to the trend toward a climate change.
- Potential loss of valued natural landscapes and remnant vegetation, in particular biodiversity assets and remnant vegetation.
- Increasing competition and demand for coastal access for recreation, industry and tourist use.
- The adverse impacts of increased human activity along the coast on the marine environment.

### Economy

- The growing tourism market is increasing demand for tourist facilities, amenities and infrastructure in the sub-region.
- The impacts of the seasonality of the tourism sector on local communities need to be considered, to ensure towns are economically sustainable and have adequate infrastructure and services.

### Transport

- Indian Ocean Drive is an important tourist route that could be compromised if used for major freight.
- There is increasing economic and recreational demand for new marine facilities in the sub-region, in particular at Ledge Point and Lancelin.

## 1.4 Methodology

The Strategy was prepared by the Department of Planning, Lands and Heritage on behalf of the WAPC. A steering group was established to guide the preparation of the Strategy. The steering group included representation from:

- Western Australian Planning Commission (WAPC)
- Department of Planning, Lands and Heritage
- Mid West Development Commission
- Wheatbelt Development Commission
- WA Local Government Association (WALGA)
- Shire of Chapman Valley
- Shire of Carnamah
- Shire of Coorow
- Shire of Dandaragan
- Shire of Gingin
- City of Greater Geraldton
- Shire of Irwin
- Shire of Northampton.

The Steering Group met on five occasions in Jurien Bay, Geraldton, Lancelin and Perth, and was informed by subject matter experts from:

- Department of Planning, Lands and Heritage
- Department of Transport – Marine
- Main Roads WA
- Tourism WA
- Wedge Island Protection Association
- Grey Conservation and Community Association
- the Office of the Environmental Protection Authority
- Mid West Development Commission
- Wheatbelt Development Commission.

The Strategy was advertised in draft form from 1 November 2017 to 5 February 2018 and 1,402 submissions were received in response. Of these, 1,393 were concerned with the elements of the draft Strategy that contemplated the future of Wedge and Grey. The draft Strategy included recommendations that may have affected the ongoing use of those places. The Department of Biodiversity, Conservation and Attractions is responsible for the management of Wedge and Grey, and is undertaking comprehensive planning processes to determine future planning options for Wedge and Grey. In response to the submissions received, and having due regard to orderly and proper planning, the WAPC has removed those considerations from the Strategy prior to its publication.

Submissions made on other matters were received from:

- Waste Authority
- Heritage Council
- Friends of Moore River Estuary and Linda Johnson
- City of Greater Geraldton
- Department of Biodiversity Conservation and Attractions
- Margaret Drayton

Infrastructure projects identified within the Strategy are based on indicative information from State government agencies and are subject to change. Unless otherwise stated, they should not be taken as a funded Government commitment.



## 2. Governance and context

### 2.1 Planning

The planning context for this Strategy is shown in *Figure 1*. It is intended to be more detailed than regional strategies such as the Wheatbelt and Mid West Planning and Infrastructure Frameworks, and provides guidance on matters that form part of a local planning strategy.

#### 2.1.1 State planning policies

State planning policies provide the highest level of planning policy control and guidance in Western Australia. They are prepared under Part 3 of the *Planning and Development Act 2005* and are applied at all levels of planning decision-making including strategic planning, local planning strategies and schemes, structure plans, subdivision, and development.

The Strategy provides strategic direction based on the fundamentals prescribed in relevant State Planning Policies.

**The following State planning policies have particular relevance to the sub-region:**

**State Planning Policy 1 State Planning Framework (SPP1)** intends for sub-regional strategies to guide change and to establish a basis for cooperative action to be taken by State and local governments on land use change. Additionally, the Indian Ocean Drive Planning Guideline (2014) is listed in Table 5 of SPP1, it sets out broad guidelines for the location, siting and design of various land uses and development in the locality of Indian Ocean Drive.

**State Planning Policy 2 Environment and Natural Resources (SPP2)** seeks to integrate environment and natural resource management with land use planning, protect, conserve and enhance the natural environment and promote and assist in the wise and sustainable use and management of natural resources.

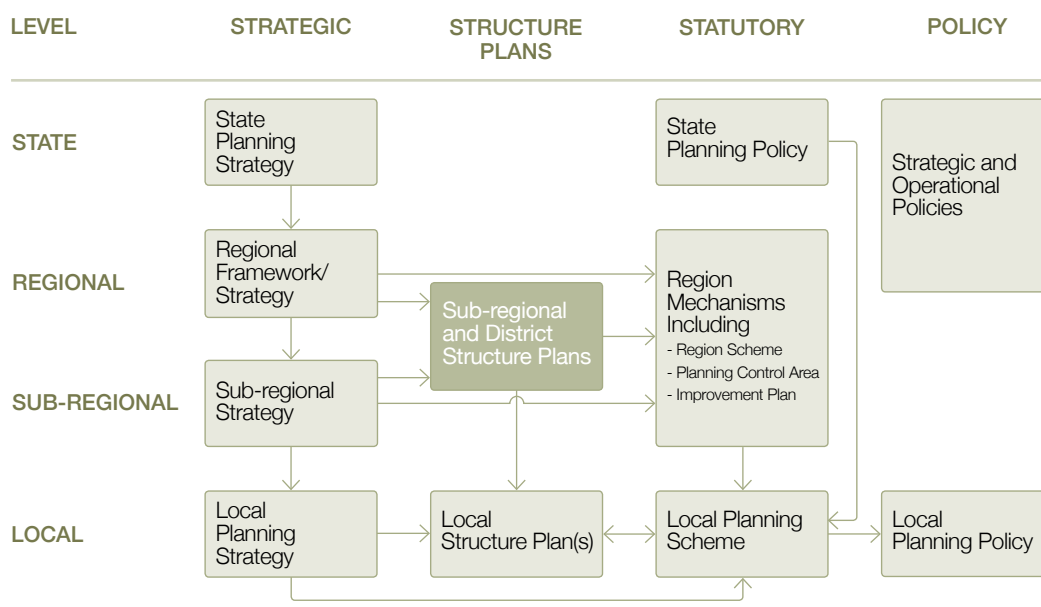


Figure 1: Western Australian Planning Framework

**State Planning Policy 2.5 Rural Planning (SPP2.5)** provides the basis for planning and decision-making for rural and rural living land in Western Australia, and for basic raw materials outside of the Perth and Peel regions.

**State Planning Policy 2.6 State Coastal Policy (SPP2.6)** provides guidance for land use and development decision-making within the coastal zone, including requiring that coastal hazard risk management and adaptation is appropriately planned for.

**State Planning Policy 2.7 Public Drinking Water Source (SPP2.7)** seeks to protect and manage public drinking water sources from incompatible land uses and pollution in order to maintain the quality of the drinking water.

**State Planning Policy 2.9 Water Resources (SPP2.9)** seeks to protect, conserve and enhance water resources, ensure that suitable water resources are maintained to meet requirements for human and all other biological life; and achieve sustainable use and management of water resources.

**State Planning Policy 3 Urban Growth and Settlement (SPP3)** sets out the principles and considerations which apply to planning for urban growth and settlements in Western Australia.

**State Planning Policy 3.5 Historic Heritage Conservation (SPP3.5)** sets out the principles of sound and responsible planning for the conservation and protection of Western Australia's historic heritage.

**State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP3.7)** seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure.

## 2.1.2 Regional planning and infrastructure frameworks

Planning and infrastructure frameworks have been prepared for each of Western Australia's 10 planning regions.

The frameworks provide guidance to government agencies and local governments on land use, land supply, land development, environmental protection, infrastructure and for the delivery of physical and social infrastructure for each region. They also provide the framework for the preparation of sub-regional and local planning strategies and inform the decisions of the WAPC.

The Mid West Regional Planning and Infrastructure Framework (2015) and the Wheatbelt Planning and Infrastructure Framework (2015) provide the regional strategic context to planning for the Strategy area. These frameworks outline the WAPC's position on planning for population growth, transport, agriculture, conservation estate, remnant vegetation, mineral prospectivity, and significant basic raw materials for the Mid West and Wheatbelt regions for a 20 year timeframe.

## 2.1.3 Local planning strategies and schemes

There are eight local governments in the strategy area, all of which have local planning strategies and schemes that govern land use and development. An overview of the local planning strategies and schemes in effect over the sub-region is provided in **Appendix 1**.

This Strategy is intended to provide direction and support to local governments to deal with issues of State and regional significance. The local schemes and strategies may need review to ensure consistency with the direction in the Strategy.

## 2.2 Regional development and context

The *Regional Development Commissions Act 1993* defines the regions of Western Australia in an almost identical manner to the *Western Australian Planning and Development Act 2005*.

Regional investment blueprints have been prepared for each region defined under the *Regional Development Commissions Act 1993*. They identify priorities for economic, social and community development projects.

By considering local issues and conditions, the blueprints seek to develop the economic base of each region by highlighting advantages, workforce opportunities and community development. They are intended to guide investment and allocation of funding into infrastructure and services for regional communities.

The sub-region has very strong economic and social connections with the Perth metropolitan region. The opening of Indian Ocean Drive in 2010 reduced the time and demands of travel between Perth and the sub-region, creating both opportunities and challenges to the coastal communities along that route.

### 2.2.1 Mid West Regional Investment Blueprint

The Mid West Regional Investment Blueprint (2015) represents a 2050 growth and development strategy for an intergenerational, global, innovative and dynamic Mid West region that attracts and retains talent and investment.

The Blueprint has five priority pillars that are deemed as important to either drive or reduce barriers to growth and development. These are:

- physical infrastructure
- digital and communications
- economic development
- highly desirable communities
- knowledge and learning.

The five pillars are further divided into 22 associated elements (sub-pillars).

The Mid West Development Commission has been progressively implementing the Blueprint.

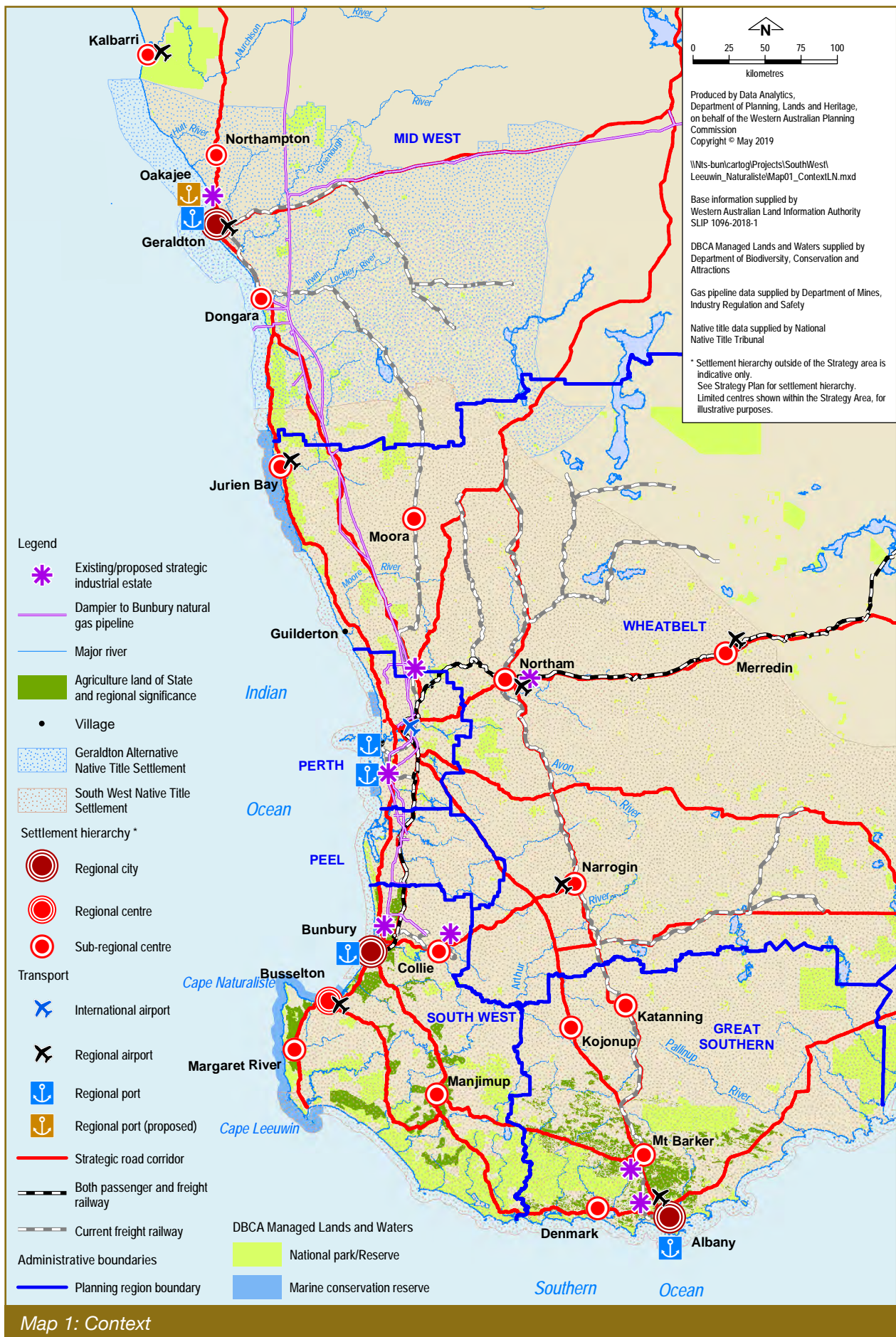
### 2.2.2 Wheatbelt Regional Investment Blueprint

The Wheatbelt Regional Investment Blueprint (2015) outlines a future for a region that is diverse in industry, liveability and capability. Five distinct sub-regions are home to 75,000 people, receive nearly 700,000 visitors annually and drive an annual economic value of \$7.4 billion. This economic activity occurs across the key industries of agriculture (including horticulture and aquaculture), mining, transport and logistics, manufacturing and construction and lifestyle services (retail, tourism, health, education, aged care).

To maximise growth across the region, the Wheatbelt blueprint outlines a roadmap with six key pillars for growth. These are:

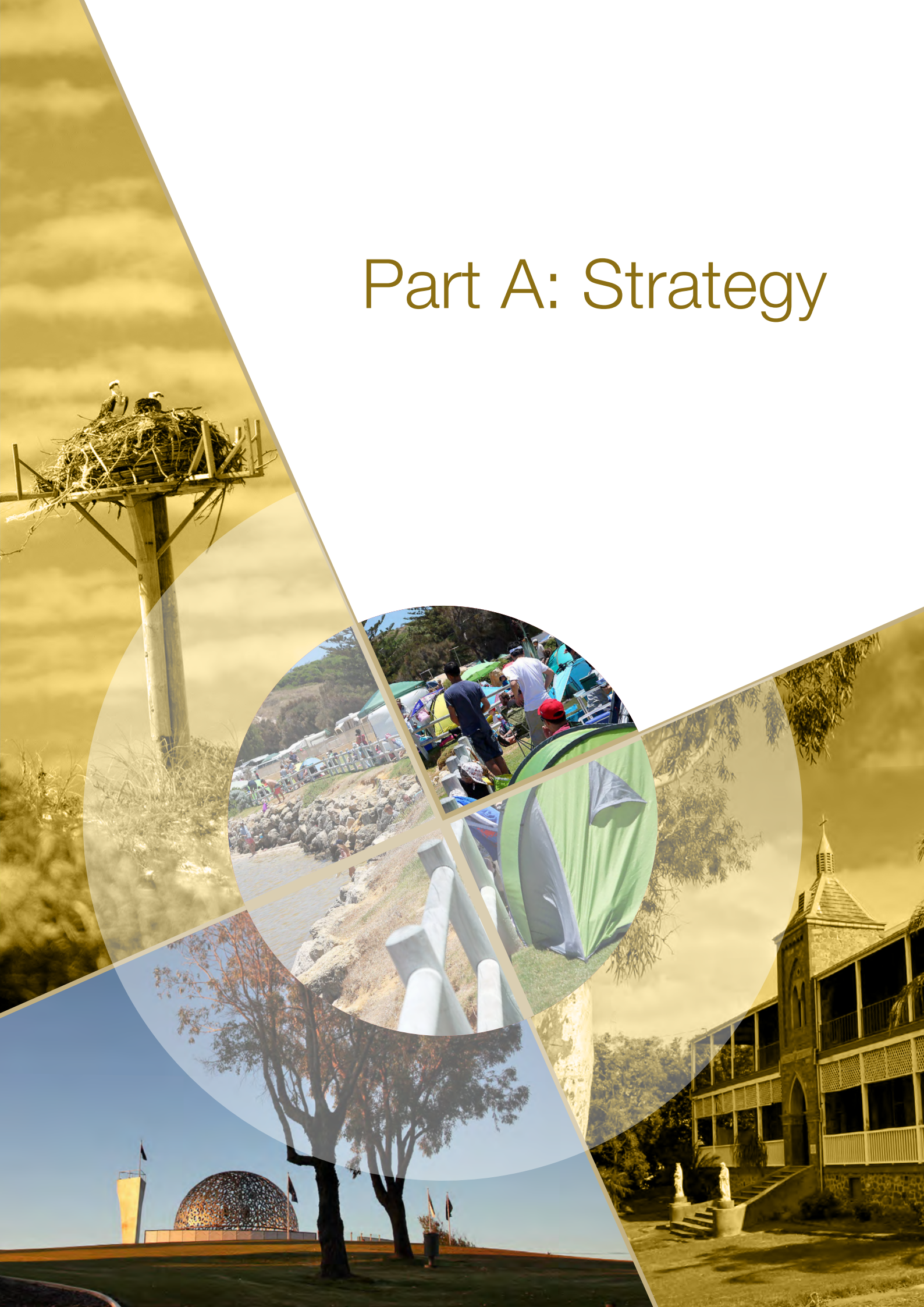
- vibrant economy
- clever people
- livable communities
- valued natural amenity
- marketing Wheatbelt opportunities
- effective partnerships







# Part A: Strategy



### 3. Vision

The vision for the *Guilderton to Kalbarri Sub-regional Strategy* is:

Relaxed and healthy coastal communities connected to a diverse economy, valued natural environment and a celebrated culture.

### 4. WAPC strategic directions

To support implementation of the State Planning Framework, including the State planning policies outlined in Section 2, the Western Australian Planning Commission (WAPC) will undertake the strategic directions listed below in its decision-making for the sub-region.

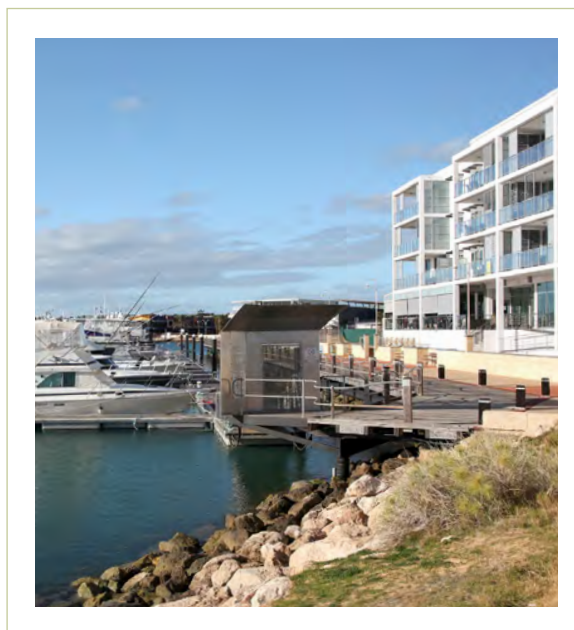
The strategic directions have been spatially represented on the strategy plan where possible. Bolded text denotes where a strategic direction is directly referenced on the strategy plan.

#### Settlement

1. Adopt the **settlement hierarchy** defined in Section 6.
2. Promote and encourage urban growth in and adjacent to established settlements.

#### Environment

3. Adopt a general presumption against new development within areas identified to be affected by coastal hazards.
4. Adopt a general presumption against planning proposals that may impact on matters of national or international environmental significance that require referral under the *Environmental Protection and Biodiversity Conservation Act 1999*.



5. Support identification in planning instruments of regional ecological corridors for biodiversity and wildlife, to connect environmental assets.
6. Balance bushfire risk, biodiversity preservation and economic growth.
7. Protect landscapes that are of high value and are viewed from the coastline, coastal bays, tourist routes and tourism activity sites.
8. Support a case-by-case approach to managing dune migration, depending on the speed of movement, likely impacts, quality of resource and available avoidance options.

#### Economy

9. Generally support the retention and development of caravan parks as affordable holiday accommodation.
10. Seek to incorporate tourism routes in local planning strategies to ensure land use change can take advantage of tourist pathways building on the sub-region's culture and heritage.

#### Transport

11. Designate and retain Indian Ocean Drive's road classification as a coastal **tourist route**, and restrict its use for freight tasks.
12. Recognise the importance of the **Oakajee Narngulu Infrastructure Corridor** (ONIC) as an important strategic infrastructure corridor linking Geraldton and the Oakajee site.
13. Support the intent and alignment of the proposed **agricultural lime heavy haulage route** from Lancelin to Brand Highway.

#### Utilities and services

14. Support and encourage fit for purpose technology to deliver innovative waste management and other local services.

## 5. WAPC actions

To support implementation of the State Planning Framework, including the State planning policies outlined in Section 2, the Western Australian Planning Commission (WAPC) will undertake the action listed below in its decision-making for the sub-region.

1. Assist local governments to implement options for planned or managed coastal retreat, where this option is identified as appropriate under relevant coastal hazard risk management and adaptation planning guidelines (CHRMAP).
2. Assist in the preparation of tourism strategies that can provide guidance to local planning strategies on issues including:
  - tourism assets, including amount and locations of zoned land, potential locations of future tourism land
  - tourism zoned land and tourist accommodation capacity, including an assessment of the private holiday rental market
  - infrastructure capacity, constraints, gaps (power, water, sewerage limits and waste management) and opportunities
  - preservation of caravan parks
  - recognition of cultural and heritage values.
3. Research the impact of seasonal tourism on local services and infrastructure.
4. Assist with planning investigations for land uses associated with existing and planned boating facilities with an aim to inform local planning strategies.



## 6. Settlement hierarchy

The Settlement hierarchy (*Figure 2*) is substantially the same as the settlement hierarchy prescribed in the Wheatbelt and Mid West regional planning and infrastructure frameworks.

The 'tourism site' places identified on the Strategy plan do not form a part of the settlement hierarchy of the Strategy.

