State Planning Strategy 2050

Planning for sustained growth and prosperity

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

State Planning Strategy Partners

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Tourism Western Australia
Water Corporation

‘The decisions we make today, shape our tomorrow’

This document seeks to build strategic planning capacity and capability across government, enabling the State to better anticipate and adapt to change in pursuit of sustained growth.

Cover image:
Mudflats, Derby, Western Australia

Turn overleaf ↗

Western Australia 1850 – 2050

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

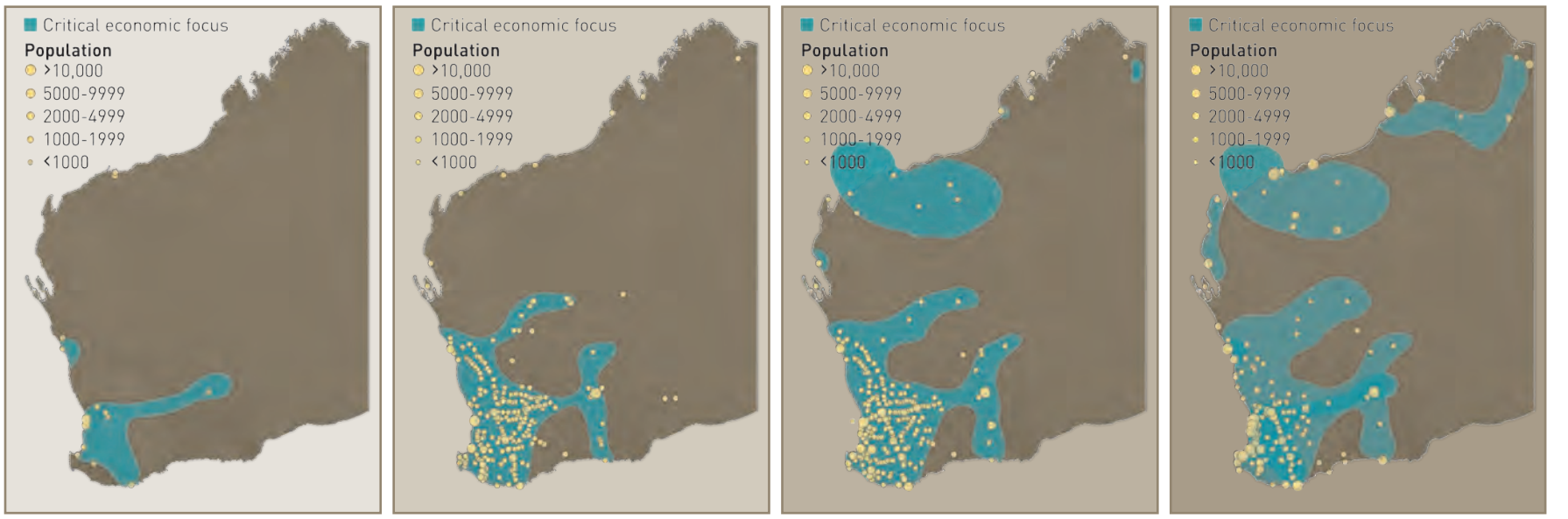
Emerging trends

1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050

WHERE WE HAVE BEEN.

WHAT WILL BE OUR LEGACY?

Maps



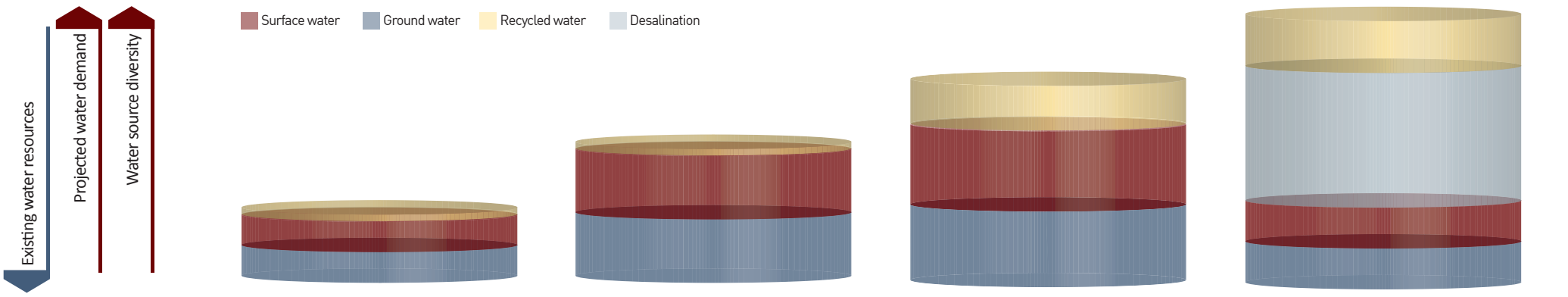
1850-1899
Characterised by the development of the Swan River Colony, along with essential infrastructure including water supply, telegraph, harbours, rail and roads. It was marked by the establishment of responsible government, preparation to join the Australian Commonwealth and a focus on building infrastructure between Perth and the Goldfields due to the gold rush of the 1890s.