Further background is provided in **Part B** of the Strategy.

| Tier                         | Settlement   | Description  |
|------------------------------|--|--|
| Regional city                | Geraldton  | <p>Regional cities are typically dominant centres for population, economic activity and employment and are considered to offer the most extensive and diverse range of high-order services and functions.</p> <p>Regional cities play a significant role in developing much of a region's industry and employment and in this regard contain substantial hard infrastructure of regional significance.</p> <p>Regional cities often service a catchment that includes the majority of the regional population as well as industrial, retail, commerce, administration, government and social services. They sustain substantial health, education and recreation infrastructure.</p> <p>Typically, regional cities have a wide range of comparative retail , regional government department offices, and are cultural and entertainment centres.</p> |
| Sub-regional centre          | Kalbarri<br>Dongara<br>Jurien Bay<br>Northampton               | <p>Sub-regional centres support the population and economic activities within their surrounding hinterlands through the provision of goods and services.</p> <p>The catchment areas of sub-regional centres usually extend beyond the immediate centre to include surrounding centres and districts and as such their services are utilised by a broader population.</p> <p>Sub-regional centres often provide local government administrative functions and a range of social infrastructure and services, including local recreation, health services and secondary education.</p>   |
| Proposed sub-regional centre | Lancelin<br>Guilderton<br>South                                |  |
| Town                         | Port Gregory<br>Horrocks<br>Leeman<br>Cervantes                | <p>Settlements within these two tiers offer a level of service that generally deals with the daily needs of their service population. The separate tiers allow for distinction to be made where particular settlements service a larger population catchment and/or offer a greater number of services relative to others. How settlements are assigned to the respective tiers is considered within the context of that particular region.</p>  |
| Local centre                 | Green Head<br>Guilderton<br>Ledge Point<br>Seabird<br>Walkaway |  |

*Figure 2: Settlement hierarchy*



## 7. Strategy plan

The Strategy plan is a spatial representation of the Western Australian Planning Commission (WAPC) strategic directions and actions. Not all WAPC strategic directions and actions are able to be spatially represented. Background and contextual spatial information is in **Part B: Profile**.

## 8. Timeframe, monitoring and review

The Strategy takes a long term view to planning for the sub-region. The Strategy document has a 20 year time horizon, after which it will require thorough review.

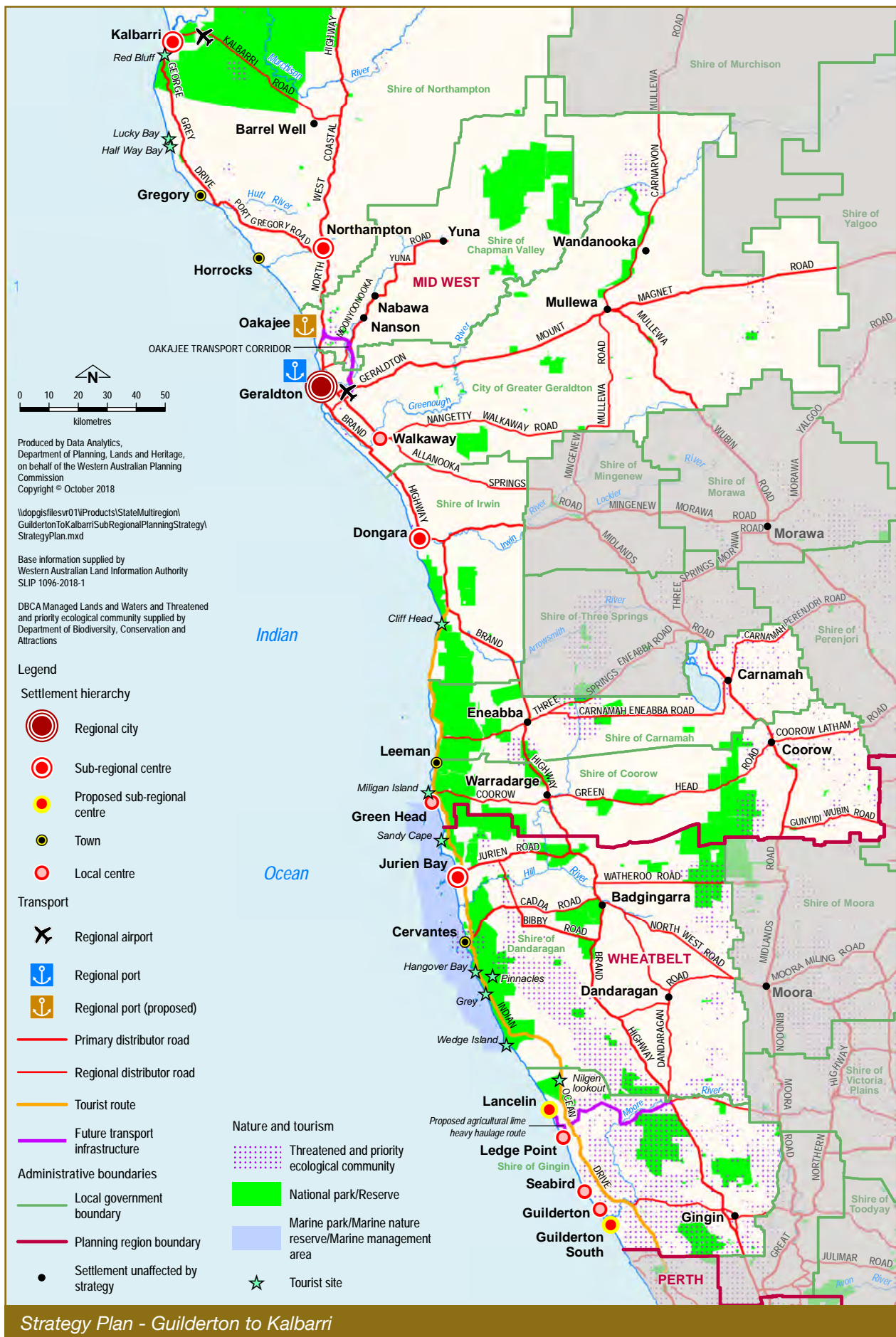
The Western Australian Planning Commission (WAPC) will be responsible for monitoring the implementation of this Strategy and determining the scope and nature of any reviews.

The Strategy is required to be reviewed, and amended as required, following resolution of the South West Native Title Settlement.

The Strategy is required to be reviewed, and amended as required, following resolution of the Geraldton Alternative Native Title Settlement Agreement. See **Part B: Profile** for further details.

The Strategy may be revised and amended by the WAPC from time to time, as required, including in response to changes to WAPC policy and positions on relevant issues.







# Part B: Profile



## 9. Settlement

The Guilderton to Kalbarri coast has two distinct settlement areas:

- the regional city of Geraldton, including settlements along the Brand and North-West Coastal highways, principally Dongara- Port Denison and Kalbarri; and
- settlements along Indian Ocean Drive, from Guilderton in the south to Leeman in the north.

These are shown on the Profile maps.

### 9.1 Population

Population change comprises three elements: fertility (births), mortality (death) and migration. It is generally the case that birth and death rates are similar, resulting in no net change in population. Migration, be it within Australia, or from overseas is the most critical factor in effecting substantial change in population.

In regional areas, the issue of population is sensitive, as there is no 'absolute' population figure that exists. This Strategy seeks to explore the different types of population data that can be used for different purposes. In considering potential population change, there is a range of data that can be used to provide an indication. This includes:

**Census data** – the Census is conducted by the Australian Bureau of Statistics (ABS) every five years and provides detailed information on people counted in a location on census night, usual residence, movement since last Census and visitors. This data is available at the finest level of detail of all data, including local government, settlement (if over a certain threshold), suburb, postcode and neighbourhood (known as a mesh-block).

**Estimated resident population** – the Estimated Resident Population produced by the ABS is Australia's official population and is used as a basis for Commonwealth grants and seats in parliament. These figures are derived by adding natural increase (births minus deaths) and net overseas migration (immigration minus emigration) to the estimated population at the beginning of the period. Account is also taken of estimated interstate movements involving a change of usual residence (net interstate migration). This data is updated every quarter, but its finest detail is for local government area.

**WAPC forecasts** – the WAPC is the State demographer and is responsible for preparing population forecasts for use by State agencies and other interested parties. Its WA Tomorrow suite of publications includes a forecast range

known as 'bands'. Users can choose from five forecasts (bands) which best suit their purposes. Bands A and B contain less optimistic forecasts, Band C is the 'most probable' forecast and bands D and E represent the most optimistic forecasts. Where smaller populations are involved, there is greater variability between the bands.





**Blueprint aspirations** – the Mid West and Wheatbelt regional investment blueprints both set aspirations for population growth, based on average annual growth rates.

Figure 3 shows anticipated population growth in the sub-region, which combines local government-wide population figures for Estimated Resident Population and the WA Tomorrow projections. An overall trend of growth is anticipated in the strategy area.

ABS and WAPC forecasts are based on the 'cohort component method', in which base population is projected by calculating the effect of births, deaths and migration within each age-sex group according to specified fertility, mortality and migration assumptions.

The component cohort method of forecasting has been used globally since 1895. It is widely used by developed nations, as well as the United Nations and the World Bank. While the model is stable and reliable, it struggles to capture seasonal changes and to project for 'opportunity' or aspiration.

The WAPC will be guided by the full range of population figures in contemplating land use change.

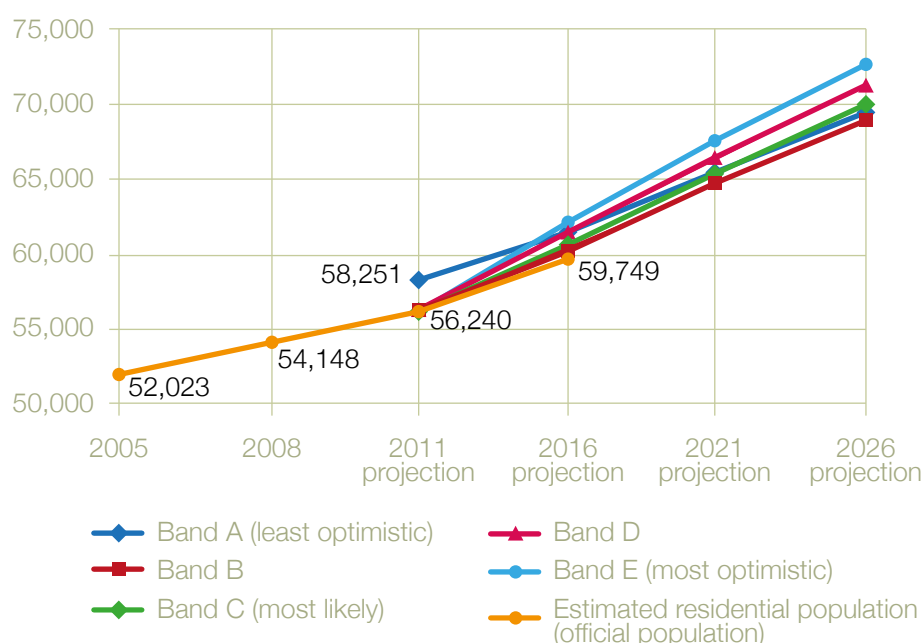


Figure 3: Anticipated population growth of local governments

## 9.2 Settlement and growth

### 9.2.1 Settlement pattern

The settlement hierarchy shown in **Part A: Strategy** is broadly similar to that shown in the regional planning and infrastructure frameworks. The settlement population figure below is broadly similar to that shown in the regional planning and infrastructure frameworks with the exception that Wheatbelt settlements are now defined to a greater level of detail.

Settlement population data is outlined in Table 1.

Table 1 also illustrates the ability of the settlements to respond to urban growth demand by identifying the existing and potential population of each settlement. In the context of this Strategy, potential population is the estimated design population of the settlements if they were to be developed to the full extent of the current level of zoned serviceable land. The planned populations of the settlements that form part of this Strategy are significantly above the existing population.

As shown in Figure 2 and Table 1, there is sufficient land supply to cater for future population growth.

| Settlement                     | 2011 population | 2016 population | 2016 potential population** |
|--------------------------------|-----------------|-----------------|-----------------------------|
| Geraldton                      | 35,749          | 38,111          | 96,000                      |
| Kalbarri                       | 1,467           | 1,557           | 6,500                       |
| Dongara-Port Denison           | 2,766           | 2,790           | 14,500                      |
| Jurien Bay                     | 1,507           | 1,761           | 35,000                      |
| Lancelin                       | 606             | 726             | 12,000                      |
| Guilderton South (proposed)    | nil             | nil             | 6,000                       |
| Cervantes                      | 461             | 527             | 2,500                       |
| Leeman                         | 356             | 352             | 2,000                       |
| Green Head                     | 256             | 297             | 1,500                       |
| Ledge Point                    | 207             | 240             | n/a                         |
| Guilderton                     | 141             | 172             | 1,000                       |
| Seabird                        | 80              | 78              | Limited growth              |
| Port Gregory (Yallatharra SSC) | 213             | 86              | Limited growth              |
| Horrocks                       | 131             | 138             | 1,500                       |

\* **Appendix 1** describes the characteristics of the assigned settlement categories.

\*\* **Existing and potential population capacity** – 2016 population is based on the 2016 Census. Potential population indicates the population that could be accommodated based on existing zoned land, noting that population is indicative only, and may be affected by topography, vegetation, bushfire, servicing and land assembly.

Table 1: Settlement population

The WAPC's approach is for one of consolidation and growth around existing settlements so they are able to realise their potential. Urban growth should be in an orderly manner, with a presumption against the development of land for urban purposes that is beyond reasonable estimates of demand.

This Strategy does not provide for Perth's outer suburbs to sprawl up the coast, and local planning frameworks are in place to achieve a nodal form of development, generally with large tracts of pristine remnant vegetation in-between.

Greater Geraldton is the only regional city in the strategy area. Kalbarri and Dongara-Port Denison are sub-regional centres within the Geraldton hinterland. South from Dongara-Port Denison, proximity to Perth tends to reduce the cultural and economic draw of Geraldton. It is not within the purpose or scope of this Strategy to contemplate detailed town growth strategies.

Part A: Strategy defines the settlement hierarchy that forms a WAPC policy position of this Strategy.

## 9.2.2 Settlement culture and tourism impacts

Aside from Geraldton, most of the settlements along the coast were established to provide a holiday destination for farming communities from inland areas. As such, these communities have strong connections to inland farming districts and a social capital and culture that has developed over decades of shared endeavour and leisure.

The planning implications associated with holiday towns are significant. Many houses are 'lock and leave', with up to 30 per cent vacancy during non-peak times. At peak times, towns struggle to cope with the influx of visitors, making demands on local facilities and services, and also impacting on the sustainability of facilities in off-peak times.

The impact of tourism on specific facilities is discussed in Section 5 – Economy.

## 9.2.3 Holiday homes

The sub-region has a high proportion of homes that are vacant for significant periods of the year and used as holiday homes for non-residents. As shown in *Table 2* below, all settlements in the sub-region had significantly higher rates of unoccupied dwellings on census night 2016 than the Western Australian average rate of 13.3 per cent.

| Settlement           | Number of dwellings (occupied) | Number of dwellings (unoccupied) | Total dwellings | Percentage dwellings unoccupied |
|----------------------|--------------------------------|----------------------------------|-----------------|---------------------------------|
| Guilderton           | 69                             | 319                              | 388             | 82.2%                           |
| Seabird              | 29                             | 47                               | 76              | 61.8%                           |
| Ledge Point          | 87                             | 324                              | 411             | 78.8%                           |
| Lancelin             | 279                            | 566                              | 845             | 67.0%                           |
| Cervantes            | 206                            | 289                              | 495             | 58.4%                           |
| Jurien Bay           | 572                            | 560                              | 1,132           | 49.5%                           |
| Green Head           | 125                            | 205                              | 330             | 62.1%                           |
| Leeman               | 136                            | 141                              | 277             | 50.9%                           |
| Dongara/Port Denison | 1,134                          | 326                              | 1,460           | 22.3%                           |
| Geraldton            | 13,261                         | 2,367                            | 15,628          | 15.2%                           |
| Horrocks             | 65                             | 103                              | 168             | 61.3%                           |
| Gregory              | 32                             | 32                               | 64              | 50.0%                           |
| Kalbarri             | 286                            | 548                              | 834             | 65.7%                           |

*Table 2: Dwelling occupancy rates of settlements*

A high proportion of holiday homes and unoccupied dwellings present planning challenges for local communities and there is often a high level of community opposition to 'lock and leave' suburbs. A high prevalence of unoccupied dwellings can result in greater servicing and infrastructure requirements to accommodate peak occupancy periods and places pressure on essential infrastructure (power, water, sewerage, waste) as well as community facilities and infrastructure at peak periods. A high prevalence of holiday homes can also lead to reduced housing affordability, reduced long-term rental stock and limited accommodation for staff employed in the tourist sector.

The Strategy proposes various actions to address issues including researching the impact of seasonal tourism on local services and infrastructure and further assessment of the private holiday rental market.

### 9.3 Aboriginal heritage and native title

This strategy acknowledges the traditional owners of the Guilderton to Kalbarri sub-region, past and present. The sub-region is predominantly within Yued Noongar and Yamatji country.

The *Native Title Act 1993* provides for the recognition and protection of Aboriginal and Torres Strait Islander people's native title rights and interests. Certain government actions, such as grants of freehold, have been found to extinguish native title.

When planning for urban growth and development, native title is an important consideration as land in and around towns that may be identified as appropriate for certain development options may be subject to a native title claim or determination. Broadly, however, native title has been extinguished on the majority of land in the strategy area by the granting of freehold title.

The recognised traditional owners for the land north of Perth from Guilderton to Leeman are the Yued people, one of the six groups collectively recognised as the Noongar traditional owners of the South West under the South West Native Title Settlement. This has been recognised in the Noongar (Koorah, Nitja, Boordahwan) (Past, Present, Future) *Recognition Act 2016*. The Yued region includes coastal areas between Two Rocks and Leeman, and also includes inland areas such as Moora and Dalwallinu. The Shire of Gingin and the Yued people have prepared a reconciliation action plan, which identifies two significant areas for Yued people. These are shown on [Map 3](#).

On 8 June 2015, after extensive negotiations, and authorisation by the Noongar people, the Western Australian Government signed (executed) the six South West Native Title Settlement Agreements with the Ballardong, Gnaala Karla Booja, South West Boojarah, Wagyl Kaip and Southern Noongar, Whadjuk and Yued groups. Following successful registration of the Settlement Agreements, and Settlement commencement, any native title rights that may exist will be surrendered in exchange for a negotiated package of benefits, including formal recognition of the Noongar people as traditional owners (already complete – see above), land, investments and the establishment of Noongar Regional Corporations.

A major component of the Settlement is the establishment of the Noongar Land Estate through the transfer of a maximum of 320,000 hectares of Crown land for cultural and economic development, comprising 300,000 hectares as reserve land and 20,000 hectares as freehold title. Under the Settlement, the Noongar Boodja Trust will be a major landholder in the Wheatbelt and South West regions. Traditional owners are expected to be more closely involved in land use planning in the district upon commencement of the Settlement. This land will provide cultural and economic development opportunities for the Noongar Regional Corporations representing the recognised Noongar groups. Until the South



West Native Title Settlement commences the *Native Title Act 1993* (Cth) still applies to all land users planning activities in the Settlement Area. The area covered by the South West Native Title Settlement is shown in [Map 3](#).

Geraldton and its surrounds are considered to be the traditional lands of the Yamatji people. The Yamatji people are currently engaged with the State Government in the negotiation of a Geraldton Alternative Native Title Settlement Agreement to resolve their native title claim applications.

In the Mid West, the Naaguja claim covers approximately 5,500 square kilometres including the City of Greater Geraldton and the shires of Chapman Valley, Irwin and Northampton. This is also part of the Geraldton Alternative Settlement Agreement negotiations. Until the Agreement is finalized and the Naaguja claim is resolved, the *Native Title Act 1993* (Cth) still applies to all land users planning activities in these areas. Once the Agreement is in place, traditional owners are expected to be more closely involved in land use planning in the district. This strategy acknowledges the traditional owners of the sub-region, past and present. The area covered by the proposed Geraldton Alternative Settlement Agreement is shown in [Map 3](#).

The South West Native Title Settlement is not yet finalised. Once it is, the Yued Noongar people are expected to be more closely involved in land-use planning in the relevant parts of the sub-region. Following resolution of the South West Native Title Settlement the Strategy will need to be reviewed in consultation with the Yued Noongar people and possibly amended to incorporate any changes that may be required.

The Geraldton Alternative Native Title Settlement Agreement is not yet finalised. Once it is, the Yamatji people are expected to be more closely involved in land-use planning in the relevant parts of the sub-region. Following resolution of the Geraldton Alternative Native Title Settlement

Agreement the Strategy will need to be reviewed in consultation with the Yamatji people and possibly amended to incorporate any changes that may be required.

## 9.4 Historic heritage and culture

When planning for development, the identification and conservation of historic heritage places is important in representing sense of identity and its history.

State Planning Policy 3.5 Historic Heritage Conservation sets out the principles of sound and responsible planning for the conservation and protection of Western Australian historic built heritage places.

The Guilderton to Kalbarri sub-region consists of 1,343 places on local government heritage inventories, 148 places on the State Register of Heritage Places and 39 places are included in the State Register Assessment program. Those sites on the State Register of Heritage Places are shown in [Map 4](#).

Historic heritage places have the potential to contribute to the cultural and economic diversity of the sub-region. In particular, heritage assets can play a significant role in local tourism development.

## 10. Environment

The Guilderton to Kalbarri strategy area is rich in biodiversity and natural assets, including flora, fauna and mineral resources however historical farming practices have resulted in extensive clearing.

Planning processes are required to consider the environmental values of the region and incorporate measures to ensure that potential impacts on the environment are avoided or minimised. There is an increased focus on enhancement of environmental assets where feasible. Significant proposals that are likely, if implemented, to have a significant effect on the environment, may require referral to the Environmental Protection Authority (EPA) and/or Commonwealth Minister for the Environment under the *Environmental Protection Act 1986* (WA) and/or *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth), respectively.

With the region experiencing pressure for growth, the Western Australian Planning Commission (WAPC) will seek to address natural resources early in planning processes, particularly as part of strategic regional and sub-regional. This is because delaying the consideration of natural resources to structure planning and subdivision stages reduces the ability to achieve desired outcomes.

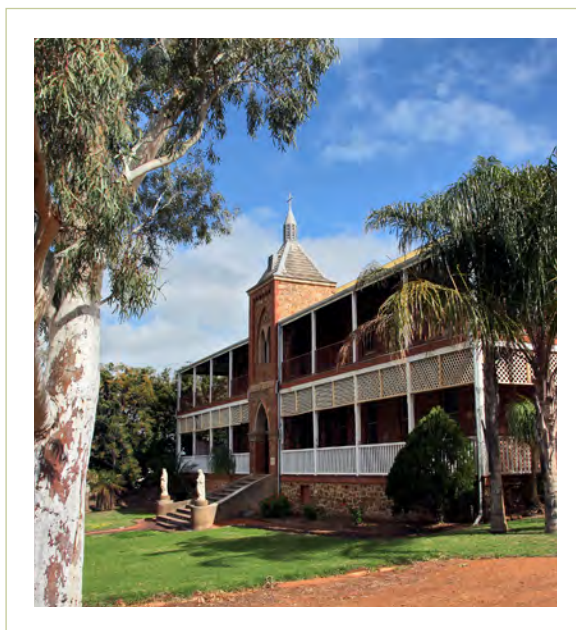
The WAPC will be guided by the principles outlined in State Planning Policy 2 Environment and Natural Resources (SPP2) and State Planning Policy 2.5 Rural Planning (SPP2.5), as they relate to natural resources.

### 10.1 Climate

The strategy area covers two temperature/humidity zones as defined by the Bureau of Meteorology (BOM) (2017). Moving north through the strategy area, the climate experiences more hot, dry summers with mild winters, while the southern section of the strategy area experiences warm summers with cold winters. Average annual rainfall within the study area ranges from 600 millimetres in Lancelin to 346 millimetres in Kalbarri (BOM, 2017).