1900-1949
Due largely to the gold rush, a period of rapid economic and population growth. It was also a period impacted by two world wars, and a Great Depression, leading to significant difficulties. Clearing and settlement of the Wheatbelt was a major focus, as was the development of rail, road and sea export facilities to move commodities.

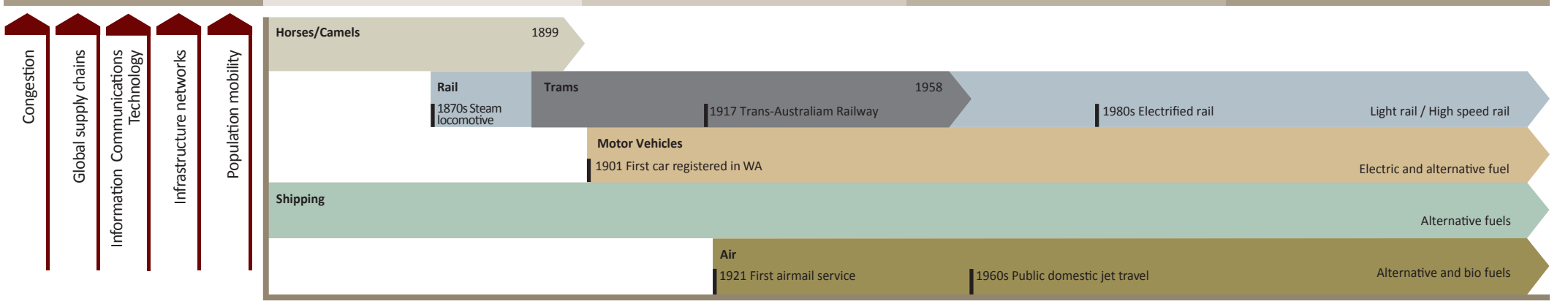
1950-1999
Characterised by the post war baby boom and the development of the Pilbara's rich mineral, oil and gas reserves. Gas was delivered to the south west of the State via a pipeline from the north, and there was significant investment in major industrial facilities and social infrastructure. It also heralded the home computer, the internet, the digital revolution and low cost air travel.

2000-2050
Began with a strong demand for raw materials, which is likely to continue well into the future. The earlier part of the period was characterised by the global economic crisis and growing concern about climate change. This period is likely to be characterised by growing diversity, the development of renewable energy, evolution of digital economy, an ageing population, globalisation and an orientation towards sustainable living.

Water sources

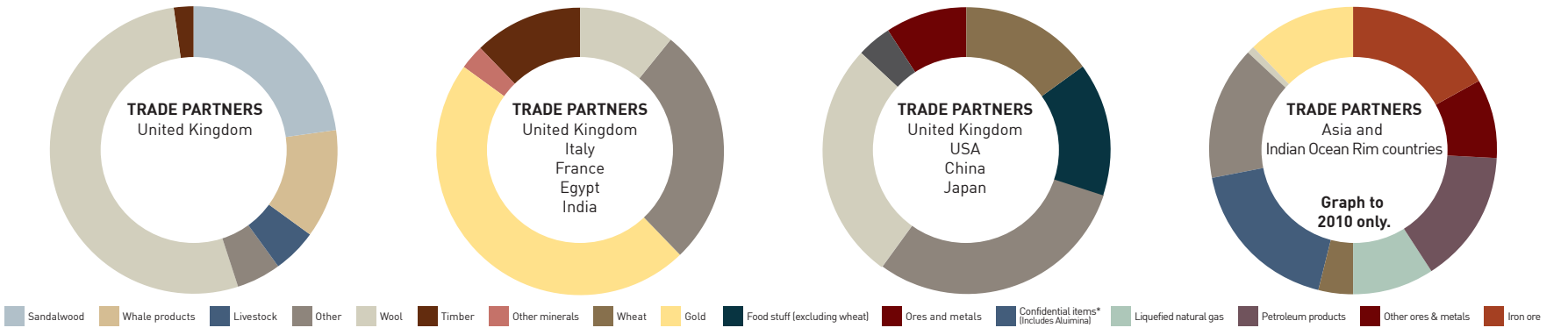


Movement



Major commodities

Manufacturing
Workforce participation
Globalisation
Estimated labour force
Export value



Housing

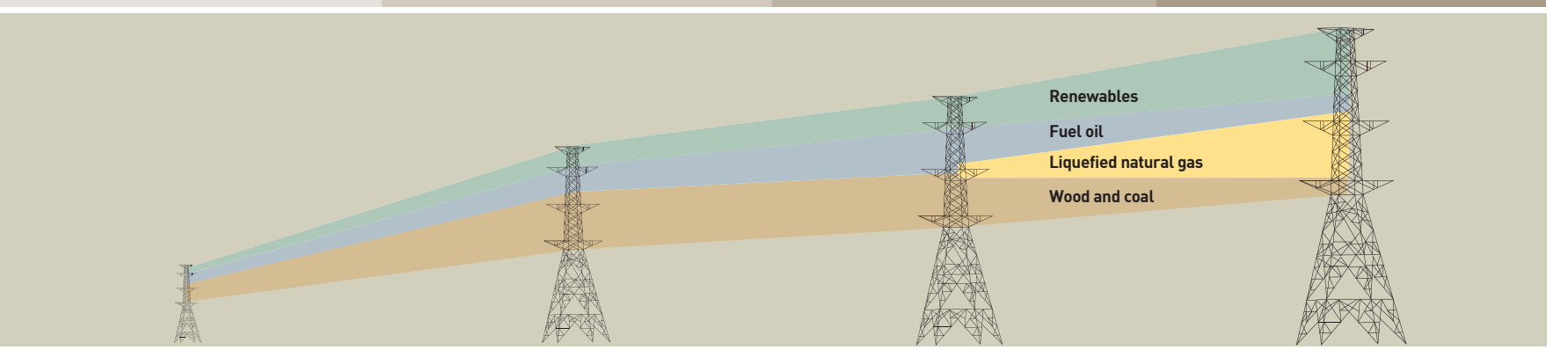
Housing affordability
Housing mix and stock
Water and energy efficiency

Urban Form

Average lot size
Compact settlement structures
Lot diversity
Permeability of movement
Site responsive
Solar orientations and layout
Transport integration