The Bureau of Meteorology (2017) notes that the observed mean annual temperature from 1970-2016 has been increasing. This is consistent with the observed trend in global annual temperature over the same time period.

The implication of future temperature increases, both locally and globally, needs to be considered within future planning work. This includes consideration of the long-term effects on the environmental systems and biodiversity. Further, there is an increased likelihood of extreme events such as bushfires, storm events and coastal impacts within the strategy area. Proactive planning within this context can address otherwise irreversible impacts on the environment and on



both public and private infrastructure. Guidance for addressing several of these issues is provided through State planning policies, such as SPP2, SPP2.5, SPP2.6 and SPP3.7.

## 10.2 Biodiversity

The strategy area is characterised by a diverse range of terrestrial and marine ecosystems supporting flora and fauna, exemplified by two of the 15 biodiversity hotspots in Australia being located within its boundary. Biodiversity hotspots are highly diverse areas that are under threat.

The Geraldton to Shark Bay Sandplains biodiversity hotspot comprises extensive heaths and scrub-heaths; perfect habitats for native fauna. The sandplains are most extensive in the north, where the area overlaps the edges of the Carnarvon Basin biodiversity hotspot. The sandplains are home to a diverse range of endemic plants and many reptiles, including a number of endemic small skinks and the Western Australian Carpet Python. Threats include grazing pressure from stock and rabbits.

The Mount Lesueur-Eneabba hotspot is located at the southern extent of the strategy area. It supports a large number of distinct, species-rich endemic communities. There are more than 250 indigenous plant species, many within the heaths and scrub heaths. The hotspot provides an ideal habitat for reptiles, especially small lizards, and home to the threatened Dibbler, a small carnivorous marsupial. Threats include grazing pressure, fragmentation of remnant vegetation and feral animals including pigs and goats.

Other significant ecosystems found within the strategy area include rivers and their catchments such as the Moore, Hill, Murchison, Irwin, and Chapman rivers and associated estuaries as well as wetlands of national significance. Nationally important wetlands within the strategy

area include the Hutt Lagoon System, Karakin Lakes, Indoon System, Lake Thetis, Lancelin Defence Training Area and Murchison River (lower reaches).

The strategy area also contains significant marine biodiversity, ecosystems and habitats, such as those found within the Jurien Marine Park and Abrolhos Marine Reserve. Within the strategy area there are several Matters of National Environmental Significance (MNES) and other matters protected by the *Environment Protection and Biodiversity Conservation Act (1999)* (EPBC Act) in addition to the wetlands mentioned above. The EPBC Act currently lists one National Heritage Place (Lesueur National Park), three threatened ecological communities likely to occur in the area (including Banksia Woodlands of the Swan Coastal Plain), 103 threatened species and 51 listed migratory species within the strategy area.

Land use planning can be an effective tool to improve biodiversity conservation outcomes through the identification and protection of areas with significant biodiversity values, including corridors, establishment of reserves, through zoning, and the appropriate location and control of adjacent land uses.

The strategy area's biodiversity is one of its major assets, providing economic and social benefits to the broader community. Opportunities to enhance this resource both for use by the community and for its tourism potential should be investigated. Development should aim to protect vegetation, flora and fauna species and communities which are identified as having significant environmental values.

## 10.2.1 Conservation assets and protection

The strategy area is largely cleared as a result of historical land uses, with a substantial amount of cleared land available for development. As such the remaining remnant vegetation is important for the conservation and environmental values it holds. Future development should be avoided in areas with vegetation and flora values, to prevent additional impacts to remnant vegetation.

The Department of Biodiversity, Conservation and Attractions (DBCAs) plays an important role in conservation and environmental management, whilst also providing advice to planning decision-makers on environmental issues relating to nature conservation and DBCA-managed areas.

National Parks and associated approved management plans within the strategy area are outlined in Table 3. There are also a number of nature reserves and conservation areas of high environmental value, which should also be considered in land use planning. Additionally, regional flora and vegetation surveys have been undertaken for some sections of the strategy area, including the Geraldton Regional Flora and Vegetation Survey (2010).

As well as the above national parks, the strategy area also contains the Jurien Bay Marine Park, the Abrolhos Commonwealth Marine Reserve and numerous nature reserves.

In order to help protect and maintain Australia's biodiversity, the Commonwealth administers the *Environment, Protection and Biodiversity Conservation Act (1999)*. Within the strategy area there are several Matters of National Environmental Significance and other matters protected by the EPBC Act, including one National Heritage Place (Lesueur National Park), three listed threatened ecological communities likely to occur in the area (including Banksia Woodlands of the Swan Coastal Plain), 103 listed threatened species and 51 listed migratory species. Furthermore, as noted in Section 4.4.2, the strategy area contains a diversity of wetlands of which six are listed as nationally important under the EPBC Act. These include the Hutt Lagoon System, Lake Logue-Indoon System, Murchison River (lower reaches), Lake Guraga, Karakin Lakes, Lake Thetis and Lancelin Defence Training Area. This means that activities such as major new developments, works or infrastructure that are likely to have a significant impact on national matters of significance needs to be considered and approved at the national level before proceeding.

| Local Government | National park   | Management plans   |
|------------------|---|--|
| Northampton      | Kalbarri National Park  | Kalbarri National Park 2015  |
| Carnamah         | Tathra National Park  |  |
| Coorow           | Alexander Morrison National Park<br>Lesueur National Park (portion)<br>Watheroo National Park (portion)   | Lesueur National Park<br>– Coomaloo Nature Reserve 1995  |
| Dandaragan       | Lesueur National Park (portion)<br>Watheroo National Park (portion)<br>Badgingarra National Park<br>Nambung National Park<br>Drovers Cave National Park | Lesueur National Park<br>– Coomaloo Nature Reserve 1995<br>Nambung National Park 1998 (including Wangarren, Nilgen and Southern Beekeepers Nature Reserves and the Wedge and Grey Masterplan 2003) |
| Gingin           | Moore River National Park   | < 50   |

Table 3: National parks

Although as noted above there are several reserves for varying conservation purposes within the strategy area, significant biodiversity assets remain in unprotected remnant vegetation on private land.

It is also possible that a number of sites that may be suitable for new conservation reserves over Crown land will be established in the strategy area to offset development in the Perth and Peel region. Possible conservation reserves, as indicatively shown in *Figure 4*, present opportunities for nature based tourism and recreation, provided that conservation values are protected.

The clearing of native vegetation in Western Australia is generally restricted and requires a clearing permit under Part V, Division 2 of the *Environmental Protection Act 1986* unless the clearing is for an exempt purpose.

Future land uses and development will need to carefully consider the environmental values of the strategy area and incorporate measures to ensure that impacts from development on the environment are avoided or minimised, and the environmental values of the land are enhanced where feasible. Significant proposals which are

likely, if implemented, to have a significant effect on the environment, may require referral to the Environmental Protection Authority (EPA) and/or Commonwealth Minister for the Environment under the *Environmental Protection Act 1986* (WA) and/or *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth), respectively.

Generally the WAPC will not support proposals that may have a significant impact on matters of national or international significance and will require referral under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).

This Strategy seeks to preserve biodiversity values by avoiding development in vegetated areas. Aside from the biodiversity status of the area, there is substantial zoned and/or cleared land available for development. Further, although there is relatively good information about biodiversity assets, there is a need to consider wildlife and biodiversity corridors that may be able to link the areas of land held in conservation reserves.

## 10.3 Landscape

The Guilderton to Kalbarri landscape is primarily viewed from three major north-south travel routes including Indian Ocean Drive (the tourist route south of Dongara which incorporates roadside viewing bays), Brand Highway (which was also designed to capitalise on view opportunities) and the North West Coastal Highway.

The landscape's character is unique amongst areas within a day's drive of Perth. There are few buildings or other structures outside settlements, and the extensive areas of natural sand-plain vegetation comprise low-growing plants without trees. Planted windbreaks are uncommon in the agricultural areas. The result is a sweeping, open landscape in which wide views are dominated by the terrain, coastal dunes, broad sand-plains and inland flat-topped hills.



*Figure 4: Possible conservation reserves*



The coastline is characterised by white lines of surf breaking over off-shore reefs and white, sandy beaches with low, grey limestone headlands and cliffs. The coastline further north at Kalbarri features high cliffs of orange and brown layered sandstone. White mobile dunes track north amongst the northerly-orientated parabolic dune systems along the coast. The dunes are occasionally broken by small estuaries which have formed in the mouths of those rivers that have forged a route through the dunes. These rivers provide opportunities to view the landscape from small watercraft.

Further inland, dunes give way to extensive, wildflower-carpeted sand-plains and occasional flat-topped ranges (for example, Moresby Range) and individual hills, termed mesas (for example, Mt Lesueur). Landscape features of note include the limestone pinnacles at Nambung National Park, the unique pink waters of Hutt Lagoon at Port Gregory and the sandstone coastal cliffs and gorge at Kalbarri.

There is no forest or woodland in the region; naturally growing trees are found principally in wetter areas such as along watercourses and near wetlands. The predominant kwongan vegetation is low-lying sand-plain vegetation; globally significant for its great diversity of species. Kwongan creates a colourful display of wildflowers that can be viewed from vehicles and roadsides. Trails and roadside bays in Lesueur and Kalbarri national parks provide safe opportunities to observe and photograph wildflowers.

Grazing and cropping, the region's agricultural uses, retain the naturally open character of the landscape. Planted windbreaks form strong lines through the landscape, but they only occur in limited areas, such as inland from Dongara. Mining and extractive industries, such as mineral sands and lime-sand, have minimal visibility in the landscape.

Urban areas are confined to compact nodes along the coast, mainly accessed by roads parallel to the coast but inland from it. There are few locations where roads are located alongside the coast. Most settlements developed post-WWII, beginning as coastal holiday and fishing communities with modest dwellings and minimal gardens or trees. This created an open, windswept character that remains typical of the region's settlements.

However, several settlements present a contrast including Dongara, with its intact convict-era stone and brick buildings and very large Moreton Bay fig trees, and nearby National Trust hamlet, Greenough hamlet, also of local stone. Geraldton, while the largest of the region's towns, retains a distinct coastal feel as its waterfront and port facilities are major features. The outstanding St Francis Xavier's Cathedral, built of local sandstone to the design of Monsignor Hawes, maintains a visual link to the area's natural geology.

## 10.4 Water resources

The strategy area contains significant ground and surface water assets, with many of these water resources being adjacent to, or surrounded by, existing town sites.

Future land use change and development must consider these resources and potential impacts on the total water cycle. The aim is to deliver an outcome that is consistent with the principles of integrated water cycle management and water sensitive design as outlined within State Planning Policy 2.9 Water Resources and Better Urban Water Management (2008).

The regulation of the take and use of water, protection of waterways, managing drainage and protection of public drinking water sources and supply is currently managed through six Acts, which are expected to be consolidated into one Water Resources Management Act. In 2015

drafting of a bill commenced, and it is intended that the new Act will substantially modernise the existing legislation, some of which dates back to the early twentieth century. The new legislation is intended to address the water management needs of the State in the context of climate change, water allocation and licensing and environmental management.

### 10.4.1 Groundwater

Five groundwater management areas, proclaimed under the *Rights in Water and Irrigation Act 1914*, exist within the strategy area: the Gascoyne, Arrowsmith, Gngangara, Jurien and Gingin groundwater areas. Groundwater is the major, almost sole, source of water for domestic, agricultural, industrial and commercial developments within the strategy area.

Water reserves, catchment areas and underground water pollution control areas are collectively known as public drinking water source areas (PDWSAs). Within the strategy area these are proclaimed under the *Country Areas Water Supply Act 1947* (WA). The Water Quality Protection Note 75 (Department of Water, 2012) notes that there are 18 PDWSAs within the strategy area, most being located within close proximity to existing settlements. Within these areas land use and development is guided by the WAPC's State Planning Policy 2.7 Public Drinking Water Source, State Planning Policy 2.2 Gngangara Groundwater Protection and State Planning Policy 2.9 Water Resources.

### 10.4.2 Surface water

The strategy area contains numerous surface water features including rivers, wetlands and other water-dependent ecosystems. The surface water systems typically discharge into coastal lagoons or wetlands before reaching the coast. The mouths of systems that do not reach the coast typically have little or no connection to the ocean, with river mouths blocked by sand dunes or bars, sometimes permanently.

The strategy area's river systems are considered to have regionally significant values in terms of biodiversity, habitat provision, aesthetics, recreation, and indigenous and European cultural heritage; however it is recognised that their condition varies along their length.

There are three main river basins within the strategy area; namely the Greenough, Moore-Hill and Murchison River Basins. The Murchison River is approximately 700 kilometres long and drains the Yilgarn Plateau. The Greenough River and Moore-Hill river basins are made up of a number of small rivers, which are not linked. These include the Irwin, Hutt, Bowes, Greenough, and Arrowsmith rivers within the Greenough River basin, and the Eneabba Creek, Hill and Moore rivers within the Moore-Hill basin.

As noted in Section 4.2.1, the strategy area contains a number of significant wetlands. Many of the strategy area's wetlands dry out completely during the summer, however there are some which are continuously fed by groundwater that are particularly important transitory habitats for migrating birds as well as supporting significant permanent ecosystems.

The impacts of land use and climate change on environmental water supply and biodiversity management will also be a key challenge for the sub-region. Pressure areas are likely to include Irwin, Greenough, Murchison, Chapman, Hill and Moore River systems, the agricultural areas within the sub-region, native vegetation and national parks/reserves. It is imperative that investigations into these impacts on natural assets in the strategy area are undertaken, and utilised in the preparation of planning strategies, schemes and policy. Further, floodplain mapping of significant waterways and establishment of natural and heritage corridors should be undertaken.

## 10.5 Coastal planning

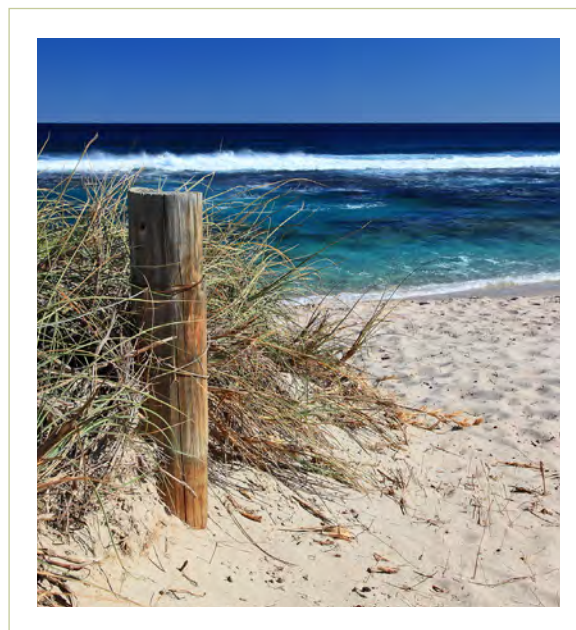
The landforms of the Guilderton to Kalbarri coast are diverse and dynamic, with coastal dune formations that are significant in contributing sand to the coast. While some of the coast falls within national parks and nature reserves, other parts are subject to increasing pressure from development for residential, tourist, recreational, industrial and commercial uses.

This section focuses on land use planning decision-making in those coastal areas that are particularly susceptible to coastal processes (including climate change) and where the coastal processes may affect established public and private assets and/or will influence decisions about proposed new development.

### 10.5.1 Responses to coastal erosion

SPP2.6 sets out four measures for managing risk and adapting to coastal hazards (Figure 5) that must be considered on a preferred and sequential basis.

The response to coastal erosion along the Guilderton to Kalbarri coast has generally been ad-hoc. This can be attributed to a lack of technical information, capacity and resourcing constraints, unclear responsibilities (private sector, local government, State government) and uncertainty about legal liabilities.



As shown in [Map 7](#), the Guilderton to Kalbarri coast contains a variety of landform types with differing vulnerabilities to landform change. Some areas within the strategy area may be considered to have a relatively high risk of coastal erosion and will be the most significant planning challenge in the strategy area. SPP2.6 establishes a framework to respond to coastal hazards such as erosion in existing settlements through Coastal Hazard Risk Management and Adaptation Planning (CHRMAP). For many settlements from Guilderton to Kalbarri, CHRMAPs have either been or are being prepared.



*Figure 5: Risk management and adaptation hierarchy*

Faced with critical coastal hazards, communities have tended to protect coastal assets, rather than adopting accommodate or retreat measures. However, in coming years, the preparation of CHRMAPs will determine communities' preferred adaptation measures. Planned or managed retreat may be necessary, particularly where development is at imminent or expected risk from coastal erosion. Where coastal hazard risks are evident, 'avoid' is always the preferred option for new development.

The key factors in identifying any preferred risk treatment measure are the societal (tangible and intangible) costs and benefits of the measures considered and the triggers for implementation. Affected communities and others who have an interest in the physical and natural assets of the locality are central to placing a value on these assets and participating in the selection of a preferred adaptation measure. This includes consideration of the value that communities place on houses, beaches, parks, roads and other facilities relative to the costs of implementing an adaptation measure.

The settlement hierarchy outlined in this Strategy provides for substantial growth and development in particular in Geraldton, Jurien Bay, Lancelin (south) and Guilderton (south). While a range of factors influence settlement hierarchy, being capable of future growth is a key factor and this may be influenced by the outcomes of CHRMAP and other requirements of SPP2.6.

## 10.6 Bushfire

Bushfire protection is a land use and development issue in much of the strategy area particularly where settlements and development activities occur. The recently released State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP3.7) and the accompanying Guidelines apply to every stage of the planning process and it is intended that bushfire planning and management measures be addressed as early as possible in the planning process, with the level of information provided being progressively more detailed.

Bushfire protection measures include construction of fire breaks and removal of vegetation from around dwellings. In instances where biodiversity management conflicts with bushfire risk management measures and significant clearing of native vegetation is the only means of managing bushfire risk, the policy position is that the proposal should generally not be supported (SPP3.7 Guidelines).

This Strategy seeks to manage bushfire risk by avoiding development in vegetated areas.





## 10.7 Marine environment

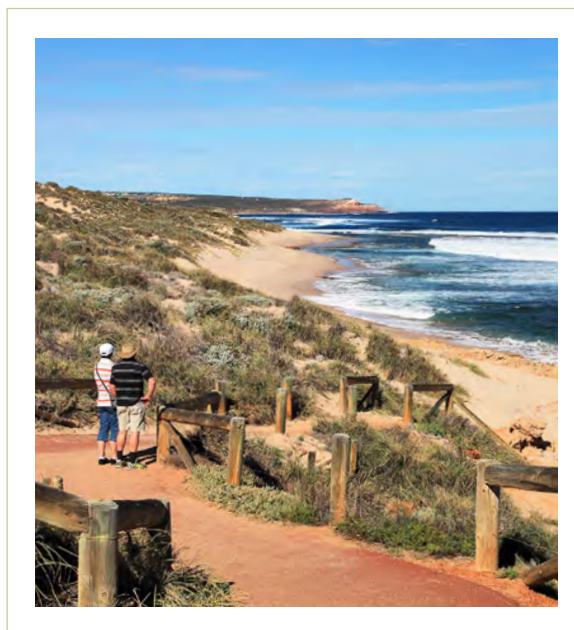
The marine environment is an important natural asset on which the tourism and fishing industries are dependent and has a strong connection with the on-shore natural environment.

The strategy area abuts significant marine biodiversity, ecosystems and habitats, such as those found within the Jurien Marine Park and Abrolhos Islands Marine Reserve. These areas support numerous marine communities and species including at least 15 whale species and other aquatic mammals likely to occur in the area.

The Jurien Marine Park extends from Green Head to Wedge Island. The marine park consists of an extensive limestone reef system parallel to the shore which has created a huge shallow lagoon that provides habitat for Australian sea lions, dolphins and juvenile fish. Extensive sea grass meadows inside the reef shelter a variety of marine animals such as western rock lobsters, octopus and cuttlefish. The marine park surrounds many ecologically-important islands that contain rare and endangered animals found nowhere else in the world. A small section of the marine park is a sanctuary but fishing, swimming and diving are allowed in the majority of the marine park area. The marine park is managed by the *Department of Biodiversity, Conservation and Attractions* in partnership with the local community.

The Abrolhos Islands and their surrounding coral reef communities form one of Western Australia's unique marine areas. The islands lie about 60 kilometres west of Geraldton on the Western Australian coast, and consist of 122 islands clustered into three main groups: the Wallabi Group, Easter Group and Pelsaert Group, which extend from north to south across 100 kilometres of ocean. Lying in the stream of Western Australia's warm, southward-flowing Leeuwin Current, the marine environment surrounding the Abrolhos is a meeting place for tropical and temperate sea-life.

Land use activities in the catchment and along the coast have the potential to affect the health and function of the coastal environment particularly through water quality and changes and mobilisation of sediments. Access points such as boat ramps, swimming and surf beaches and car parking areas are particularly vulnerable during peak tourism periods. These assets are largely managed by the local government and the Departments of Transport and the Department of Biodiversity, Conservation and Attractions. Community education is essential to minimise degradation, contamination and overfishing of the marine environment.



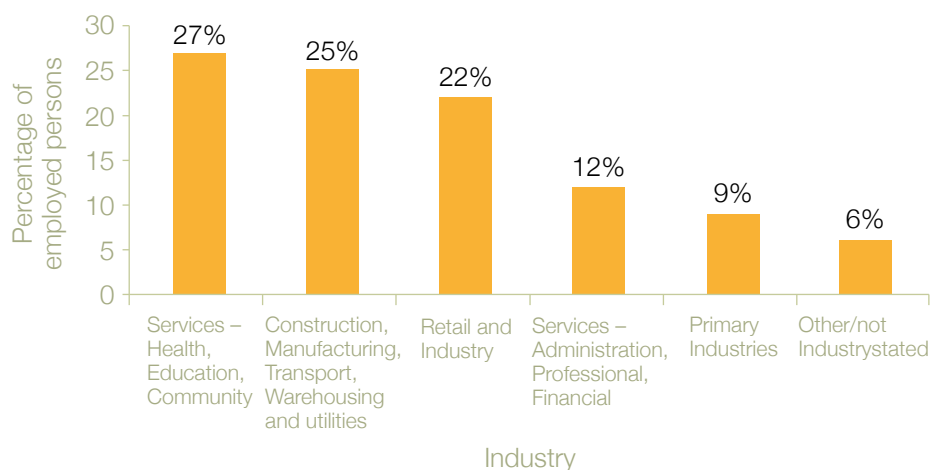
# 11. Economy

The sub-region's economy has benefited from a distinct locational advantage, being in close proximity to Perth, as well as the significant agricultural and mineral resource areas contained within the broader Mid West and Wheatbelt regions. The coastal settlements of the sub-region are developing from the traditional agricultural, servicing and commercial fishing base, into a diverse economy driven by growth in the tourism sector, expansion of social services, horticulture, aquaculture, investment in renewables and the ability to service the resources sector.

It is important to note that even though the agricultural and mining sectors provide the highest value in per cent of regional gross domestic product in the broader regions, they are not the biggest employers (Figure 6).