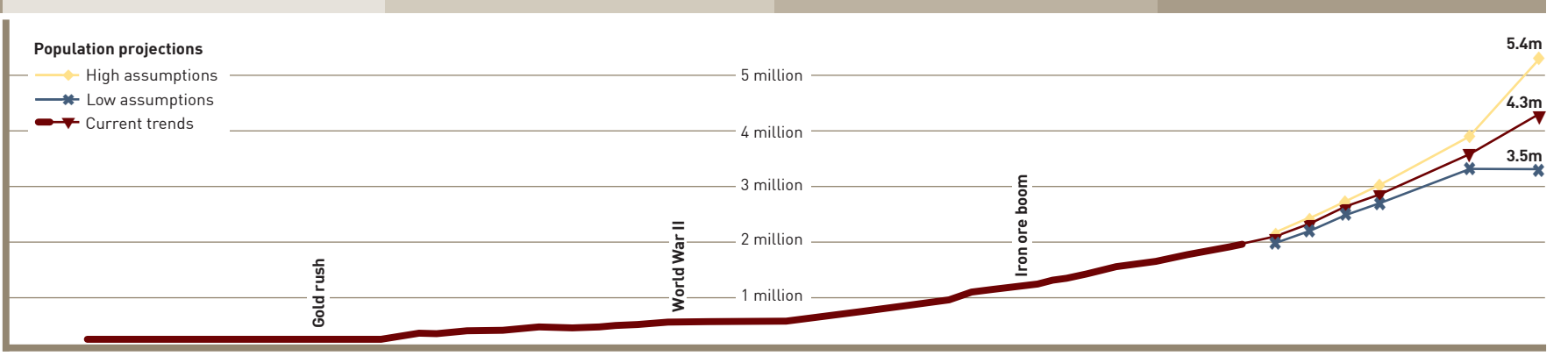
Energy

Energy affordability
Investment in renewable energy
Energy source diversity

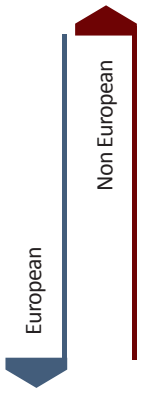


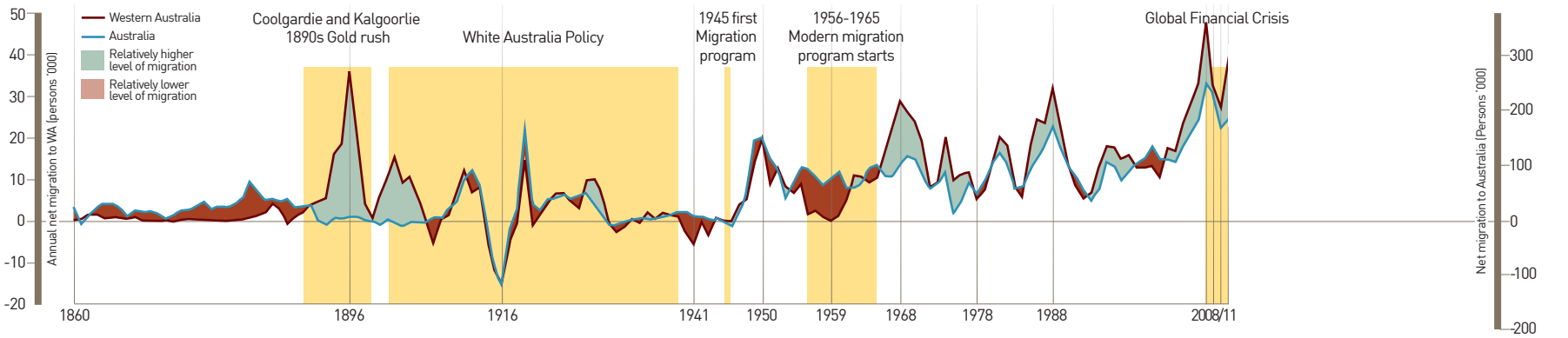
Population

Population age
Regional centres
Urbanisation

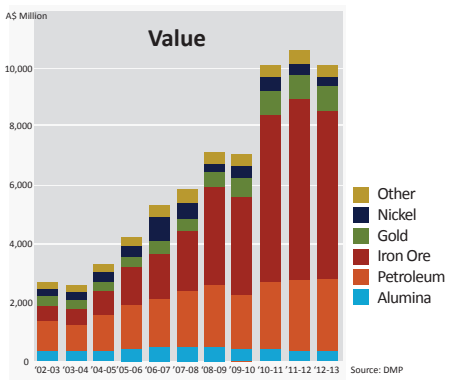


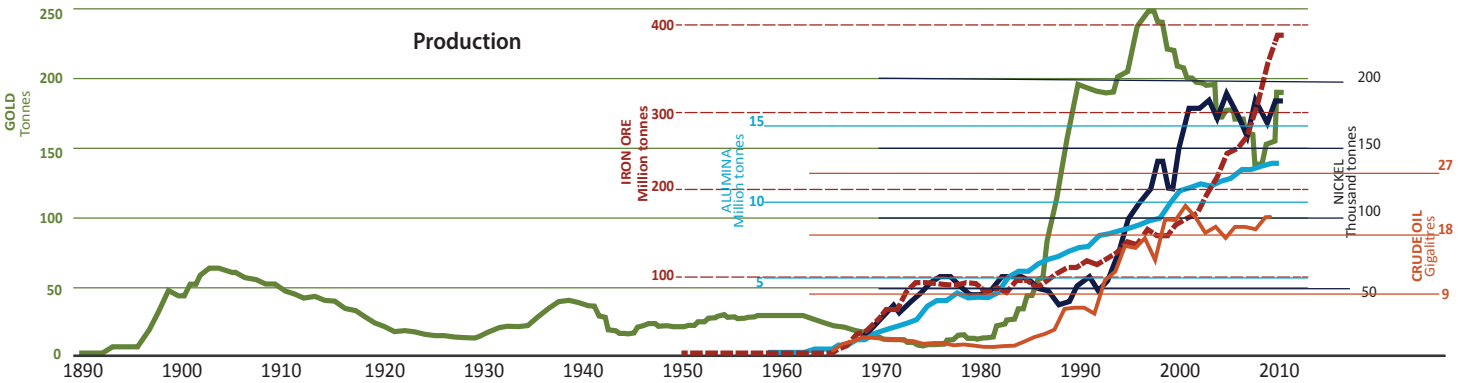
Migration



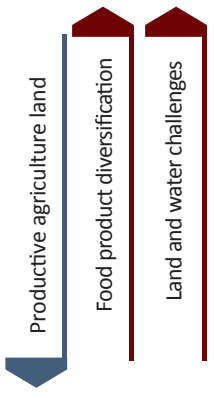


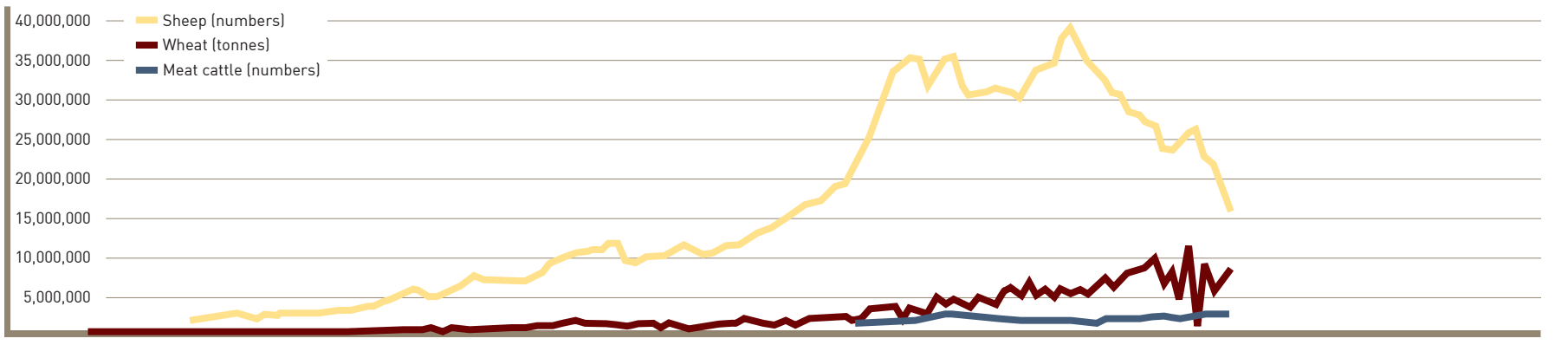
Minerals





Agriculture





Historical timeline

1850 - First convicts arrive on the Scindian

1879 - First Government railway in the State constructed from Geraldton to Northampton

1868 - Transportation of convicts from England ends with the arrival of the Hougoumont

1885 - First discovery of gold at Halls Creek triggers gold rush in WA

1851 - Pearling industry starts operation in Shark Bay

1895 - Kings Park officially opened

1911 - University of Western Australia established

1898 - First motorcar arrives in Perth

1892 - Married women gain the right to own property

1914 - WW1 begins

1889 - John Forrest becomes first Premier

1918 - WW1 ends

1899 - Perth Mint established to profit from Australia's richest goldfield at Kalgoorlie

1829 - The establishment of the Swan River Colony

1901 - WA becomes part of the Commonwealth of Australia

1898 - Perth Zoo opens

1826 - The establishment of a British military outpost in Albany

1899 - Women given the vote

1889 - Great Southern Railway opened

1921 - Edith Cowan first woman to be elected to any Australian Parliament

1914 - First Australian made aeroplane flies at Coolgardie

1985 - State Planning Commission Act gazetted

1970 - Minerals boom begins/economy bolstered by iron ore mines in the Pilbara and nickel mines around Kalgoorlie

1959 - Metropolitan Region Scheme Act gazetted

1984 - Advance Australia Fair proclaimed as Australia's national anthem

1928 - Town Planning and Development Act gazetted

1939 - WW2 begins

1979 - Women win the right to maternity leave

1967 - Indian Pacific train completes first journey by rail from Sydney to Perth

1946 - Pilbara Strike

1967 - Aboriginal people given the vote

2012 - Australia's carbon price legislation in effect

1953 - Second Planning Commissioner, John A Hepburn

1945 - WW2 ends

1963 - Metropolitan Region Scheme commences operation

1942 - 1945 - Japanese occupation of Christmas Island

2009 - Royalties for Regions Act

1942 - Japanese planes attack Broome. Official death toll 88

2008 - Prime Minister's apology to the Stolen Generations

1934 - Goldfields riots

1990 - Dr.Carmen Lawrence, becomes WA's first woman premier

1947 - Florence Cardell-Oliver becomes the first female cabinet member of an Australian Parliament

1929 - Inaugural Town Planning Board, first Planning Commissioner, David L Davidson

1930 - Perth is connected to Adelaide via a telephone line

1990 - Paul Keating announces Australia is experiencing an economic recession

1825 1850 1875 1900 1925 1950 1975 2000 2025 2050

Contents

Introduction

Western Australia: time series 1850-2050 ..... inside cover
Premier's foreword 5
Minister's preface 5
The State Planning Strategy 2050 6
Application and assumptions 7
Supporting documents 10

The vision

The context 12
The vision 20
The principles 22
The strategic goals 24
The spatial dimensions 29

The Strategy

Interrelated State strategic directions 33
1. Economic development 35
1.1 The resources economy 39
1.2 Education, training and knowledge transfer 43
1.3 Tourism 47
1.4 Agriculture and food 51
1.5 Remote settlements 57
1.6 Land availability 61

2. Physical infrastructure 64
2.1 Movement of people, resources and information 67
2.2 Water 71
2.3 Energy 75
2.4 Waste 79
2.5 Telecommunications 83

3. Social infrastructure 86
3.1 Spaces and places 90
3.2 Affordable living 94
3.3 Health and wellbeing 96

4. Environment 101

5. Security 105

Action planning

Implementation 108
Evaluation 110
State Planning Strategy checklist 112

Annexures

Glossary 114
Acronyms 117
Acknowledgements 117
Bibliography 118

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List of figures and tables

Figures

1. The State Planning Strategy positioning 6
2. The State Planning Strategy structure..... 6
3. Overview of the Western Australian planning system 8
4. State planning and development framework..... 9
5. Western Australia's population growth 12
6. Net migration compared with policy and economic influences..... 13
7. Projected population growth 14
8. Age distribution 14
9. Projected labour force 15
10. Western Australia's key trading partners 2010-11..... 15
11. International time zones 16
12. Gross domestic product (based on PPP)..... 17
13. Climate change scenarios: temperature and rainfall projections 2030-70 18
14. Trends in Western Australia's temperature and rainfall 1910-2008 18
15. Towards an advanced economy: building on economic strengths..... 24
16. South West Australian global biodiversity hotspot..... 27
17. Planning for spatial dimensions 28
18. Northern sector map..... 29
19. Central sector map 31
20. South West sector map 32
21. Planning for economic development..... 34
22. Planning for the resources economy 38
23. Planning for tourism..... 46
24. Planning for agriculture and food 50
25. Western Australia's key food export markets 51
26. Planning for remote settlements 56
27. Planning for land availability 60
28. Planning for movement..... 66
29. Planning for water 70
30. Planning for energy 74
31. Electricity generation in Western Australia (all sources/renewable)..... 75
32. Planning for waste..... 78
33. Planning for telecommunications 82
34. Planning for social infrastructure 87
35. Planning for spaces and places 90
36. Planning for health and wellbeing 97
37. Planning for environment..... 100
38. Planning for security..... 104
39. State planning strategy evaluation cycle..... 111
40. At a glance – State Planning Strategy checklist..... 112