Those industries that have historically fuelled economic growth and development in the sub-region are, in a number of coastal settlements, now taking a secondary role or are in a period of readjustment to new market conditions. Growth industries, such as tourism are now playing an important part of the economic diversification of the Guilderton to Kalbarri sub-region (Centre for Regional Development, 2011). Strategic planning is needed to not only promote growth and protect the highest value industries, but also to promote those industries that foster the highest levels of employment.

Although primary production is, and will continue to be a major economic driver in the strategy area, there are strong planning controls to protect and support this sector of the economy through SPP2.5. The focus of this document is to further explore potential for new economies and jobs.



*Figure 6: Employment by industry*

The Wheatbelt and Mid West regional planning and infrastructure frameworks, as well as the Wheatbelt and Mid West blueprints give an extensive overview of the economic drivers associated with the sub-region. The major points covered by these documents in relation to the sub-region's economic drivers include the following:

- The majority of the sub-region's retail trade and manufacturing occurs in Geraldton and Jurien Bay (reflecting the large population bases). The retail sector is one of the sub-region's largest employers (12 per cent of the labour force).
- The sub-region contains a variety of minerals and basic raw materials and is strategically placed to provide value to the broader region's major resource projects, such as providing port and strategic industrial estate services. The biggest mines in the sub-region are generally for garnet, heavy mineral sands or construction materials.
- Limesand deposits within the dune systems along parts of the sub-region are a valuable resource for the broader region's agricultural industry.
- Operational gas fields within the sub-region are located within the northern extents of the Perth Basin and include Dongara, Woodada and Beharra Springs. There have been numerous commercial hydrocarbon fields discovered in the offshore and coastal area south of Geraldton and there are many untested prospects in the sub-region, including those that contain shale gas resources. The logistics and economics of potential oil and gas discoveries are positive due to the Parmelia and Dampier to

Bunbury natural gas pipelines, the proximity to Perth and the deregulated Western Australian gas markets. While there may be economic returns from such resources, environmental and land use impacts need to be carefully considered.

- The principal commercial fishery in this sub-region is the western rock lobster fishery, which is Australia's most valuable single-species wild capture fishery. The Department of Primary Industries and Regional Development (DPIRD) estimate that the 2014 commercial ex-vessel catch was valued at \$359 million. Other significant products include pearling, prawns, scallops, abalone and finfish.
- Aquaculture will be a strategic growth industry. Initiatives to expand the aquaculture sector in the West Coast Bioregion currently include trials for octopus, live rock/coral and finfish. DPIRD has completed the process of securing a Mid West Aquaculture Development Zone located at the Abrolhos Islands.
- It is important that all communities have access to adequate social infrastructure and services, including essential services such as educational and medical facilities. The provision of such infrastructure and services can play an important role in attracting and retaining staff in the sub-region.
- Alternative energy initiatives (for example, wind, solar, wave and microgrids) have been identified as a growth industry that could generate local employment and business development.

- There are positive economic and social multipliers associated with growth in the tourism and recreation sectors with room to consolidate and market the sub-region's brand as a quality activities-based destination. However, there is seasonality to this sector, with capacity and infrastructure constraints during peak periods, and more contemporary planning policy guidance is needed.

Future growth in the sub-region and the rate at which it occurs will invariably be influenced by the strength of the economy. It is therefore critical to plan for land assembly, infrastructure, and provide appropriate policy guidance to meet the needs of the economic drivers.

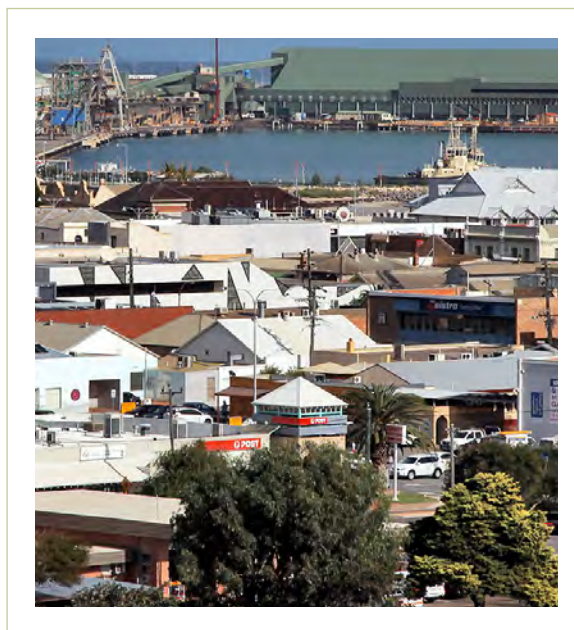
Recent policy guidance has been provided in regards to rural planning by the release of State Planning Policy 2.5 Rural Planning (SPP2.5) and the associated guidelines. Further, the release of the regional planning and infrastructure frameworks, as well as the Wheatbelt and Mid West blueprints has provided specific guidance and initiatives relating to the sub-regions economic drivers.

While there is a range of economic drivers in the strategy area, these are mostly addressed in other planning frameworks. For this Strategy, tourism is identified as a priority area and one where the planning approach has not previously been articulated.

## 11.1 Employment

As of September 2016, the labour force of the Guilderton to Kalbarri sub-region was 21,061 persons, with an estimated unemployment rate of 5.725 per cent (Department of Employment, 2016). The majority of the labour force is based in the regional city of Geraldton followed by the sub-regional centres of Jurien Bay, Dongara and Kalbarri.

As seen in Figure 5, the industries that employ the most people within the sub-region include construction (12%), retail trade (12%), health care (10%), education and training (9%), accommodation and food services (7%), transport, postal and warehousing (7%) and public administration (7%). The percentages of employment for these industries are reasonably close together reflecting a relatively diverse economy.





## 11.2 Tourism

Tourism is a key economic driver for the coastal communities of the strategy area, and there are approximately 600 tourism-related businesses within the local governments. More than \$360 million is spent per annum by tourists in the area (Department of Planning, Lands and Heritage, 2017), however the sub-region only captures a small percentage of the total visitors to Western Australia (Figure 7).

Recent and planned upgrades to the sub-region's built environment and infrastructure, such as increased accessibility through completion of Indian Ocean Drive and the proposed Kalbarri Skywalk are enhancing the tourism product and visitation.

In addition, the general availability of zoned land for tourism purposes and existing attractions will be key opportunities that should be built upon. These opportunities may attract tourists from new tourism markets, as well as increasing domestic tourist numbers.

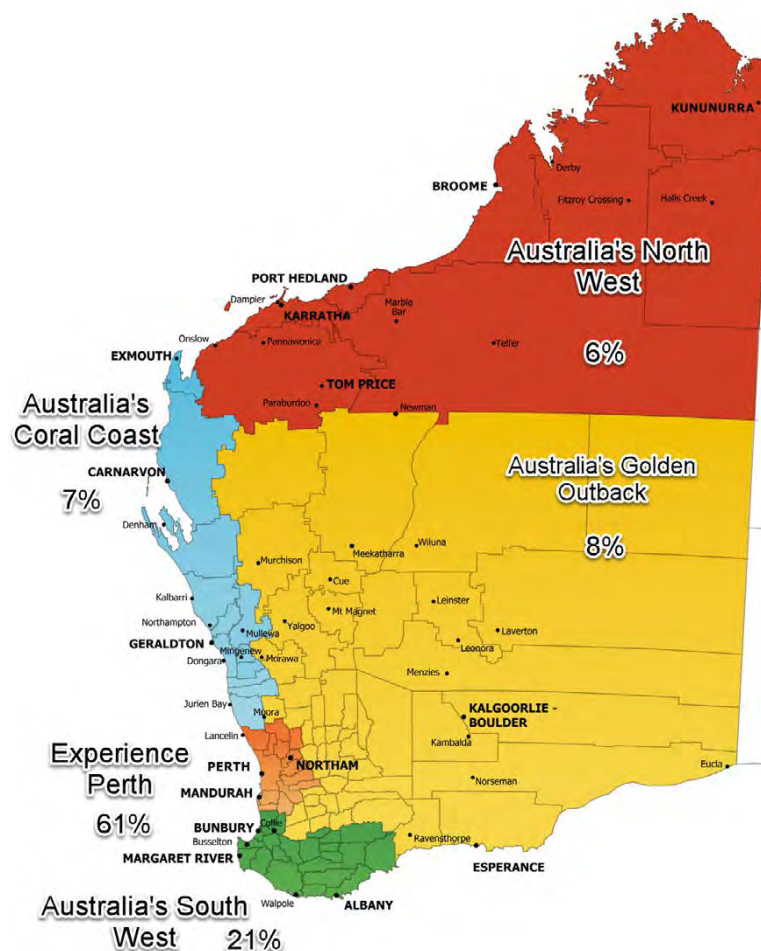


Figure 7: Percentage of total visitors to Western Australia by Tourism WA region

Source: Tourism WA, 2016  
(The strategy area is part of the broader Coral Coast region)

As continued population and tourist growth is expected to place pressure on the sub-region's coastal areas, it is important that potential tourism opportunities are developed in a strategic and sustainable manner. To date, ad hoc planning has resulted in many settlements within the sub-region having fragmented areas of land zoned for tourism purposes, with little to no connection to the main activity centres, tourism assets and facilities. Further challenges include:

- infrastructure provision and capacity, especially during peak periods
- global, national and state economic conditions
- environmental constraints
- promotion of identity
- seasonal tourism product
- the perception the sub-region is a 'stop-over' between the major destinations of Perth and the State's northwest
- limited hotel, caravan park and camping capacity during peak periods (for example, Lancelin's need for an appropriate caravan park site, Dongara during Kitestock)
- impact of holiday homes, including community opposition to 'lock and leave' suburbs, reduced long-term rental stock, accommodation for staff involved in tourism-related roles
- provision of services away from the coastal areas (for example, Northampton acting as a service centre for the localities of Horrocks and Port Gregory)
- conservation, interpretation and promotion of the area's heritage places.

A number of potential actions have been identified to address these challenges. In addition, priorities for tourism product and infrastructure development in the strategy area are further identified in Australia's Coral Coast Destination Development Strategy 2007-2017 (TourismWA, 2007) for all local governments between Guilderton and Kalbarri. Analysis of each area's strengths and unique selling points is addressed, including an analysis of the current status of, and potential gaps in access, accommodation, attractions, activities and amenities.

Tourism components of local planning strategies may be prepared by the local governments in consultation with TourismWA. These can address State, regional and sub- regional planning (refer Planning Bulletin 83 – Planning for Tourism). Currently, the shires of Dandaragan and Irwin (Shire of Irwin, 2013) have local tourism planning strategies that make specific land use planning recommendations.

In order for local planning strategies to appropriately address planning related tourism issues in the future the current policy guidance will need to be reviewed and updated to a contemporary standard. Current policy guidance is spread over several planning bulletins. To enhance the State's role in planning for tourism, it is recommended that tourism planning bulletins be reviewed, with the aim of forming one consolidated policy.

### 11.2.1 Tourism assets and events

The coastal communities between Guilderton and Kalbarri have several significant tourism assets and events. These can create demand for tourism facilities as well as tourism associated land uses, both within and outside of existing urban areas. The natural environment is the main driver for tourism within the strategy area, with significant features such as:

- a pristine coastline, including the Abrolhos Islands
- wildflower country
- The Pinnacles (Nambung National Park)
- Island Rock and Natural Bridge (Kalbarri)
- Lake Thetis thrombolites
- Lancelin sand dunes
- Ellendale Pool (Greenough)
- Geraldton-based attractions, including the Moresby Range, HMAS Sydney memorial, St Francis Xavier cathedral and Museum of Geraldton
- Nambung, Stockyard Gully, Drovers Cave and Lesueur and Kalbarri national parks
- Beekeepers, Lake Logue, Yordanogo and Nilgen nature reserves vast marine assets including Jurien Bay Marine Park and numerous first-class surfing and kite-surfing spots such as Coronation Beach.
- Events that create significant demand for tourism assets and facilities within the sub-region include:
  - Lancelin Ocean Classic
  - Opera in the Pinnacles
  - Nambung Country Music Muster
  - Indian Ocean Festival
  - Sundays by the Sea

- Various sporting events (for example, triathlons)
- Kalbarri Adventurethon
- Film fest
- Chapman Valley Agricultural Show
- Nukara Music Festival
- Redhill Concert
- Kalbarri Canoe and Cray Festival
- Yuna Regatta.

The Wheatbelt Planning and Infrastructure Framework designates the Pinnacles as a State Strategic Tourism site, attracting over 190,000 individual visitors per year (TourismWA, 2017).

Stopping bays and lookout areas are interspersed along the coast including several stopping bays along the main tourist routes of Indian Ocean Drive and the North-West Coastal Highway. Stopping bays and lookouts include but are not limited to Hangover Bay, Thirsty Point, Grigson Lookout, Wedge Island Lookout, Dynamite Bay and South Bay (Green Head), Fisherman's Lookout (Dongara), Point Moore Lighthouse, Separation Point Lookout and the stopping bays and lookouts in the Red Bluff locality (Kalbarri) and the proposed Kalbarri Skywalk.

Tourist nodes and coastal campsites are also being investigated along the sub-region's coast. The Dandaragan Local Planning Tourism Strategy (2012) noted an action to investigate the provision of nature-based camp sites with a focus on Sandy Cape and Hill River.

Further, the Shire of Coorow is undertaking a 'coastal nodes eco-tourism project' in order to identify tourism nodes, such as Milligan Island, along the coast. Five of the nodes within the strategy area have received investment and have been upgraded to support tourism activity. Those upgraded are Sandy Cape near Jurien Bay, Milligan Island near Green Head, Cliff Head near Dongara, and Lucky Bay and Half Way Bay near Kalbarri.

There is potential for future tourism areas at Wedge and Grey. It has been proposed in the past to outline a framework for transitioning the existing developments at these sites to 'normalised' tourist and recreation areas for public benefit. This will eventually require approval from decision-makers in keeping with the State's planning and development system, reasonably applied to site conditions.

The State Government has recently announced the intention to establish a National Park over the uninhabited islands located at the Abrolhos Islands and has committed to construct core infrastructure at the Wallabi Group of uninhabited islands to enable tourism activities to commence including jetties at Beacon and East Wallabi Islands. The Department of Biodiversity, Conservation and Attractions (DBCA) will take on responsibility for managing tourism activities at these islands. DPIRD will retain responsibility for continued management of the commercial cray-fishing operations at the habited islands, including all the waterways.

In addition to the natural environment, the sub-region's settlements provide amenity, servicing and accommodation functions within the urban setting, while historic farmstay/bed and breakfast, eco-resorts and unique experiences are also offered outside of the urban areas. It is recommended that the majority of tourism development be situated in or near to existing settlements and service centres. Development should not be located where it may cause a negative impact on the very environment that drives tourism activity in the sub-region.

### 11.2.2 Wedge and Grey

Wedge and Grey are coastal locations used for recreation and holiday stays. The shacks have been developed since the late 1950s using a variety of materials and styles and without approvals. Originating as holiday shacks for inland farming communities, there are now over 300 squatter shacks at Wedge and over 100 shacks at Grey.

At Wedge, there are five shacks allocated for professional fishers and two for traditional owners. The shack sites are located on Crown Reserves 43283 (Wedge) and 43284 (Grey) and are approximately 213 hectares and 172 hectares respectively. Wedge and Grey are managed by DBCA.

In May 2010, the Legislative Council Standing Committee on Environment and Public Affairs initiated an inquiry into shack sites in Western Australia. The Committee in its report (Report 21) made a recommendation specific to Wedge and Grey. In August 2011, the Government at that time responded to the Committee's report and accepted this recommendation with qualification:

**Report 21 Recommendation 6:**  
That Committee recommends that the responsible Minister and managing authority instruct leaseholders and shack owners to remove the shacks at Wedge and Grey 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.

**In August 2011 Government response to recommendation 6:**  
Accept with qualification. The State Government will examine options for Wedge and Grey that meet the requirements for public recreation and tourism use in conjunction with a level of shack retention that contributes to the opportunities for



public use. This consideration would be in consultation with the current shack leaseholders. Any future development of the sites will be subject to State planning requirements and will address equity of access and use, building safety, health and amenity, coastal processes and provide for environmentally sustainable public outcomes.

Wedge and Grey are currently being assessed for inclusion on the State Register of Heritage Places. Future planning for Wedge and Grey will account for the heritage values of the sites.

The DBCA is working with shack associations and other key stakeholders to focus on practical solutions essential to achieving positive human health, safety and environmental outcomes at Wedge and Grey.

### 11.2.3 Trails and cultural tourism

Physical and mental health continues to be vitally important to the general well-being of Western Australian communities, with trails/tracks in all their forms becoming an increasingly valuable outlet for exercise, recreation and adventure. As such, Western Australia is seeing increased growth in trail-related activities.

The Western Australian Strategic Trails Blueprint 2017-2021 seeks to achieve the vision “By 2021 more people will be using Western Australia’s trail network resulting in greater community, social, cultural, economic, environmental, health and wellbeing outcomes for Western Australia”. The Blueprint aims to achieve this by providing

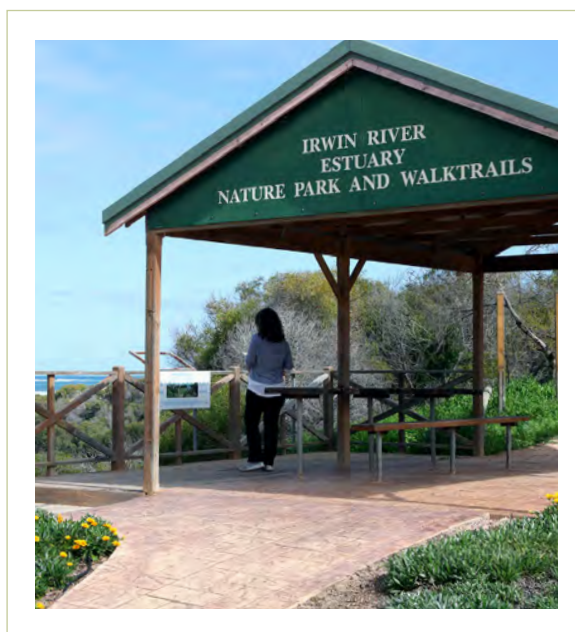
guiding principles, strategic directions and actions for consideration across the State for government, trail managers, landholders, trail support groups, tourism operators and the community.

Walking tracks, vehicle (4WD and 2WD) trails and diving trails (such as Jurien Bay underwater interpretive snorkel and dive trail) as well as a significant cultural history provide a substantial opportunity for drawing tourist numbers into the sub-region.

There are currently several trails associated with stopping bays and town sites with some of the more well-known trails including the Lake Thetis Loop Trail (Cervantes); Turquoise Way Trail (Jurien Bay); Stockyard Gully Cave Trail and Lesueur Walk Trail (Leeman); Thungara Trail (Irwin); Greenough River Trail and Chapman River Trail (City of Greater Geraldton); Bigurda Trail, Ross Graham River Walk, Northampton Botanic Line, Mushroom Rock Walk Trail, Loop Walk (Kalbarri National Park); Dongara Heritage Trail; and Chapman Valley Scenic Drive.

Tracks and trails provide opportunities to explore landscapes of sub-regional significance via links between important features, however there are currently limited connections between trails along the coast. Significant opportunities exist for the

establishment of sub-regional connections, including establishment of a 4WD trail north of Kalbarri connecting to Shark Bay, creation of a coastal hiking track linking settlements, and an inland hiking track establishing connections to national parks and farm stay accommodation.



Currently, Aboriginal tourism activities and experiences are under-represented in the strategy area, the exception being the Bundiyarra Aboriginal Community Corporation which endeavours to provide authentic aboriginal cultural and cuisine experiences to meet a growing cruise ship tourism sector. International tourists seek to have tourism experiences highlighting Aboriginal culture and heritage. Aboriginal occupation of the sub-region has established many important mythological sites which include natural features such as waterholes, rivers, hills and rock formations where people, animals and characters left traces of their journey across the landscape. Often these places are interconnected and form trails through the landscape, called 'songlines' in English. There are five Aboriginal groups within the sub-region that have vast knowledge of the area and its cultural history.

Tourism can play a key role in conserving built heritage as well as cultural heritage particularly in regional locations. Heritage tourism can contribute to the rejuvenation of regional and urban areas and conservation of heritage places, and spread economic benefits across a wide geographical area through themed trails and driving routes.

By diversifying through niche opportunities such as Aboriginal tourism, historic heritage sites, geo-sites and geo- tourism, hiking and research tourism, there is potential to create authentic connections with visitors and unique cultural experiences and to increase visitation to and across the sub-region.

| Local Government  | Developed (ha) | Undeveloped (ha) | Applicable zones  |
|-------------------|----------------|------------------|---|
| Chapman Valley    | 14.54          | 142.23           | Restricted use (1 and 2), Rural smallholdings (Additional use A1 and A3)  |
| Coorow            | 5.1            | 10.23            | Tourist accommodation   |
| Carnamah          | 0              | 0                | N/A   |
| Dandaragan        | 19.39          | 77.51            | Tourist, Harbour, Commercial, Rural residential (Additional use 3), Special use 2 and 4   |
| Greater Geraldton | 58.75          | 128              | Special use 2 and 3, Regional centre, Tourism, Mixed use, Residential, Rural residential (Additional Use 1), Rural (Additional use 15), Commercial (Additional use 17)                |
| Gingin            | 28.3           | 15.47            | Tourism, Town Centre, Residential (Additional use 20), Special Use  |
| Irwin             | 12.98          | 144.77           | Special Use (1,2,6,7,9,12,13,15,17,22,23, 24,25 and 28)   |
| Northampton       | 37.61          | 49.21            | Town Centre, 'Caravan, camping and cabin', Tourist development, Tourist accommodation, Special use 14 (TPS10), Special use 2,5 and 10 (TPS 9), General rural (Additional Use 1 and 3) |
| <b>Total</b>      | <b>176.67</b>  | <b>567.52</b>    |   |

Table 4: Land zoned for tourism purposes

## 11.2.4 Tourism land supply

Growth of the tourism industry relies on the availability of appropriately zoned and located land within town sites and in their hinterlands, as well as the supply of suitable infrastructure.

An initial assessment has been undertaken of the development status of land that is zoned to allow for tourism land uses. This involved an assessment of cadastral and scheme information as well as visual interpretation of aerial photography.

At the sub-regional level there is generally a sufficient supply of land zoned for tourism purposes within 10 kilometres of the coastline, with a total of approximately 737 hectares identified, 76 per cent (567 hectares) of which is considered to be undeveloped, as shown in Table 4.

Potential tourism land supply constraints were identified in the Shire of Carnamah, Shire of Coorow (specifically Leeman, which only contains 2.6 hectares of undeveloped land zoned for a tourism purpose) and the Shire of Gingin.

Within the Shire of Gingin, the townsites of Guilderton and Seabird are constrained, having zero hectares and 1.13 hectares of undeveloped land respectively. Further, the Wheatbelt Planning and Infrastructure Framework noted that limited tourist accommodation is available within the Lancelin townsite.

Several factors challenge the provision of additional land for tourism, including limited capacity for townsite expansion, vegetation, lack of year round tourism demand, land assembly and varied community aspirations.

Relevantly, 89 per cent of Irwin's undeveloped area is found approximately 17 kilometres north of Dongara within one isolated estate (Special Use 1 – Wakeford Road, Bookara).

Depending on the level of future economic activity within the State, accommodation may become constrained within the inner parts of the City of Geraldton during peak periods.

This is due to the majority of the undeveloped land within Table 5 being located outside of the City's centre. Although the 'Regional centre' zoning allows for 'tourism' developments, there may be a significant lag period for new establishments being sited and developed should economic activity increase.

There is also evidence that the supply of tourism zoned land (developed and undeveloped) is fragmented across some settlements and often not located near attractions or activity centres (for example, Cervantes, Lancelin and Kalbarri). This creates difficulty in concentrating compatible land uses within defined precincts or nodes that can generate synergistic economic advantages. Although some settlements are working towards areas that support tourism growth (Jurien Bay, City of Greater Geraldton and Dongara) some areas currently lack a sense of place and a choice of activities including open activated spaces, coffee shops, restaurants and bars, which are very important in creating the ambience necessary to support tourism growth.

A lack of infrastructure and infrastructure capacity may hamper growth of currently undeveloped tourism zoned land (for example, providing connections to power, sewerage and reticulated water). The availability of water and sewerage infrastructure is often a greater constraint than the availability of suitable land for tourism development. Developers frequently have to fund extension or augmentation of sewerage and water supply infrastructure which, depending on the scale of the project and the locational circumstances, can have a significant impact on project viability.

### 11.2.5 Caravan parks

Caravan parks are a fundamental component of Western Australia's tourism accommodation mix, particularly in the Guilderton to Kalbarri sub-region where self-drive travel is the most practical means of moving between locations. Caravan parks are primarily intended to provide short-stay accommodation for leisure tourists, and can vary considerably in size, scale, function, design, location, services and facilities. 'Short-stay' refers to occupancy by the same person for no longer than three consecutive months in any twelve month period. 'Long-stay' refers to occupancy by the same person for any period of time greater than three months. Long-stay accommodation is secondary to the primary use.

Other park types and associated licensing provisions exist; these may be exclusively long-stay parks such as residential parks, lifestyle villages, transient workforce accommodation parks, transit parks, nature-based parks or a mix of these park types.

The retention and development of caravan parks as affordable holiday accommodation within the State is a priority that is being addressed across government. Caravan parks experience competing demands, which have contributed to numerous closures throughout the State.

These demands include:

- redevelopment (for residential use or higher end tourism accommodation)
- meeting minimum standards and the increasing complexity of regulatory requirements
- upgrading aging infrastructure, and funding replacement and maintenance
- providing a greater range of facilities in response to changing market demands

- continuing to provide an affordable holiday experience while balancing increased operational expenses catering for the demand for other accommodation needs (for example, social housing, transient workforce accommodation, retirement living, emergency housing).

Caravan parks are particularly under pressure within the sub-region, as many are in locations that are attractive for redevelopment.

In particular, the development of caravan park accommodation is a priority in the Shire of Gingin. In some instances, redevelopment for higher value visitor accommodation, such as chalets and apartments, is able to occur under the existing scheme zoning. It is important to try to protect existing budget accommodation such as caravan parks. Where the need has been identified, local planning strategies can offer an opportunity to identify suitable sites for new budget accommodation and support appropriate developments. Local governments are also encouraged to consider the position set out by Planning Bulletin 49 (Caravan Parks) in planning and decision-making for caravan park related developments.

In a recent study of tourism trends, economic outlook and future needs of the Guilderton to Kalbarri sub-region (Department of Planning, Lands and Heritage, 2017), analysis suggested that six new caravan parks will be required by 2035 across the sub-region under a low growth scenario and 14 under a high growth scenario. This has been estimated on the basis that a caravan park will be provided when demand approaches the capacity of a new park.



## 11.2.6 Peak tourism

Anecdotal evidence has noted that demand for tourism facilities and associated infrastructure is affected by the seasonality of the sub-region's population influx. Estimates have shown that the population within the sub-region's settlements can more than double within these periods; for example the populations of Lancelin and Guilderton can swell from 600 to 1000, and 140 to 1,000 respectively.

The Mid West Tourism Development Strategy (2014) notes that accommodation including holiday homes and caravan parks within the sub-region is often of mixed standard and has supply limitations during peak seasons.

Further, essential infrastructure (power, water, sewerage and waste) as well as community facilities and infrastructure at these peak periods can often become constrained or placed under pressure due to increased usage, resulting in decreased levels of service.

Throughout the sub-region, peak visitation often occurs during September-October for example, school holidays and spring wildflowers, and near peak visitation in April for example, Easter, Anzac Day and school holidays and July-August for example, school holidays and wildflowers.

The sub-region has limited tourism data to adequately manage and plan for peak tourism and inform decision-making. It is important that the sub-region undertakes tourism data collection and reporting that over time will provide

a richer understanding of trends to inform future plans and strategies. National or State tourism data should become secondary to the primary data gathered within the region.

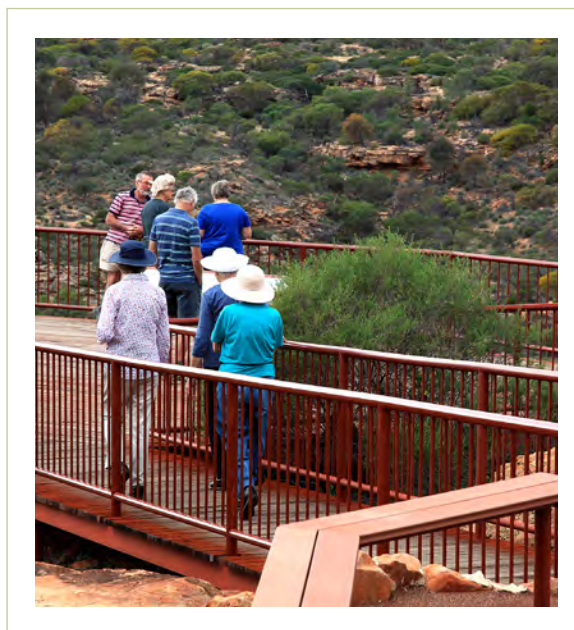
## 11.2.7 Recreational boating

Recreational boating is an important part of Western Australia's culture, and also assists in increasing visitation to tourist nodes and assets. It creates demand for facilities and a mix of land uses, and attracts visitors to the area.

There is a high level of demand for recreational boating within the strategy area for fishing, leisure, sport and to take advantage of the sub-region's vast coastal and marine assets. Demand has grown steadily over the 25 years to 2015 (*Figure 8*) with Department of Transport figures noting the number of vessels increasing from approximately 2,000 in 1990, to more than 5,000 in 2015. The majority of these vessels are found within the City of Greater Geraldton (50 per cent), followed by the Shire of Gingin with 13 per cent (*Figure 9*), reflecting the larger population and subsequent diversity of facilities within these areas.

The demand for facilities is also affected by the seasonality of the sub-region's population flux.

Anecdotal evidence has suggested that some boating facilities within the sub-region are seeing three to six times the demand during peak periods when compared to off-peak seasons. This has often resulted in anti-social behaviour and 'ramp rage' due to constrained facilities.



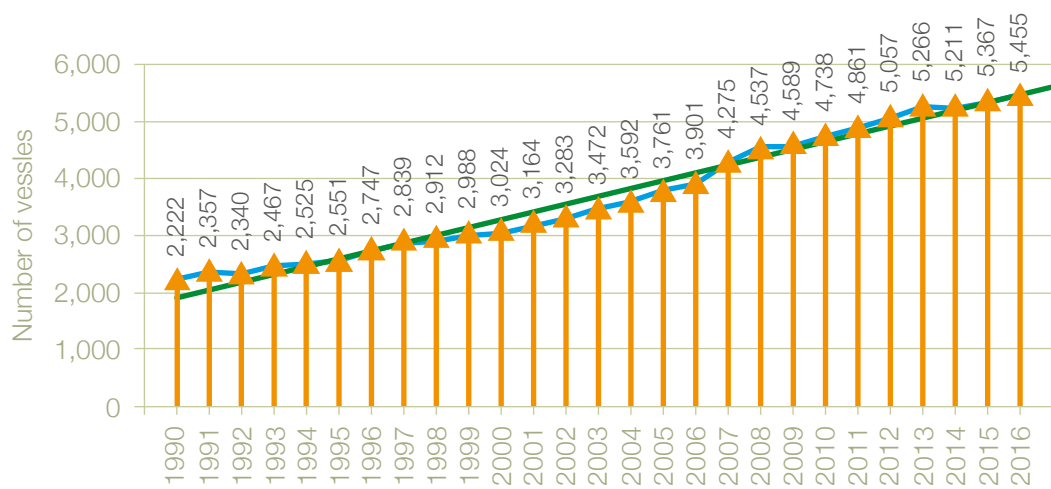


Figure 8: Number of recreational vessels

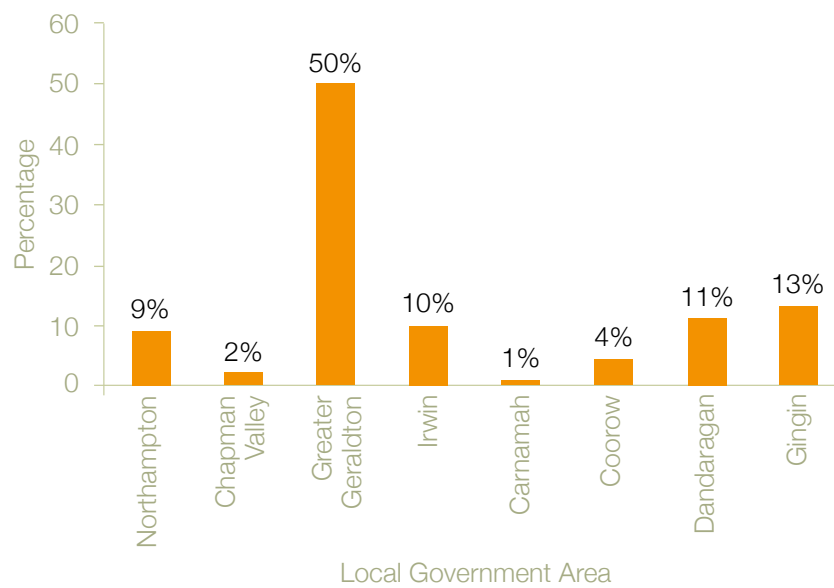


Figure 9: Percentages of recreational vessels

Previous studies have been undertaken by the Department of Primary Industries and Regional Development to determine estimates of annual catch levels by boat based recreational fishers. While these estimates can assist in determining the peak fishing season in the Guilderton to Kalbarri region (summer/autumn) they do not account for non-fishing recreational boat use and does not include enough detail to determine launch numbers for specific jetties within the area. In addition, the region is categorised as 'West Coast' which also includes the Perth metropolitan area. A more refined, up-to-date study is required so that new and upgraded facilities are not omitted.

The Western Australian Marine Science Institution conducted a study at the Entrance Point boat ramp in Broome. Using video footage from a DPIRD camera, researchers were able to examine factors affecting the launching of recreational boats over a one year period. It was found that influential environmental factors included air and sea temperature, wind speed and direction, rainfall, barometric pressure and tides, in addition to the time of day and day type (weekday, weekend or holidays). This method could be applied to future studies of boat launch areas within the Guilderton to Kalbarri coastal region.

Due to the sub-region's coastline offering a diverse range of environments to sail, cruise, fish, scuba dive and explore, as well as the Jurien Bay Marine Park encompassing an ecologically unique area, recreational sailing is emerging as a significant opportunity. There is potential to identify a sub-regional or regional recreational sailing route, which uses available facilities as safe mooring and anchorage points and stop-over locations along the route.

In order to establish such a route recommended daily travel distances will need to be investigated, as well as establishing the suitability of current facilities and whether additional facilities will be needed. This could potentially create additional land use demands if facilities are established in currently undeveloped or underdeveloped locations.

A variety of recreational boat facilities are located in coastal towns to meet the needs of the sub-region's population (Table 5).

Currently, at most maritime facilities managed by the Department of Transport, the number of pens/moorings available for occupation by vessels is not always sufficient to completely satisfy demand, therefore members of the public are required to apply to a waitlist (Department of Transport, 2017). Marine vessel accommodation plans are available on the Department of Transport's website. The Batavia Coast Marina, Jurien Bay Boat Harbour and Port Denison Boat Harbour all have capacity for additional pens (Table 6). Some planning has been done to investigate a possible 150 pen Ledge Point Boat Harbour, however this is not a committed or funded project. Pens are not available at any other locations within the sub-region apart from Kalbarri.

The need for additional boating facilities will be subject to growth in the sub-region's boating fleet and visitor numbers, as well as assessing the supply, capacity and expansion potential of existing facilities. Future expansion of boating facilities within the sub-region will have land use planning implications that will need to be considered through the planning framework.

**Table 5: Existing boating facilities**

| <b>Boating facility</b>  | <b>Class<sup>1</sup></b> | <b>Main wharf/jetty infrastructure</b>   | <b>Number of serviced pens/ moorings</b>  |
|--|--------------------------|--|---|
| Guilderton   | 2                        | Beach ramp, river ramp   | Nil   |
| Ledge Point  | 2                        | Two beach launch locations (DeBurg Street and Jones Street)  | Nil   |
| Lancelin   | 2                        | T-shaped Jetty, fuelling facilities, beach launch  | Nil   |
| Cervantes  | 2                        | Jetty with fuelling facilities   | Nil   |
| Cervantes  | 2                        | Beach launch   | Nil   |
| Jurien Bay Boat Harbour  | 6                        | Two service jetties, one fuel jetty, one government jetty, concrete four-lane boat ramp, boat maintenance facilities | 69 – Potential for 150 extra pens   |
| Green Head Maritime Facility   | 2                        | 'L-shaped' service jetty, dual-lane concrete boat ramp with catwalk and single lane boat ramp                        | Nil   |
| Leeman Head Maritime Facility  | 2 and 3                  | One 'L-shaped' service jetty (Rudduck Street), double lane gravel boat ramps (Illyarrie Street)                      | Nil   |
| Port Denison Boat Harbour  | 4                        | Two service jetties, one concrete wharf, dual-lane concrete boat ramp with catwalk                                   | 48 pens 23 commercial moorings nine recreational moorings, two swing moorings - potential for at least 200 extra pens |
| Batavia Coast  | 6                        | Double boat launching ramp with two finger jetties, service jetty, fishing platform                                  | 84 floating pens - potential for 80   |
| Town Beach   | 2                        | Beach launch   | Nil   |
| Drummond Cove  | 2                        | Boat ramp  | Nil   |
| Coronation Beach   | 2                        | Beach launch   | Nil   |
| Horrocks Jetty   | 2                        | Beach launch   | Nil   |
| Port Gregory Maritime Facility   | 2                        | Service jetty  | Nil   |
| Kalbarri Maritime Facility   | 3                        | One service jetty, one recreational jetty, one main boat launching ramp  | 32 commercial boat pens, 23 commercial moorings, five charter moorings, two swing moorings                            |
| <sup>1</sup> NOTE: The Department of Transport classifies boating facilities according to the below hierarchy:<br>Level 1 – An effective sea rescue organisation;<br>Level 2 – Beach launch for 4WD vehicles;<br>Level 3 – Local area single lane ramp with onshore parking;<br>Level 4 – District ramp, 2 lanes, sealed parking;<br>Level 5 – Regional ramp, multiple lanes, holding jetties, sealed parking;<br>Level 6 – Boat harbour, multiple lanes, boat pens, sealed access and parking<br>Source: Department of Transport, 2017. |                          |  |   |



### 11.2.8 Tourism signage and promotion

Designated touring routes, signage, digital media and online promotion can direct tourists towards experiences, attractions and services offered by different destinations. The aim is to encourage visitors to explore tourism products and activity centres not located on major transport corridors, whilst establishing links between attractions.

Currently, signage within most of the sub-region is disparate between settlements, with a lack of informational signs that alert road users to the existing services and facilities. This is especially the case along the North West Coastal Highway and the southern section of the sub-region along Indian Ocean Drive as noted within the Indian Ocean Drive Planning Guideline (WAPC, 2014). The lack of signage directing the travelling public to, and providing information about services, facilities and tourist routes can potentially intensify the opinion that there are insufficient attractions and facilities within the sub-region. Further there is often distinct and separate branding of towns and therefore no coherent (sub-regional) identity in the minds of visitors.

Navigation for visitors and residents into and through the sub-region should be easy, with branding easily identifiable, badged and sited.

Tourism WA, in conjunction with Main Roads, has developed tourist signage guidelines to address the issues of safety, aesthetics, and compliance with national industry and road authority standards. These guidelines apply throughout the State. Tourist attraction signs are only permitted for establishments that are recognised as being of significant interest to tourists and meet some essential assessment criteria such as the core business being tourism-based and strongly committed to providing visitor services.

'Australia's Coral Coast' (the tourism promotional body representing the sub-region) also plays a role in signage for branding and marketing purposes.

Signage is considered as a development under the *Planning and Development Act 2005*, and as such is also regulated by the local government. It is standard protocol that Main Roads WA will only assess an application for a sign or advertising device where it has received an approval from local government.

Digital media and online promotional information is also limited within parts of the sub-region, including gaps in town information, day trip options, experiences available and recommended 'must-do' activities (Mid West Development Commission, 2014).

From a land use planning perspective, the agglomeration of tourism related land uses around tourist nodes, activity centres, attractions and facilities can significantly increase the effectiveness of signage and promotion towards these destinations. While the provision of locational diversity in tourism products is important, local planning strategy reviews should ensure that land use zones with a tourism use are consolidated around or near to facilities that will provide benefit to and gain advantages from tourism.

Further, it is vital that planning, development and promotion proceed with a similar vision to ensure that visitor experience matches the brand promise. Both need to be aware of what it is that people like most about Western Australia and what will drive additional visitors into the sub-region.

## 11.3 Mining and gas extraction

The coastal strip between Guilderton and Kalbarri contains garnet, coal, titanium zircon and petroleum resources ([Map 9](#)).

Northern extents of the Perth Basin situated in the strategy area as far north as Northampton, have accommodated oil and gas exploration since the 1950s. This has involved a range of activities including field exploration, seismic surveys, exploration and development drilling, as well as construction of infrastructure and gas pipelines. The portion of the strategy area within the Perth Basin area is thought to have a high prospectivity for conventional gas and unconventional gas production, with unconventional gas encompassing tight gas, shale gas, and coal seam gas, all generally requiring hydraulic fracturing to improve reservoir permeability. Various petroleum activities are also located offshore including oil processing at Cliff Head.

Operational oil and gas fields in the strategy area are concentrated in the Shire of Irwin, where the Corybas tight gas field, Western Australia's first operating tight gas operation is located. In Western Australia, shale and tight gas rock formations are found between 2,000 and 4,000 metres below ground, significantly below groundwater resources and under layers of low permeability rock. As the gases are found at great depth with significant vertical separation from non-saline shallow aquifers, environmental and health impacts generally associated with their extraction are considered manageable.

Figure 10 shows Western Australia's Sedimentary basins and potential shale gas resource locations. There have also been numerous hydrocarbon fields discovered offshore and within the strategy area, south of Geraldton, as well as untested shale gas resources in the Dandaragan Trough.

The Department of Mines, Industry Regulation and Safety is the lead agency for the management of the titles system for mining, petroleum and geothermal industries, ensuring that safety, health and environmental standards are achieved in accordance with legislation.

The exploration and extraction of mineral and petroleum resources are primarily regulated under the *Mining Act 1978* and the *Petroleum and Geothermal Energy Resources Act 1967*.

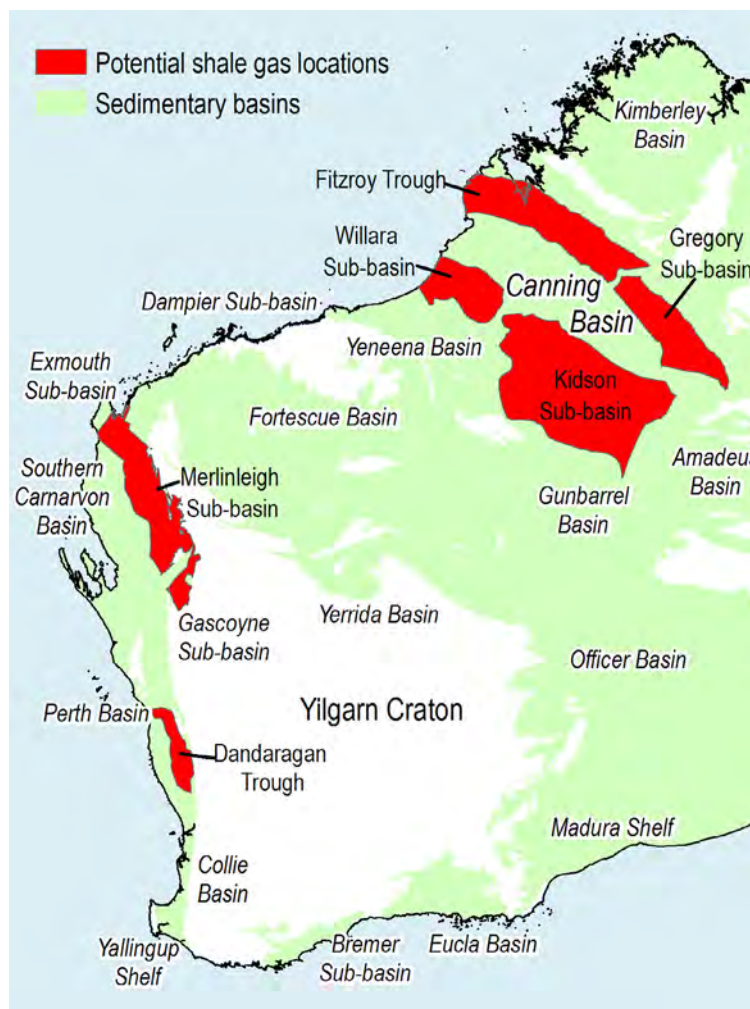


Figure 10: Sedimentary basins of Western Australia and potential shale gas resource locations

Section 120 of the *Mining Act 1978* does not allow a planning scheme to prohibit the issuing of a mining lease, meaning that land use planning cannot control mining operations. There is no similar clause in the *Petroleum and Geothermal Energy Resources Act 1967*.

The Department of Mines, Industry Regulation and Safety has commenced a legislation reform initiative to modernise the State's petroleum and geothermal legislation. The primary focus of this initiative will be to amalgamate the three main petroleum Acts and the two associated fees Acts into a single common 'Petroleum Act' to cover all petroleum and geothermal operations conducted in Western Australia. It is not yet known if the proposed legislative reform initiative will address land use planning control of some petroleum and geothermal operations.

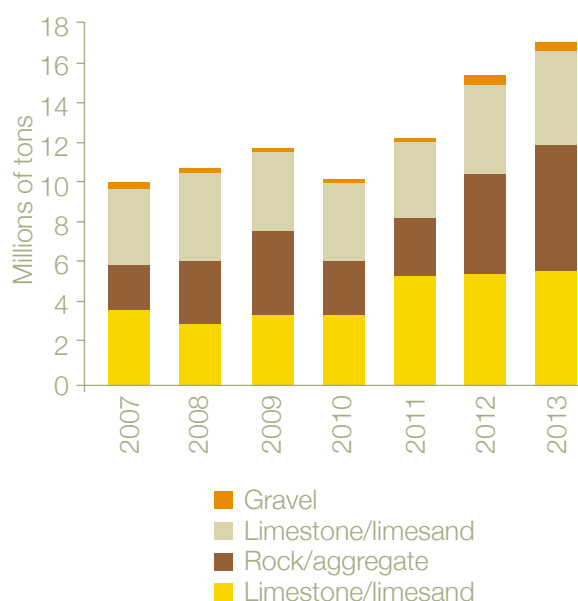
The Department of Mines, Industry Regulation and Safety has released two sets of resource management and administration regulations for unconventional gas, adding to the regulatory framework that addresses potential adverse impacts from shale or tight gas projects such as land access, flora and fauna, local amenity, water quality and human health.