Tables

1. Structure of strategic directions..... 33
2. A strategic approach to to economic development 37
3. A strategic approach to planning for the State's resources economy..... 41
4. A strategic approach to planning for education, training and knowledge transfer 45
5. A strategic approach to planning for tourism 49
6. A strategic approach to planning for agriculture and food 54
7. A strategic approach to planning for remote settlements 59
8. A strategic approach to the sustainable supply of land for future development..... 63
9. A strategic approach to planning for movement of people, goods and services..... 69
10. A strategic approach to water planning..... 73
11. A strategic approach to energy planning 77
12. A strategic approach to planning for waste 80
13. A strategic approach to telecommunications infrastructure..... 84
14. A strategic approach to planning for spaces and places 92
15. A strategic approach to the planning for affordable living..... 95
16. A strategic approach to planning for health and wellbeing 98
17. A strategic approach to environmental planning 103
18. A strategic approach to planning for security..... 107
19. Collaborative arrangements 108

About the photographer

Richard Woldendorp

Richard was born in Utrecht, The Netherlands, in 1927 and moved to Australia in 1951. On a return trip to Holland in 1955 he bought a camera and his long association with photography was born. In 1961, his photographs won numerous awards in national photographic competitions. It was then that Richard decided to become a professional photographer and he focused his lens on his great passion: the Australian landscape. Aerial depictions became his speciality, as he believes this best captures the vastness and uniqueness of the outback.

Richard's iconic photographs are housed in national and state Australian galleries, as well as many private collections here and overseas, and he has been recognised for his contribution to photography and the arts with a vast array of awards.

In December 2004 he was honoured as a State Living Treasure for his outstanding contribution to the visual arts, his skill, talent and intensity as a photographer and for his original vision of the Australian landscape. In the Queen's Birthday Honours in June 2012 he was appointed the Order of Australia" for service to the arts as an Australian landscape photographer."

Some of Richard's awe-inspiring visions of the Western Australian landscape are included in this publication.

Premier's foreword

Western Australia is in a period of sustained growth with a high level of public and private investment being channelled into infrastructure and development; it is a period of great promise and opportunity for all Western Australians.

Much of the world's economic growth during this century will come from Western Australia's trading partners in the Asia – Pacific region. Growing demand for the State's raw materials, renewable energies, knowledge and technological skill base will create future opportunities.

In the past decade, Western Australia has been shaped by population and economic growth. In international trade Western Australia produces more than one third of Australia's exports with just one tenth of the nation's population.

Reflecting this changing and increasingly complex global and domestic environment, the need for State strategic planning has never been greater.

The State Planning Strategy 2050 is the Government's strategic planning response to the challenges the State is likely to face into the future.

It takes a broad integrated view of planning and development in this State, reaching beyond land-use planning to place priority on managing population and economic growth.

I believe the State Planning Strategy 2050 is an important strategic planning framework that will help Western Australia sustain its growth and continue to build prosperity for future generations.

Hon Colin Barnett MLA
Premier of Western Australia

Minister's preface

The State Planning Strategy 2050 is an integral part of the Western Australian planning system designed to inform planning policies and decisions throughout the State.

The first State Planning Strategy was published in 1997. The primary focus of that document was regional and local land-use planning.

Since then Western Australia has been shaped by population growth, the global economy, urbanisation, technology, climate change, and increased water and energy requirements.

In response this document seeks to better anticipate, adapt to and manage the drivers of change most likely to influence the future development of Western Australia.

Prepared by the Department of Planning under the guidance of the Western Australian Planning Commission this Strategy takes into account what is known about the future and sets a vision to 2050 based on a framework of State planning principles, strategic goals and objectives.

The State Planning Strategy 2050 envisages a doubling of Western Australia's current population by 2056 and outlines the arrival of the State's northern and central regions as hotspots for capital investment and their increasing contribution to Australia's Gross Domestic Product.

However, land-use planning and development is becoming increasingly complex, requiring a more integrated and strategic response.

This document recognises that collective action can achieve the State's strategic goals and objectives more effectively than any single organisation acting alone.

In this regard the State Planning Strategy 2050 provides a credible State strategic context from which public authorities and local governments participating in and/or influenced by the planning system can frame their respective legislative mandates and requirements.

Specifically, the State Planning Strategy 2050 outlines the Government's intention to undertake a collaborative approach in planning for the State's infrastructure, environment, food security, land availability, economic development, education, training and knowledge transfer.