In 2017 the Government announced the banning of unconventional gas production in the South West, Perth and Peel planning regions. A moratorium on commercial fracking elsewhere in the State was also announced, subject to public enquiry.

## 11.4 Basic raw materials

A ready supply of basic raw materials (BRM) is important for future urban and industrial development, essential for the construction of buildings, roads and other infrastructure, and also for the sustainability of agricultural production. Sources of BRM include sand, clay, limestone, limesand, gravel and rock aggregate. There are several basic raw materials mining tenements in operation in the vicinity of the coast as shown in [Map 10](#).

Population growth in Western Australia has increased the demand for BRM (Figure 11), and protection of strategic resources is a relevant planning matter. So too, the extraction of resources needs to be carefully managed. The Geological Survey of Western Australia (GSWA) assists in land use planning to identify, map and protect areas of BRM for future extraction, and to minimise land use conflicts.



**Figure 11: Basic raw materials extraction on Crown land in Western Australia**

Limestone and limesand (aglime) deposits within the dune system along parts of the Mid West Coast, within Gingin coastal areas around Lancelin and Ledge Point, and in the Shire of Dandaragan, are a valuable resource predominantly for agriculture, as it is used to address soil acidification. Much of the limesand resources from the strategy area are freighted by road to agricultural areas to the east. As such, east-west limesand routes are a relevant planning consideration for this Strategy. Further details on proposed routes are outlined in Section 6.1.

A number of mobile dunes occur within the strategy area which can result in impacts on infrastructure and surrounding land uses. To mitigate these impacts, implementation of management strategies such as limesand extraction may have beneficial outcomes in reducing dune areas and migration speeds. The impact on environmental values and native vegetation is variable however, with further investigation to occur before limesand extraction is utilised as a dune management strategy. This Strategy supports a case-by-case approach to managing dune migration, depending on the speed of movement, likely impacts, quality of resource and available avoidance options.

Policy guidance in relation to BRM is currently provided in SPP2.5.

The policy sets out matters which are to be taken into account and given effect to by the Commission and local governments in considering zoning, subdivision and development applications for the extraction of basic raw materials, or within the vicinity of identified BRM resource areas. In addition, they seek

to protect and preserve Western Australia's rural land assets due to the importance of their economic, natural resource, food production, environmental and landscape values. Ensuring broad compatibility between land uses is essential to delivering this outcome, and includes consideration of indicative separation distances or in sub-regional and/or local planning strategies, and in schemes as required.

The Department of Mines, Industry Regulation and Safety is progressively mapping BRM resources, including 'Significant Geological Supplies' (SGS). SGS areas are basic raw materials identified by the Department of Mines, Industry Regulation and Safety as having State significance due to the size of the resource, relative scarcity, demand and/or location near growth centres and transport routes.

In the strategy area, there are substantial BRM deposits. If developed, they would potentially exceed forecast demand for BRM. For example, within the Shire of Irwin, there are large areas of limestone, all of which do not need planning protection.

Once SGS are identified, they may be incorporated into strategic planning in accordance with SPP2.5. Consideration of the incorporation

of SGS into strategic planning will require consideration of the potential strategically environmentally significant implications of doing so, based on advice from relevant government agencies and authorities. As shown on [Map 10](#), BRM significant geological supplies are mostly located to the east of coastal areas, however it is evident





that most extraction is currently occurring near settled coastal areas, particularly south of Dongara-Denison, north of Jurien Bay and North of Cervantes. Over time it is expected these resources will be depleted, and extraction will move to the SGS sites.

Identification of basic raw material resources and sites does not indicate that extraction would be environmentally acceptable nor that subsequent approval for extraction would be given. Proponents are required to address environmental matters which may determine the extent and/or manner in which BRM may be extracted.

Where BRM occur on Crown land (unallocated, reserve or pastoral leases), extraction for commercial sale requires a Mining Lease. Mining tenements are issued under the *Mining Act 1978* and are administered by the Department of Mines, Industry Regulation and Safety. Where BRM occur on private (freehold) land, extraction requires approval under the *Planning and Development Act 2005*, administered by local government.

## 11.5 Agriculture

Many areas of highly productive soils are found close to the coast in the strategy area. This includes soils in Northampton and Chapman Valley areas, the front and back flats at Greenough, the Irwin River Valley, and Spearwood type sands which run in a belt up the coast from south of Perth to the vicinity of Jurien Bay. These fertile and versatile soils are the foundation for high quality agricultural land and are important, finite assets for the agricultural industry.

The agricultural sector is a high value industry for the sub-region. Recent studies have identified areas of high quality agricultural land adjacent to the Irwin, Greenough and Chapman rivers that require protection from conflicting land uses. These areas could provide suitable areas for expanding the horticultural industry in the sub-region, provided a water supply can be identified. A \$4.7 million groundwater and land assessment is currently investigating groundwater availability, land capability and crop suitability in the area between Gingin and Dongara, and is expected to be finalised in 2018.

DPIRD is aware that intensive agriculture including horticulture and animal production, such as

piggeries and poultry, has grown rapidly in the past decade in this area, particularly in the Shire of Gingin. Research undertaken earlier this century identified that catchment management practices threaten the health of the lower Moore River. The growth in intensive agricultural activities in the past decade has increased nutrient runoff even further.



The levels of nutrients in the estuary are significantly above accepted standards and it is considered eutrophic. Because of the naturally dark colour of the water due to tannin and the dynamic of the sand bar, the estuary at Guilderton is not yet affected by algal blooms. However, altering the natural dynamics of the estuary and river mouth through development may create serious problems with algal blooms in the future.

State Planning Policy 2.5 Rural Planning notes that sub-regional and local planning strategies should provide soil and land capability information regarding the risk of nutrient export where land uses may generate increased nutrient loads in rivers, estuaries or their tributaries. It is further stated within SPP2.5 that environmental and landscape attributes will be managed and improved by making planning decisions that support the protection of water resources and their dependent environments in order to maintain or improve water quality.

Proposals that may affect the nutrient level of a river, estuary or associated tributary need to consider the nutrient load of that system. WAPC consideration of such proposals, where the nutrient load is already above accepted standards, would require a net reduction in nutrient export to be demonstrated.

The draft Government Sewerage Policy 2016 promotes reticulated sewerage as the best disposal method for sewage. It requires all new subdivision and development to be connected to reticulated sewerage where available or considered necessary on health, environment or planning grounds.

Further, one of the key issues addressed by the review of the current sewerage policies is the potential for impacts on the environment from the on-site disposal of sewage. The draft policy dictates sewage sensitive areas and associated requirements in these areas. Sewage sensitive areas represent locations where there is a high environmental risk associated with on-site sewerage disposal. These areas are well-defined, known to have high environmental values and to be sensitive to the impacts of on-site sewage disposal.

The following sewage sensitive areas are recognised by the draft policy and are shown in [Map 6](#):

- land that drains to and is within two kilometres of the estuarine areas of the Moore, Chapman, Greenough, Hill, Irwin and Murchison rivers
- land within two kilometres of the coastal embayment of Jurien Bay
- land within a boundary, which is one kilometre up-groundwater-gradient and 250 metres down-groundwater-gradient of a significant wetland or where the groundwater gradient is unknown within one kilometre of the significant wetland
- habitats of threatened and priority ecological communities and specially protected water depended fauna wild river catchments.

## 12. Transport

The Guilderton to Kalbarri sub-region is focused along a road network adjacent to the coast comprising of Indian Ocean Drive, Brand Highway and North West Coast Highway. Geraldton is also serviced by rail, port and a regional airport. Future major transport projects in the area include the Oakajee Transport Corridor and proposed upgrades to agricultural lime heavy haulage routes to Brand Highway.

### 12.1 Roads

The strategy area is serviced by a number of key primary and regional distributor roads that provide critical linkages both within the area and more broadly to the surrounding regions.

Roads classified as primary distributor roads include Brand Highway, Northampton-Kalbarri Road and North West Coastal are part of the Main Roads Western Australia network. These roads form part of the national highway network serving important inter-regional routes and connections including to the Perth metropolitan area, the North-West and other regions. Regional distributor roads and other public roads in the area are the responsibility of local governments and provide important tourist and heavy haulage connections between settlements, primary industries and other destinations.

#### 12.1.1 Indian Ocean Drive

Indian Ocean Drive is the principal tourist route linking coastal settlements and tourist attractions with the Perth metropolitan area to the south and to the north Dongara and Geraldton. As a regional scenic coastal tourist route, Indian Ocean Drive provides an alternative route to Brand Highway for tourists travelling north of Perth. The Western Australian Planning Commission (WAPC) has adopted the Indian Ocean Drive Planning Guideline to provide for the growth of the road while retaining the distinctive attributes through broad guidelines for the location, siting and design of various land uses and development in the locality of Indian Ocean Drive.

The Indian Ocean Drive Planning Guideline also contains recommendations for future investigations, including those that would contribute to improved visitor and tourism amenities. These include road signage to identify the location and distance to stopping places, amenities and fuel, construction of new look-outs along the northern section of the road such as at Freshwater Point (Shire of Irwin) and the upgrading of existing look-outs, such as at Lions Lookout (Shire of Dandaragan).

While Indian Ocean Drive is primarily a tourist and commuter route, it also provides a localised heavy haulage traffic resulting from the transportation of agricultural lime. This is contained to small sections of Indian Ocean Drive between east-west roads used as part of the haulage of agricultural lime (aglime).

This Strategy recommends retention of Indian Ocean Drive as a designated tourist route, limiting its capacity to accommodate major freight tasks. The Brand and Great Northern highways are capable of performing this role.

### 12.1.2 Greater Geraldton road network

At present, freight tasks that access the North-West Coastal Highway (Carnarvon, Exmouth, Onslow and Karratha areas) all pass through Geraldton. Over time, the competing needs of amenity and efficient freight movement may require planning to accommodate freight movements. The State Government is currently investigating a number of infrastructure projects to focus on the safe movement of freight and passenger traffic, ranging from a Geraldton cycle network to a Greater Geraldton heavy freight bypass.

The Department of Transport's Western Australian Regional Freight Transport Network Plan forecasts an increase in growth pressures facing Western Australia's regional freight transport network, with a doubling of regional road freight by 2031. It is expected that most transport pressure in the strategy area will be concentrated around the Greater Geraldton area. Linked to the prospect of iron ore projects in the region, the Geraldton Port may reach capacity and generate significant heavy freight traffic at peak periods such as the grain harvest.

Brand Highway and North West Coastal Highway currently form the primary coastal freight route between Perth and the North West of Western Australia. It is recognised there needs to be a high standard heavy freight route for regional and freight traffic including bypasses of key Mid West towns.

As shown on [Map 2](#), the Oakajee Narngulu Infrastructure Corridor (ONIC) project proposes a 32 kilometre long infrastructure corridor co-locating road, rail and utilities infrastructure. This would provide strategic linkages between Oakajee, Narngulu, Geraldton Port and iron ore mines.

### 12.1.3 Agricultural lime routes

A number of dedicated and proposed agricultural lime ('aglime') routes are recognised by Main Roads WA.

The aglime routes are identified as the preferred routes for the transport of aglime from coastal areas where it is sourced, to inland agricultural areas of Western Australia.

With a number of active mines located within close vicinity to settlements along the coastal strip, these aglime routes comprise a number of east-west local roads including K.W Road and Sappers Road (Shire of Gingin), Jurien Road (Shire of Dandaragan), and Coorow-Green Head Road (Shire of Coorow).

Table 6 lists the five designated aglime routes in the area. The table identifies the restrictive access vehicle (RAV) rating for each route. The RAV network is administered by Main Roads WA and identifies the suitability of certain roads for different types of RAV vehicles. Further information on RAV networks can be found on the Main Roads website.

While not identified as designated aglime routes, there are a number of local roads further north which carry significant aglime freight traffic. These roads include Coolimba- Eneabba Road (Shire of Carnamah) and Kailis Drive (Shire of Irwin) and also carry large volumes of commuter traffic.

Recognising the importance of the safe and efficient aglime haulage, the State Government has announced additional funding for the upgrading of the original five aglime routes. The Aglime Routes Upgrade project will upgrade key local roads and junctions with Indian Ocean Drive and Brand Highway.



*Table 6: Designated agricultural lime routes*

| Aglime route no.                         | Roads<br>(to Brand Highway intersection)       | Local<br>Government | Restrictive access vehicle<br>(RAV) network   |
|--|--|---------------------|---|
| Aglime Route 1<br>Lancelin to Northam    | Lancelin Road<br>Gingin Brook Road             | Gingin              | RAV 4   |
| Aglime Route 2<br>Lancelin to Goomalling | KW Road<br>Sappers Road<br>Orange Springs Road | Gingin              | RAV 4   |
| Aglime Route 3<br>Cervantes to Burakin   | Cervantes Road<br>Cadda Road                   | Dandaragan          | RAV 4 (Cervantes Road),<br>RAV 6 (Cadda Road) |
| Aglime Route 4<br>Jurien to Dalwallinu   | Jurien Road                                    | Dandaragan          | RAV 7   |
| Aglime Route 5<br>Coorow - Latham        | Coorow-Green Head Road                         | Coorow              | RAV 4   |

## 12.2 Rail

The rail network in the strategy area is operated by Brookfield Rail and comprises of narrow gauge railway. Rail haulage is exclusively made up of bulk products, such as grain, mineral sands and iron ore and currently terminates at the Geraldton Port. The Western Australian Regional Freight Transport Network Plan recognises that the growth of the resources industry in the southern Mid West region is expected to drive a significant increase in rail freight task into Geraldton to 2030. As such, consolidation of the rail network, linking the Geraldton Port, Narngulu industrial estate and the proposed Oakajee port and industrial estate is an important consideration and is proposed as part of the ongoing investigations into the Oakajee Narngulu Infrastructure Corridor (ONIC). The draft Oakajee Narngulu Infrastructure Corridor Draft Alignment Definition Report (WAPC, 2014) defines a preferred alignment for the ONIC.

While the strategy area currently has no passenger rail service, there may be opportunities in the future to consider a passenger rail service between Perth and Geraldton. This is of particular importance given the population growth potential of towns in the coastal strip between Perth and Geraldton and the availability of land within the strategy area.

## 12.3 Aviation

The strategy area is serviced by a number of airports and airstrips used for a variety of tasks including general and recreational aviation and Royal Flying Doctor services.

Geraldton Airport is the principal airport and is serviced by multiple daily Regular Public Transport (RPT) services provided by Virgin Australia Regional Airlines and QantasLink on the Perth-Geraldton Route. Funding has been secured to lengthen and expand the Geraldton Airport. This airport expansion has the potential to significantly increase air freight trade in and out of the Mid West region.

Sealed airstrips are located at Kalbarri, Dongara and Jurien Bay and unsealed airstrips are located at Cervantes, Leeman and Eneabba. The Shire of Dandaragan has completed a study into possible options for the long-term development of a Regional Airport in the Jurien Bay area.

The Department of Transport has released the State Aviation Strategy which supports the economic and social development of Western Australia through aviation services and infrastructure.

## 12.4 Ports

The regional port of Geraldton is currently the area's only port facility; however, a significant deepwater facility is proposed at Oakajee, about 20 kilometres north of Geraldton in the Shire of Chapman Valley. Geraldton Port, and the proposed Oakajee Port are administered by the Mid West Port Authority under the *Port Authorities Act 1999*.

Geraldton Port has played a significant role in the growth of the area, with the export based industries of surrounding regions reliant upon the port. Exports account for over 90 per cent of Geraldton Port's total throughput volume. Traditionally catering for the export of grain, Geraldton Port is increasingly adapting to the growth of the resources and tourism industries. In the 2014/15 cruise ship season Geraldton welcomed more than 34,000 passengers.

Shore tension units have enabled Geraldton Port to safely berth cruise ship vessels. However, this has come at a cost to adjoining berths and port users who are unable to berth due to the length of cruise ship vessels and the shore tension units extending into other berths. Mid West Ports Authority has embarked on a Port Master Planning process that will identify future port expansion opportunities to accommodate further growth in trade, including the identification of a potential dedicated lay by berth for cruise vessels (the new Berth 8 adjacent to the eastern breakwater).

The proposed integrated deepwater port at Oakajee, with supporting infrastructure, is expected to respond to the demands of the resources industry beyond the sub-region. Oakajee is part of the State Government's Oakajee Mid West Development Project managed by the Department of Jobs, Tourism, Science and Innovation through the lead agency framework. The Mid West region has significant high grade/ value magnetite deposits. With China working towards lowering its emissions particularly with Chinese steel mills that process lower grade Direct Shipping Ore (DSO), an opportunity exists for miners to explore magnetite exports from Oakajee (and Geraldton), if a commercial business case can be demonstrated.

In the short-term, the Western Australian Regional Freight Transport Network Plan forecasts an increased throughput of Geraldton Port of 20-30 million tonnes per annum, the majority of which will be transport by the rail network operated by Brookfield. A number of upgrades are proposed to increase berth capacity are planned for the port of Geraldton.



## 13. Utilities and services

### 13.1 Water supply

The provision of water supply for residential, agricultural, mining and industrial uses, as well as water quality management of drinking water resources, will be a key challenge for future planning in the Guilderton to Kalbarri sub-region.

Water demand is expected to continue to increase as a result of peri-urban residential and rural living growth, development of new areas for irrigated agriculture and industrial and mining development such as Oakajee Port. Key pressure areas will be mining and industrial areas including Greater Geraldton and Narngulu as well as Dongara, Northampton and Kalbarri. Mineral sands processing operations around Eneabba alone licenced to abstract 20 gegalitres (GL) annually.

Most water supply schemes are under the responsibility of the Water Corporation with some privately operated Schemes in locations including Lancelin South and proposed for the Moore River South development. An overview of water supply schemes in the sub-region is presented in Table 6.

The sub-region depends on a range of independent water sources, primarily stand-alone water supply schemes from groundwater sources. Many aquifers are found in fractured rock formations in the area but are highly variable. The Yarragadee aquifer extends to areas along the southern coast, providing a more stable source of water, but is more challenging to access due to its depth and the region's difficult terrain.

Water resource availability is informed by allocation plans under the *Rights in Water and Irrigation Act 1914*, and is subject to allocation limits. The Department of Water and Environmental Regulation's support for a land use change or development would be influenced by whether or not water is available. If abstraction of the required water would result in significant environmental effects such as impacts on native vegetation, wetlands or waterways, the Department of Water and Environmental Regulation may need to refer the proposal to the Environmental Protection Authority under s38 of the Environmental Protection Act.

The sub-region is covered by a number of Groundwater Allocation Plans including the Gingin Groundwater Allocation Plan which covers Guilderton to Grey, Jurien Groundwater Allocation Plan which covers Grey to north of Jurien and the Arrowsmith Groundwater Allocation Plan which covers further north to Geraldton. The plans include allocation limits and licensing policies for how groundwater resources will be allocated and managed. Allocations for abstraction should be reviewed regularly to accommodate anticipated long-term demand. While there are significant volumes of groundwater available for further licensing throughout the sub-region, useful volumes at a local scale will vary significantly. Groundwater sources in the Shires of Gingin and Dandaragan remain part of the source portfolio to supply the Integrated Water Supply Scheme for the Perth Region.

Water for domestic use is a valuable resource, and a key challenge is to improve 'fit-for-purpose' supply and use of precious water resources. Recycled water is used in Geraldton, Kalbarri and Dongara to replace about 375 million litres of drinking water every year. This water is often provided to these towns free of charge for uses that benefit the community, such as water for some public open spaces.

*Table 7: Water sources and supply schemes*

| Settlement/scheme  | Current water sources   | Allocation (GL/annum)  | Capacity   |
|--|---|--|--|
| Geraldton Regional Water Supply Scheme<br><br>(Supplies Geraldton, Dongara–Denison, Northampton, Eradu, Narngulu industrial area and Mullewa)              | Sedimentary aquifer – Yarragadee North  | 14 (Allanooka and Mount Hill Borefields)<br><br>0.65 (Wye Springs Borefield)                               | A planning and capital program is in place to incrementally upgrade and expand the water sources, water treatment infrastructure, bulk water transfer, water storages and water distribution mains as needed as demands increase into the long term. |
| Kalbarri and Port Kalbarri<br><br>(Note: Kalbarri and Port Kalbarri are served by separate water schemes with separate bore sources, pumps, storage tanks) | Sedimentary aquifer – Tumblagooda Sandstone   | Licensed to abstract 0.6GL /600,000 KL/ annum<br><br>Adequate source capacity for at least next 5-10 years | Kalbarri town service tank has limited capacity of 2.5ML. Reserve storage may be insufficient during times of peak demand and high tourist season.   |
| Leeman and Green Head  | Sedimentary aquifer – Lesueur Sandstone   | 0.47 (Mount Peron Borefield)   | Groundwater licence allocation sufficient to meet projected demands for at least next 5 years  |
| Eneabba  | Sedimentary aquifer – Yarragadee North  | 0.2  | Current groundwater licensed allocation sufficient for the medium term.  |
| Horrocks Beach   | Sedimentary aquifer – Tumblagooda Sandstone   | 0.1  | Groundwater abstraction and scheme consumption well below licensed allocation.<br>Adequate for at least next 5 years.  |
| Nabawa   | Mostly water carting from the Geraldton scheme. Small volume abstracted from local fractured rock aquifer | 0.05   | Current water sources adequate to meet long term demand.   |
| Lancelin   | Superficial aquifer   | 0.28   | Expected to meet demands for next 5 years based on low growth rate   |
| Seaview Park   | Superficial aquifer   | 0.6  | Expected to meet medium term demands based on low growth rate  |
| Ledge Point  | Superficial aquifer   | 0.12   | Expected to meet demands for next 5 years based on low growth rate   |
| Lancelin South   | Sedimentary aquifer – Leederville (Sandstone/ Shale)  | 0.47 (1.88 on full staging)  |  |

*Continued next page*



Table 7: Water sources and supply schemes (continued)

| Settlement/scheme             | Current water sources                               | Allocation (GL/annum) | Capacity   |
|-------------------------------|---|-----------------------|--|
| Seabird                       | Sedimentary aquifer – Leederville (Sandstone/Shale) | 0.1                   | Expected to meet demands for next 5 years based on low growth rate   |
| Sovereign Hill and Guilderton | Superficial aquifer                                 | 1.38                  | Expected to meet demands for next 5 years based on low growth rate<br>Potential ground water quality issues; high nitrate plume. |
| Cervantes                     | Superficial aquifer                                 | 0.3                   | Water Corp expects to meet growth projections  |
| Jurien Bay                    | Superficial aquifer                                 | 0.42                  |  |

## 13.2 Waste water

Wastewater treatment facilities in the sub-region are outlined in Table 8. Wastewater schemes in the sub-region are operated by the Water Corporation except for Lancelin South which is serviced by Aquasol Pty Ltd, although, wastewater from Lancelin South is currently being carted by Aquasol/developer to the Water Corporation's Lancelin Waste Water Treatment Plant (WWTP) on a temporary basis until the proposed Aquasol WWTP has been commissioned. The proposed Moore South River South development site will also be serviced by a privately operated wastewater scheme when the development commences.

The Narngulu and Wonthella wastewater treatment plants, which are the largest facilities in the sub-region, treat most of Geraldton's wastewater. The Narngulu facility was commissioned in 2008, which added considerable capacity to Geraldton's wastewater scheme. Further upgrades to the facility could double its current capacity to potentially cater for the medium-to-long term growth of the city. An additional wastewater treatment site has been proposed to be located adjacent to Oakajee. Recent upgrades have also increased the capacity of the Kalbarri Wastewater Treatment Plant to cater for significant population influxes during the peak tourist season.

Most residential or rural living settlements in the sub-region are not connected to reticulated sewerage including Northampton, Port Gregory, Nabawa, Seabird and Guilderton. There is a small area of the Seabird townsite that is serviced by reticulated sewerage but there is no wastewater treatment plant and wastewater is stored in the Seabird sewerage system and then tankered to the Lancelin facility.

There are also some established, unsewered residential areas in built-up areas that are serviced by a wastewater scheme, including parts of Geraldton and Lancelin. A sewer infill program is in progress in Jurien Bay. The absence of reticulated wastewater ultimately limits the development potential of these areas, however, there is potential for innovation in on-site treatment units that may assist some areas.

The draft Government Sewerage Policy recommends new lots and development to be connected to reticulated sewerage unless exempt under particular circumstances. Where appropriate, the policy provides for the consideration of on-site sewage disposal on the condition that it does not compromise public health or the environment and where minimum site requirements can be met. There may also be a need to investigate fit-for-purpose wastewater disposal systems to accommodate future growth.

*Table 8: Current and proposed wastewater treatment facilities*

| Settlement      | Wastewater treatment facility                                |
|-----------------|--|
| Geraldton       | Geraldton North Wastewater Treatment Plant (Glenfield Beach) |
|                 | Geraldton No. 2 Wastewater Treatment Plant (Wonthella)       |
|                 | Narngulu Wastewater Treatment Plant                          |
|                 | Greenough on Sea Wastewater Treatment Plant (Cape Burney)    |
|                 | Oakajee Wastewater Treatment Plant (proposed)                |
| Dongara-Denison | Dongara Wastewater Treatment Plant                           |
| Kalbarri        | Kalbarri Wastewater Treatment Plant                          |
| Horrocks        | Horrocks Wastewater Treatment Plant                          |
| Leeman          | Leeman Wastewater Treatment Plant                            |
| Green Head      | Green Head Temporary Wastewater Treatment Plant              |
|                 | Green Head Wastewater Treatment Plant (proposed)             |
| Eneabba         | Eneabba Wastewater Treatment Plant                           |
| Jurien          | Jurien Wastewater Treatment Plant                            |
| Lancelin        | Lancelin Wastewater Treatment Plant                          |
| Ledge Point     | Ledge Point Wastewater Treatment Plant                       |

## 13.3 Electricity

The Guilderton to Kalbarri sub-region is supplied with energy from the South West Interconnected System (SWIS), which is an interconnected network emanating from Western Australia's major base load power generators at Kwinana and in the South West.

The sub-region is serviced by the North Country load area which extends from Pinjar to Kalbarri and supplies a range of mining and industrial loads, as well as many rural centres. The North Country network was designed to supply small distributed loads and as such, infrastructure

limitations in this load area have resulted in no capacity to connect new large industrial customers.

To address capacity limitations Western Power completed the Mid West Energy Project in 2015 comprising a 190kilometre electricity line between Pinjar and Eneabba, a new 330/132kV terminal substation at Three Springs and a number of substation upgrades enabling more than 500 extra megawatts of energy. The upgrade will enable further industrial and mining development in the sub-region and connection of renewable energy sources including wind and gas powered generation to the SWIS. In addition, options for potential future electricity generation at Oakajee

have been investigated as part of the structure planning for the Oakajee Industrial Estate undertaken by LandCorp.

The reliability of electricity supply in Kalbarri is an issue. Kalbarri is located at the end of the SWIS grid, and the connection can be compromised due to distance, remoteness and other environmental factors. Kalbarri will be powered by its own micro grid, a small scale power grid which will also be connected to the main electricity network which is expected to be completed in 2019. Additional supply will be provided through renewable energy from residential rooftop solar and a local wind farm. The design allows for future

renewable generation sources to be integrated as they become available. Western Power is examining similar options to address reliability issues in other regional towns.

The sub-region offers an abundant source of renewable energy, as reflected in the number of ongoing new renewable energy projects, including wind and solar generation sites. The climatic and geographic conditions are suitable to alternative energy generation such as wind, solar, geothermal and biomass generation. Table 9 outlines several current and proposed power generation sites in the Guilderton to Kalbarri sub-region.

*Table 9: Current and proposed electricity generation*

| Facility                    | Generation capacity (MW)            | Fuel       | Operator/proponent                                 |
|-----------------------------|-------------------------------------|------------|--|
| Cervantes (Emu Downs)       | 120                                 | Wind/solar | APA Group  |
| Badgingarra                 | 149                                 | wind       | APA Group  |
| Mungarra                    | 112                                 | gas        | Synergy  |
| Walkaway (Alinta Wind Farm) | 90                                  | wind       | Alinta   |
| Mumbida Wind Farm           | 55                                  | wind       | Synergy/Infrastructure Capital Group joint venture |
| Greenough River Solar Farm  | 10*                                 | solar      | Synergy/GE Energy joint venture                    |
| Kalbarri Wind Farm          | 1.6                                 | wind       | Synergy  |
| Centauri 1 (proposed)       | 168                                 | gas        | Eneabba Gas  |
| Warradarge                  | Max 250                             | wind       | Synergy/Indian Ocean Farms                         |
| Yandin                      | 338.4                               | wind       | Alinta   |
| Waddi                       | Up to 105MW (Wind) and 40MW (solar) | wind/solar | Tilt Renewables                                    |

\* The Greenough River Solar Farm has been proposed to eventually expand to a capacity of 40MW.

## 13.4 Gas

The Guilderton to Kalbarri sub-region is traversed by two major gas transmission pipelines: the Dampier to Bunbury Natural Gas Pipeline (DBNGP) which is owned by the DBP Transmission and the Parmelia Pipeline which is owned by the APA Group, which runs from Dongara to Pinjarra.

A lateral pipeline from the DBNGP supplies customers in Geraldton which is serviced by a reticulated natural gas distribution system. A new lateral pipeline could potentially be constructed from the DBNGP to Oakajee to service future users at the proposed Oakajee Industrial Estate and Port. There is, however, no access to the DBNGP from other locations in the sub-region. To achieve regional access, sufficient demand would need to be demonstrated by a large foundation customer.

The Mondarra Gas Storage Facility, adjacent to both major transmission pipelines near Dongara, is Western Australia's only underground gas storage facility. The commercial storage facility, which recently underwent a significant expansion, has a storage capacity of 15 petajoules.

In addition, substantial infrastructure also exists to support the operation of oil and gas fields within the sub-region; including pipelines, processing plants and storage facilities.

## 13.5 Telecommunications

A range of telecommunications services exists within the sub-region, depending on location and accessibility to settlements. Some parts of the sub-region are relatively remote, and telecommunications services in these areas can be limited or otherwise reliant on delivery through satellite networks.

Mobile services are generally available throughout the sub-region, however, there are gaps in coverage in some rural areas. The State Government has recently completed the delivery of the Regional Mobile Communications Project, resulting in improved mobile telecommunications services in the sub-region.

The National Broadband Network (NBN) can enable improved access to information and services and provide opportunities for the establishment of new technology based businesses. Most coastal settlements in the sub-region have access to NBN including:

- Guilderton
- Sovereign Hill (near Guilderton)
- Woodridge (near Guilderton)
- Seabird and Gabbadah
- Lancelin, Nilgen and surrounding areas inland
- Cervantes township
- Jurien Bay and surrounding areas inland
- Green Head
- Leeman
- Port Denison/Dongara
- The Greater Geraldton Urban Area
- Northampton.



## 13.6 Waste management

Several waste management facilities are located throughout the Guilderton to Kalbarri sub-region and are outlined in Table 10. These range significantly in capacity depending on the size of each facility's service catchment with the Meru waste disposal facility at Narngulu (Geraldton) is the most significant waste infrastructure facility in the sub-region, servicing the Geraldton urban area and surrounding local government areas.

The practicality and viability of waste collection and recycling services is impacted in regional areas by smaller populations across larger geographic areas with much greater disposal of waste in landfill in regional areas.

Future waste volumes and the life span of facilities will be affected by waste minimisation initiatives and service delivery models. The Waste Authority is supporting regional groups of local governments in the implementation of Strategic Waste Management Plans through the Regional

*Table 10: Waste management facilities*

|              | Type of facility                      | Main Service catchment   |
|--------------|---------------------------------------|--|
| Meru         | Waste disposal facility/landfill site | Greater Geraldton<br>Dongara–Denison<br>Northampton<br>Mullewa<br>Mingenew |
| Dongara      | Waste transfer station <sup>3</sup>   | Dongara–Denison  |
| Kalbarri     | Landfill site                         | Kalbarri   |
| Northampton  | Waste transfer station                | Northampton<br>Horrocks  |
| Leeman       | Landfill site                         | Leeman<br>Green Head   |
| Port Gregory | Landfill site                         | Port Gregory   |
| Eneabba      | Landfill site                         | Eneabba  |
| Nabawa       | Landfill site                         | Nabawa   |
| Yuna         | Landfill site                         | Facility predominantly services rural areas                                |
| Binnu        | Landfill site                         | Facility predominantly services rural areas                                |
| Gingin       | Landfill site                         | Gingin   |
| Seabird      | Landfill site                         | Seabird and surrounds  |
| Lancelin     | Landfill site                         | Lancelin   |
| Badgingarra  | Transfer Station                      | Badgingarra  |
| Cervantes    | Transfer Station and Recycling Centre | Cervantes and surrounds  |
| Dandaragan   | Landfill Site and Recycling Depot     | Dandaragan Local Government area   |
| Jurien Bay   | Landfill Site and Recycling Centre    | Jurien Bay   |

Funding Program. Strategic Waste Management Plans examine matters including:

- opportunities for regional collaboration, including initiatives to establish regional strategic landfill sites and the conversion of small sites with limited capacity into transfer stations;
- new locations with the capacity to meet long-term waste needs; and
- separation of waste, establishment or expansion of recycling and processing operations, and improved recycling systems.

Local strategic planning for waste management in the Guilderton to Kalbarri sub-region has occurred through preparation of strategic waste management plans by the Shire of Dandaragan, Shire of Gingin and the Batavia Regional Organisation of Councils (Shires of Chapman Valley, Irwin, Northampton and City of Greater Geraldton). Regional waste plans generally acknowledge the potential benefits of landfill consolidation and the construction of transfer stations to service communities, but most identify a need for external funding to support projects. Some funding is available from the Waste Authority.

Future planning for waste management in the sub-region also includes proposals to decommission all remaining coastal tips in the Shire of Gingin and to replace these with transfer stations. It is intended that waste will be transferred to a new refuse disposal site to be developed at a location east of the Brand Highway. Meanwhile, it is proposed that a new landfill site be identified for Jurien Bay that can accommodate waste from Cervantes in the longer-term and that has the potential to accept regional waste. There may also be potential to establish waste and recycling facilities in the sub-region that accept and manage waste from the metropolitan region or to develop specialist waste treatment operations that service a wide geographic area.

## 13.7 Public health and adaptive technologies

The *Public Health Act 2016* has repealed much of the previous *Health Act of 1911*. As there is a significant amount of work required to transition to the new regulatory framework, the Act will be progressively introduced over the next three to five years. There is a timeline for implementation, which outlines five key stages to the implementation of the new Act, with many of the functions carried out by local government environmental health officers.

The transitional arrangements involved with the new Act are intended to provide a reasonable timeframe to adapt to changes which relate to matters such as asbestos, terminology, authorised officers, reporting requirements, infectious diseases, public health, the built environment, water and enforcement.

With many settlements in the strategy area not having deep sewerage, and with limited access to affordable water and power supply, the use of fit-for-purpose infrastructure and innovative technologies is broadly supported, provided it can meet health and safety requirements.

## 13.8 Health and education services

Tables 11 and 12 outline the health and education facilities available to the strategy area.

Due to the historical settlement pattern of coastal communities in the strategy area, the Indian Ocean Drive settlements have limited health and education facilities, reflective of permanent population figures. It should also be noted that some 'inland' towns such as Northampton and Moora provide health and education services that are accessed by the coastal settlements.

The relationship between population and services is well-established, such that education and health facilities are typically provided when populations hit a certain threshold. From a community perspective, if the services were in place, then population may grow, which is a conundrum. In a sense, communities must endure the limitations of modest servicing until such time as populations increase.

The Strategy area also has a significant aging population, and one that is proportionally older than the State average. This presents a complex range of health (and housing) requirements for communities, with the pending retirement of the 'baby boomers' and continued trend of people wishing to 'age in place'.

As coastal communities grow, priorities will be for hospitals with accident and emergency services, and for schools that cater for years K-12. A particular challenge for this area is the issue of the demand on health services created by seasonal populations.

The need for additional facilities and upgrades is typically aligned with permanent population growth based on planning thresholds within agencies, meaning that seasonal populations do not form part of population considerations.

*Table 11: Health facilities*

| Health Campus                           | Type    | Beds | Emergency Services | RFDS airstrip |
|---|---------|------|--------------------|---------------|
| Dongara Eneabba Mingenew Health Service | Public  | <50  | Y                  | Cervantes     |
| Geraldton Regional Hospital             | Public  | 93   | Y                  | Jurien Bay    |
| St John of God Hospital Geraldton       | Private | 60   | N                  | Geraldton     |
| Kalbarri Health Centre                  | Public  | <50  | Y                  | Kalbarri      |
|   |         |      |                    | Dongara       |
|   |         |      |                    | Leeman        |

Source: Department of Health, Healthy WA Service Finder (2017); Australian Institute of Health and Welfare, Hospital Profiles (2017); Wheatbelt Regional Infrastructure and Planning Framework (2015)

In situations where permanent facilities are not in place, there should be a focus on establishing and maintaining effective access to services, particularly for emergency health services. This requires resourcing of infrastructure to support the Royal Flying Doctor Service, identifying strategic highway locations for helicopter landing and supporting local volunteer brigades.

In the strategy area, Geraldton Regional Hospital is expected to be substantially redeveloped, including upgrading of the Emergency Department and the provision of 18 new mental health beds.

**Table 12: Education facilities and enrolments**

| School                             | Location   | Type/classification              | Enrolments |
|------------------------------------|------------|----------------------------------|------------|
| Cervantes Primary School           | Cervantes  | Primary schools (K-6)            | 46         |
| Dongara District High School       | Dongara    | District high schools (K-12)     | 424        |
| Allendale Primary School           | Geraldton  | Primary schools (K-6)            | 354        |
| Beachlands Primary School          | Geraldton  | Primary schools (K-6)            | 143        |
| Bluff Point Primary School         | Geraldton  | Primary schools (K-6)            | 317        |
| Geraldton Flexible Learning Centre | Geraldton  | Non-government schools (7-12)    | 83         |
| Geraldton Grammar School           | Geraldton  | Non-government schools (K-12)    | 591        |
| Geraldton Primary School           | Geraldton  | Primary schools (K-6)            | 348        |
| Geraldton Senior College           | Geraldton  | Senior colleges (10-12)          | 845        |
| Holland Street School              | Geraldton  | Education support schools (K-12) | 47         |
| John Willcock College              | Geraldton  | High schools (7-9)               | 791        |
| Leaning Tree Community School      | Geraldton  | Non-government schools (K-6)     | 82         |
| Mount Tarcoola Primary School      | Geraldton  | Primary schools (K-6)            | 438        |
| Nagle Catholic College             | Geraldton  | Non-government schools (7-12)    | 1,227      |
| Rangeway Primary School            | Geraldton  | Primary schools (K-6)            | 451        |
| St Francis Xavier Primary School   | Geraldton  | Non-government schools (K-6)     | 469        |
| St John's School                   | Geraldton  | Non-government schools (K-6)     | 210        |
| St Lawrence's School               | Geraldton  | Non-government schools (K-6)     | 606        |
| Strathalbyn Christian College      | Geraldton  | Non-government schools (K-12)    | 456        |
| Waggrakine Primary School          | Geraldton  | Primary schools (K-6)            | 521        |
| Wandina Primary School             | Geraldton  | Primary schools (K-5)            | 330        |
| Gingin Senior High School          | Gingin     | District high schools (K-12)     |            |
| Jurien Bay District High School    | Jurien Bay | District high schools (K-12)     | 307        |
| Kalbarri District High School      | Kalbarri   | District high schools (K-12)     | 220        |
| Lancelin Primary School            | Lancelin   | Primary schools (K-6)            | 126        |
| Leeman Primary School              | Leeman     | Primary schools (K-6)            | 36         |

Source: Department of Education student census Semester 2, 2016





# Profile maps

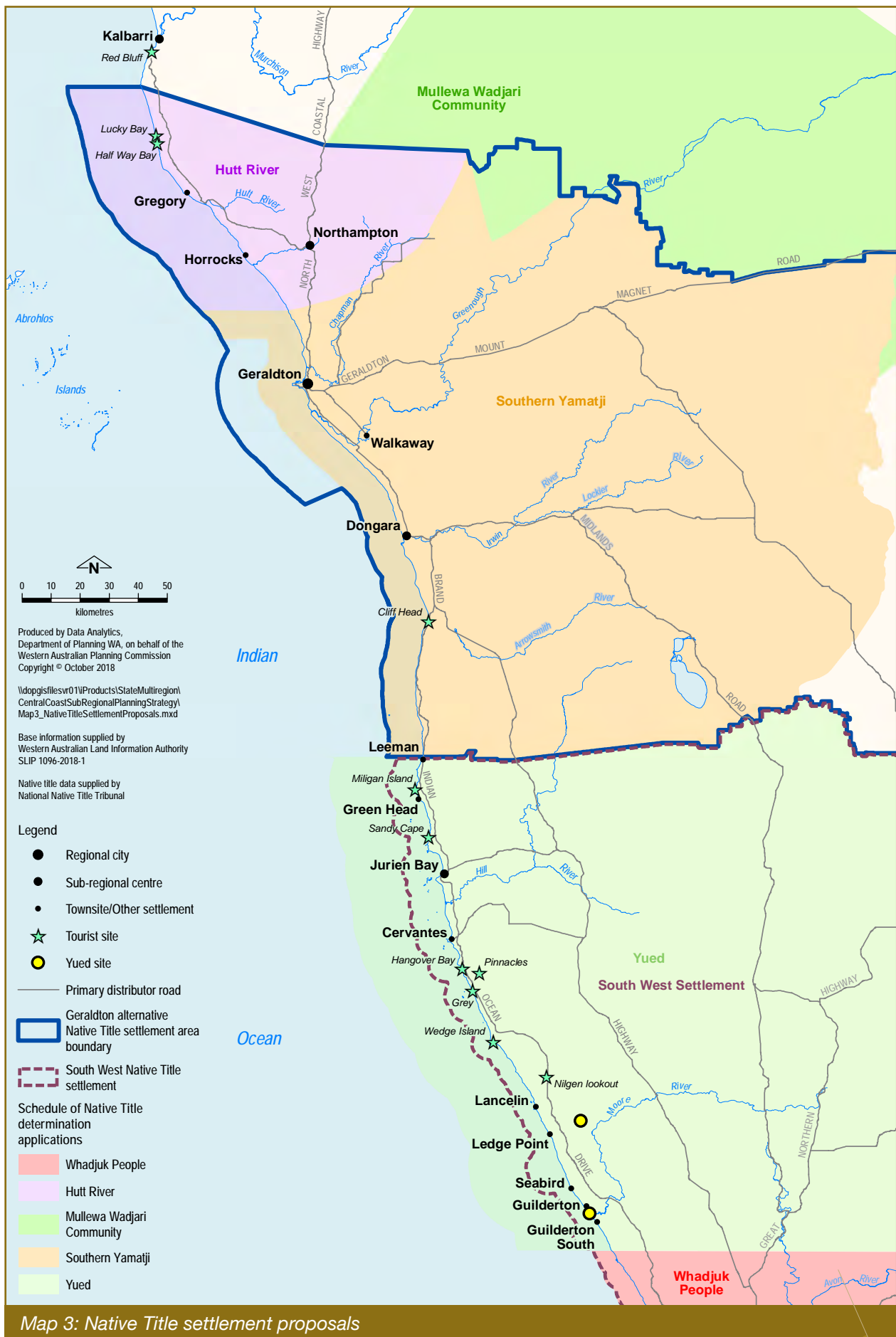
## References

### Appendix 1





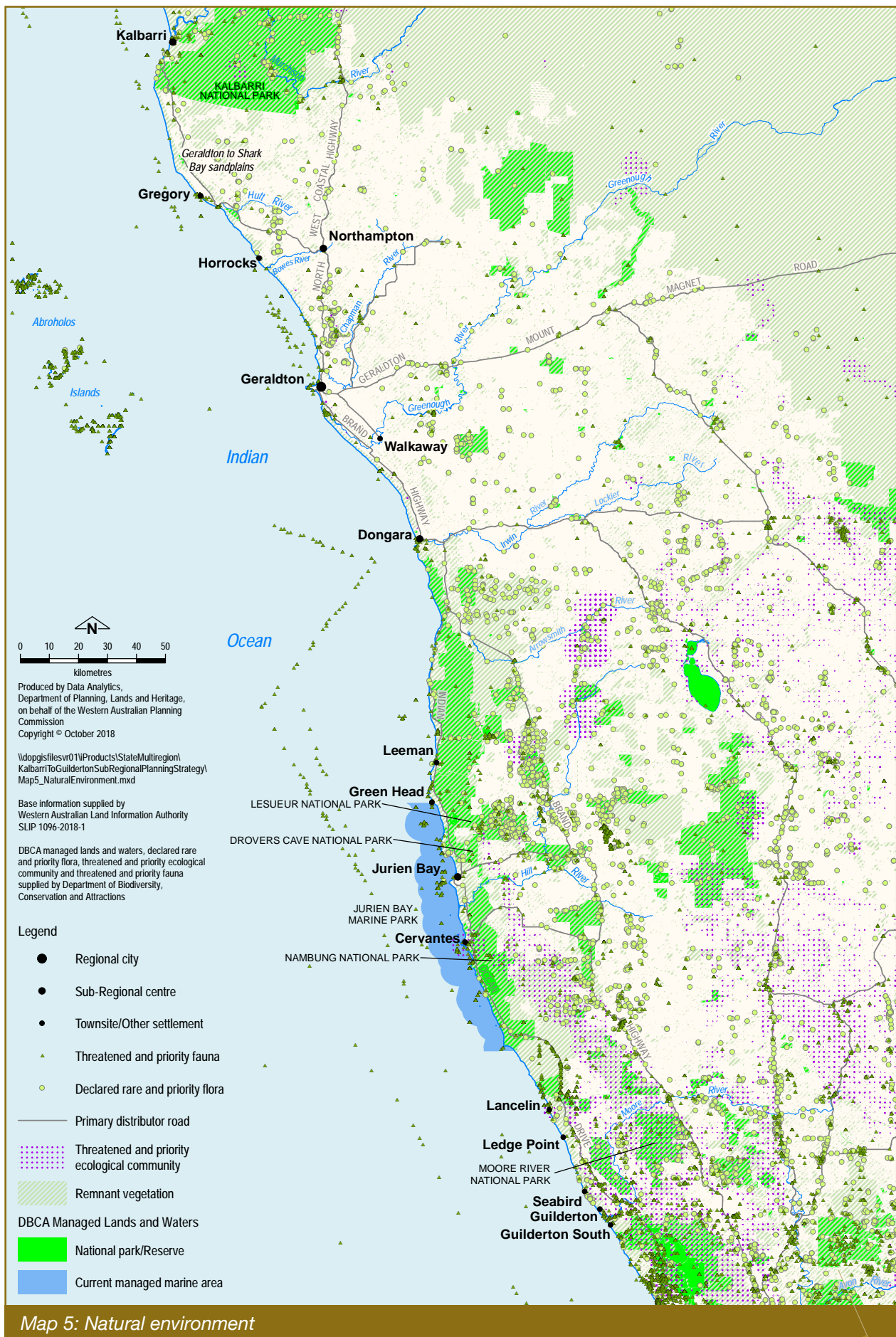




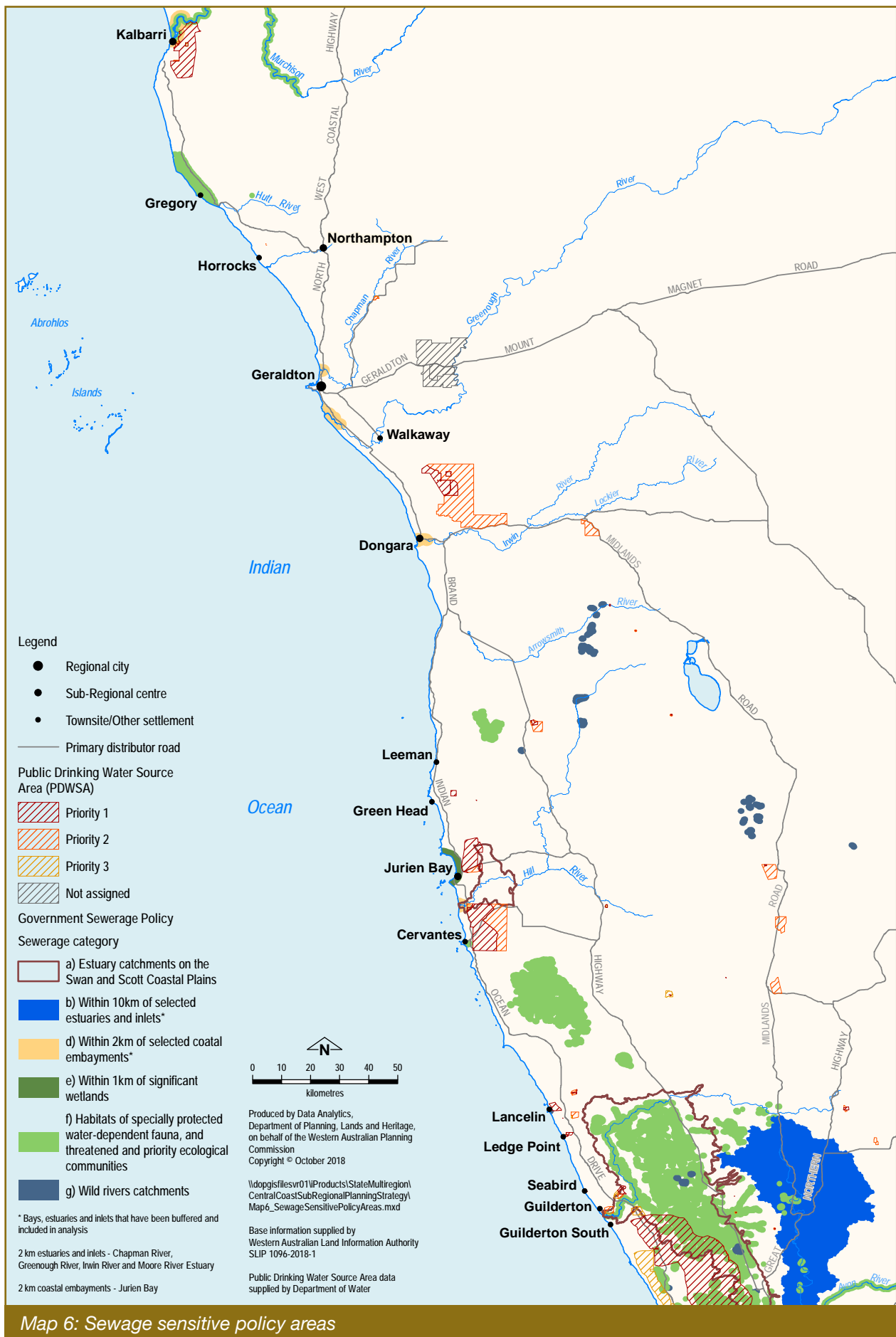
Map 3: Native Title settlement proposals





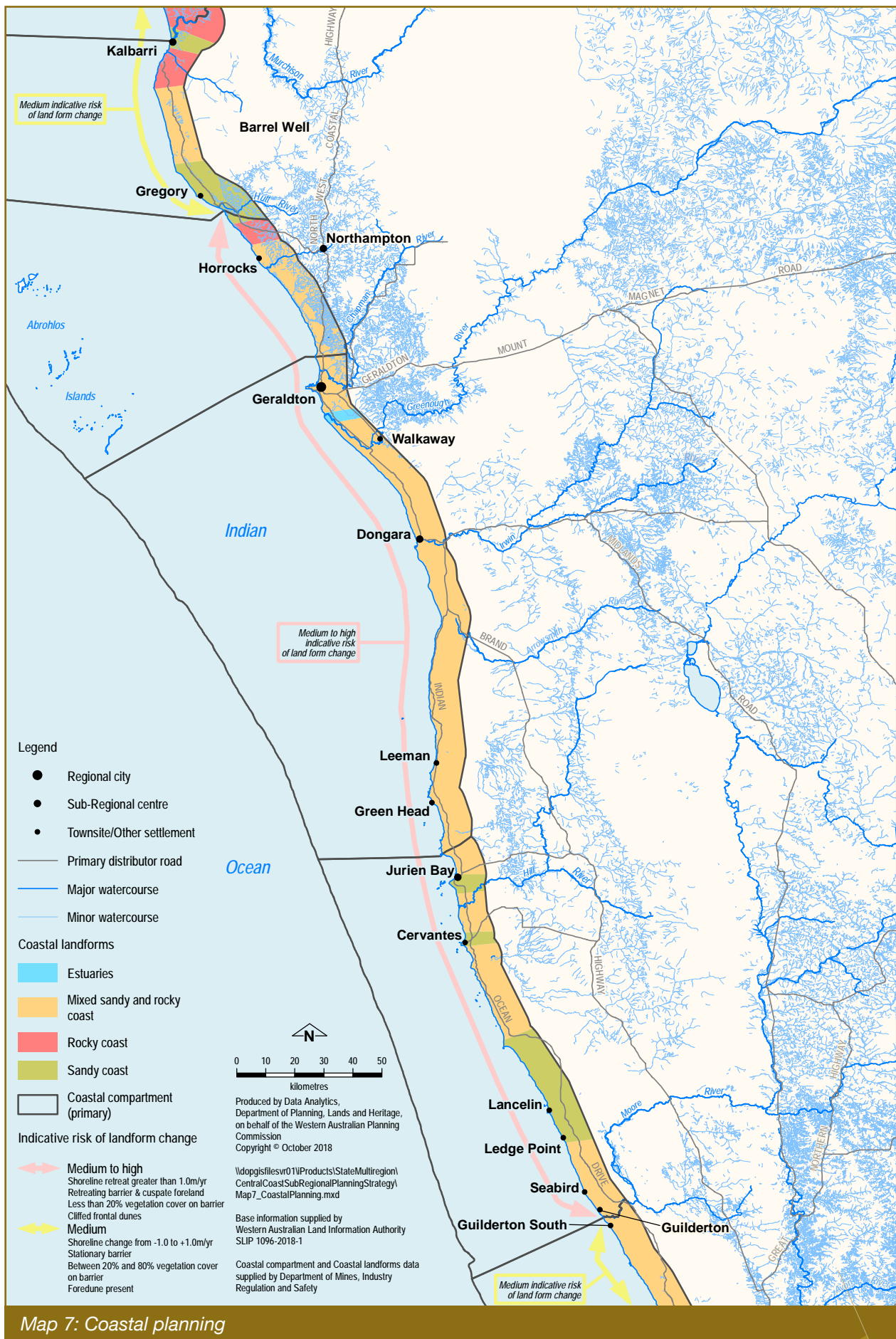


Map 5: Natural environment



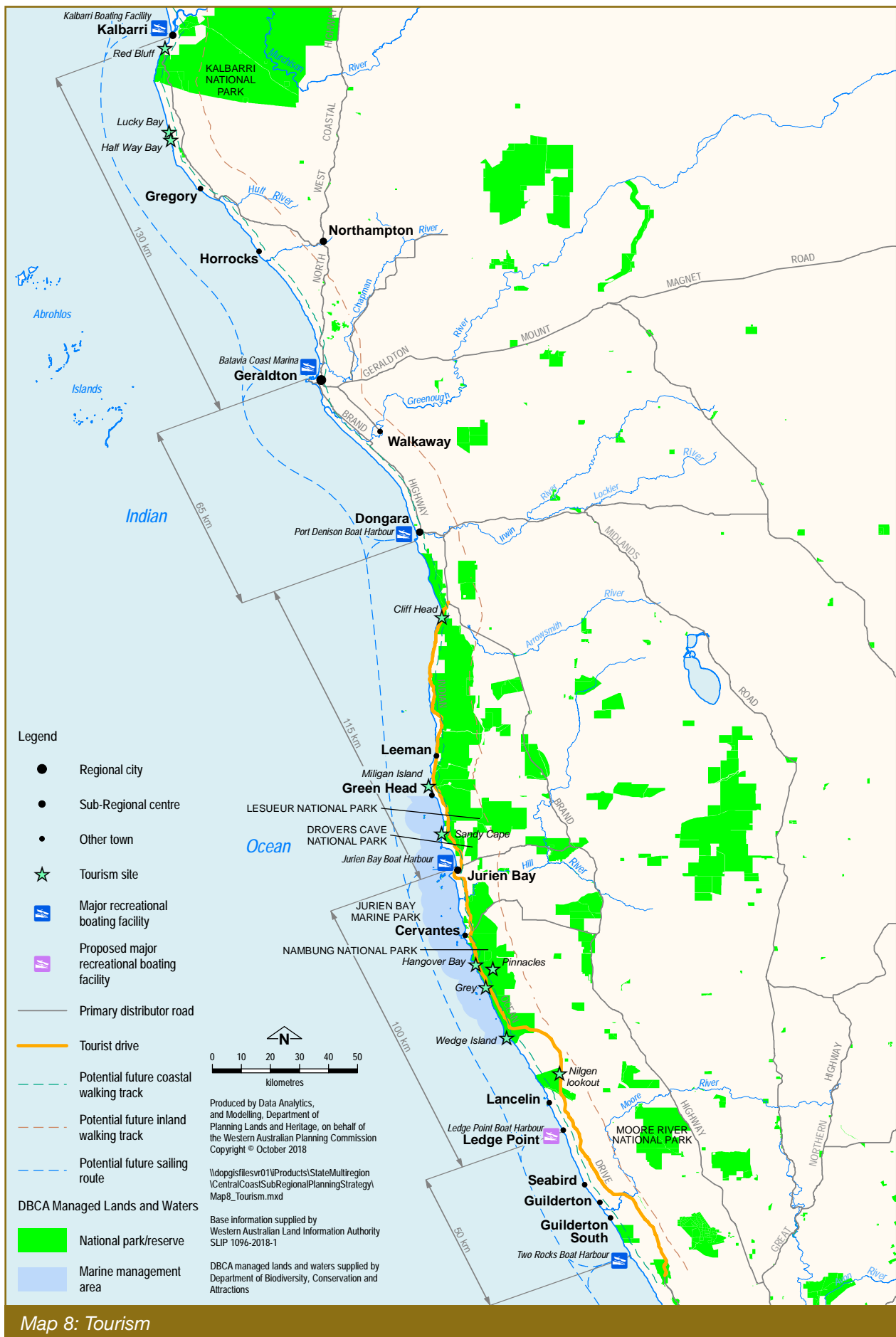
Map 6: Sewage sensitive policy areas

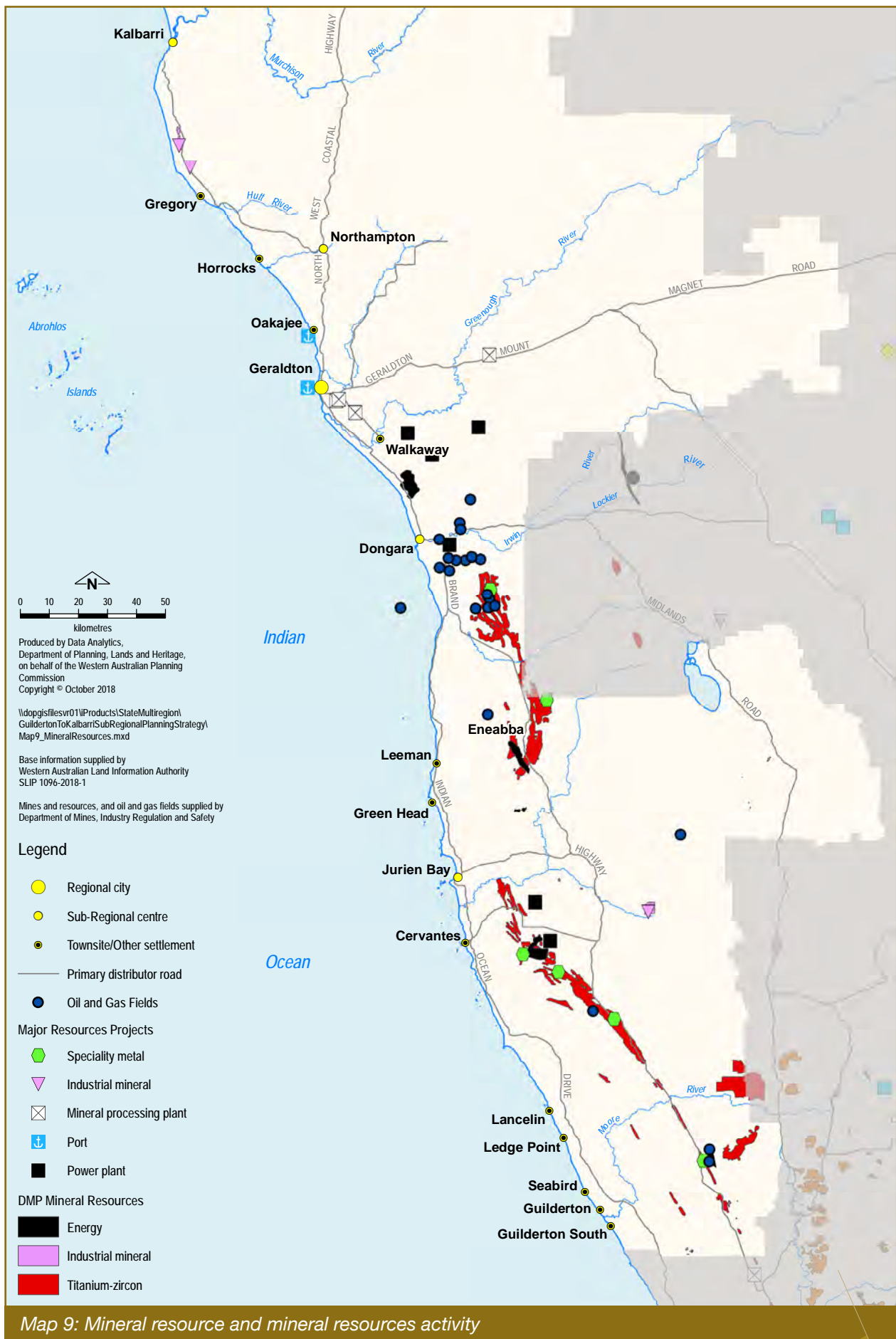


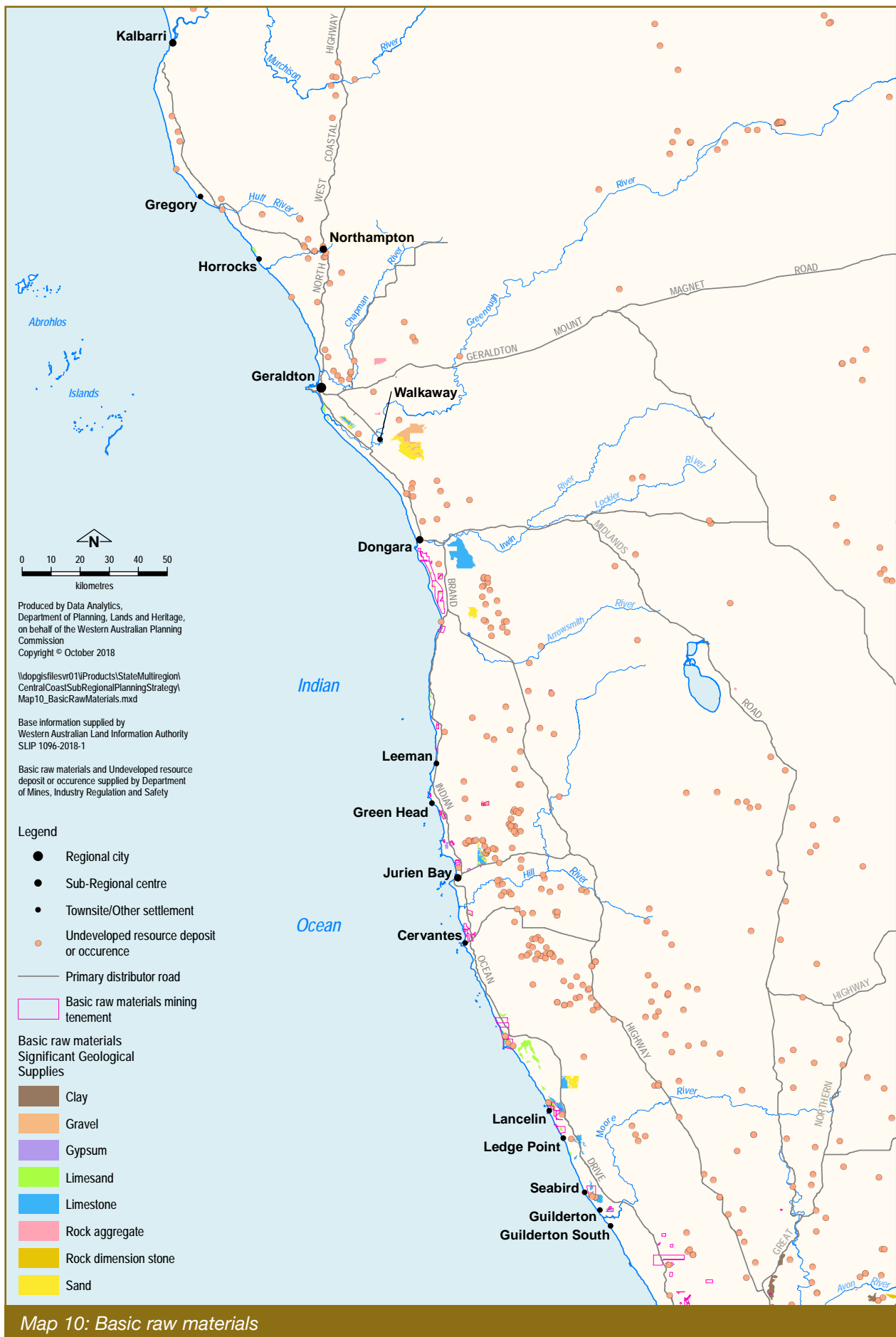


Map 7: Coastal planning









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# Appendix 1

## – Local government planning

| Local government          | Planning strategies and planning schemes  |
|---------------------------|---|
| Shire of Northhampton     | <ul style="list-style-type: none"> <li>• Shire of Northhampton Local Planning Scheme No.10 (2012)</li> <li>• Shire of Northhampton Local Planning Scheme No.11 – Kalbarri Townsite (2017)</li> <li>• Local Planning Strategy (endorsed 2008)</li> <li>• Horrocks Beach Local Planning Strategy (endorsed 2016)</li> <li>• Town of Kalbarri Local Planning Strategy (endorsed 2016)</li> </ul>   |
| Shire of Chapman Valley   | <ul style="list-style-type: none"> <li>• Shire of Chapman Valley Town Planning Scheme No.2 (2013)</li> <li>• Local Planning Strategy (endorsed 2008)</li> </ul>   |
| City of Greater Geraldton | <ul style="list-style-type: none"> <li>• City of Greater Geraldton Local Planning Scheme No.1 (2016)</li> <li>• City of Greater Geraldton Local Planning Scheme No.1a – Greenough River Resort (1986)</li> <li>• City of Greater Geraldton Local Planning Strategy (endorsed 2015)</li> <li>• Greenough Local Planning Strategy (endorsed 2008)</li> <li>• Geraldton Regional Centre Strategy (endorsed 2005)</li> <li>• Geraldton Region Plan (endorsed 1999)</li> <li>• South Greenough 2 Cape Burney Coastal Planning Strategy (2013)</li> </ul> |
| Shire of Irwin            | <ul style="list-style-type: none"> <li>• Shire of Irwin Local Planning Scheme No.5 (2008)</li> <li>• Local Planning Strategy (endorsed 2017)</li> </ul>   |
| Shire of Carnamah         | <ul style="list-style-type: none"> <li>• Shire of Carnamah Town Planning Scheme No.2 (1994)</li> <li>• Local Planning Strategy (endorsed 2014)</li> </ul>   |
| Shire of Coorow           | <ul style="list-style-type: none"> <li>• Shire of Coorow Local Planning Scheme No.3 (2015)</li> <li>• Local Planning Strategy (endorsed 2015)</li> <li>• Coorow Townsite Local Planning Strategy (endorsed 2014)</li> <li>• Leeman and Greenhead Townsite Local Planning Strategy (endorsed 2012)</li> </ul>  |
| Shire of Dandaragan       | <ul style="list-style-type: none"> <li>• Shire of Dandaragan Local Planning Scheme No. 7 (2006)</li> <li>• Local Planning Strategy (endorsed 2012) - under review</li> <li>• Jurien Bay City Centre Strategy Plan (2012)</li> </ul>   |
| Shire of Gingin           | <ul style="list-style-type: none"> <li>• Shire of Gingin Local Planning Scheme No.9 (endorsed 2012)</li> <li>• Local Planning Strategy (endorsed 2012)</li> </ul>   |