Accordingly it will be used by the Government as a basis to plan for the coordination of infrastructure across the State; integrate regional planning and development efforts; and to facilitate the consideration of project approvals, delivery of services and urban land supply.

To appreciate the possibilities of this document, it should be viewed in its entirety and not as a series of individual parts.

The State Government looks forward to working with local government, the private sector and all interested Western Australians in the ongoing application and evaluation of the State Planning Strategy 2050.

Hon John Day MLA
Minister for Planning

Planning for sustained growth and prosperity

The purpose and function of this document is to provide a credible State strategic context and basis for the integration and coordination of land-use planning and development across state, regional and local jurisdictions.

A function of the Western Australian Planning Commission is "*to prepare and keep under review: (i) a planning strategy for the State as a basis for coordinating and promoting land use planning, transport planning and land development in a sustainable manner, and for the guidance of public authorities and local governments on those matters.*"

Section 14(b), *Planning and Development Act 2005*

The State Planning Strategy is the lead strategic planning document within Government (Figure 1).

This document takes into account what is known about the future and the expectations of Western Australians, to provide a guide for future land-use planning and development throughout the State. It is structured into five parts (Figure 2).

This Strategy offers a view of the interconnections and interrelationships that are likely to influence Western Australia's sustained growth and prosperity.

It highlights principles, strategic goals and strategic directions that are important to the land-use planning and development of Western Australia.

Development of this State Planning Strategy involved considerable research and consultation across State Government and the community of Western Australia.

The ongoing application of this document will require continued collaboration to ensure that it stays on course to realise its vision of sustained growth and prosperity.

Figure 1 - The State Planning Strategy positioning

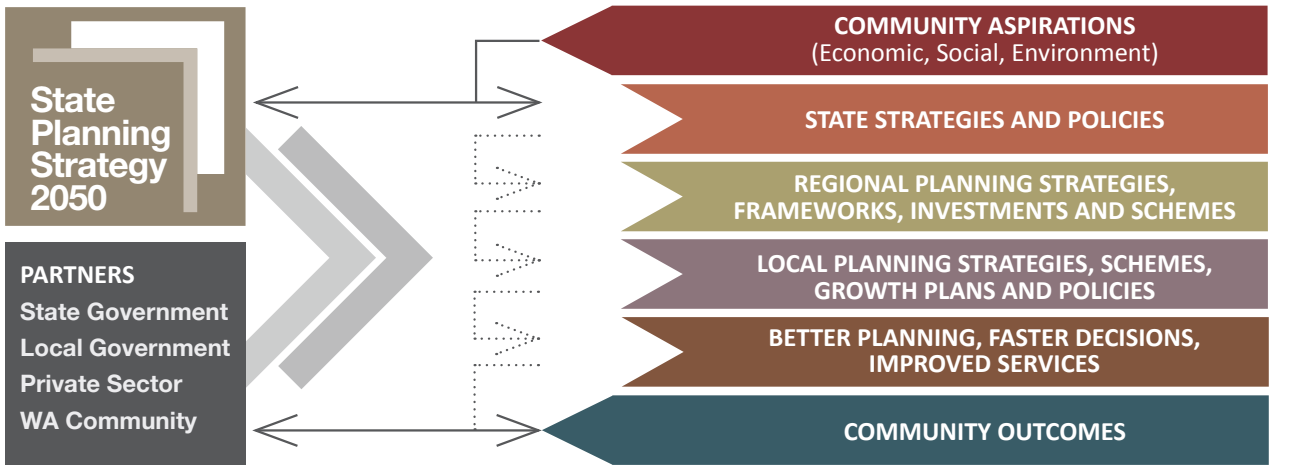


Figure 2 - State Planning Strategy structure

VISION: SUSTAINED GROWTH AND PROSPERITY

Diverse Liveable Connected Collaborative

PRINCIPLES

Community Infrastructure Economy Regional development

Environment Governance

STRATEGIC GOALS

Global competitiveness Strong and resilient regions Sustainable communities

Infrastructure planning and coordination Conservation

STRATEGIC DIRECTIONS

1. Economic development
   - 1.1 Resource economy
   - 1.2 Knowledge transfer
   - 1.3 Tourism
   - 1.4 Agriculture and food
   - 1.5 Remote settlements
   - 1.6 Land availability
2. Physical infrastructure
   - 2.1 Movement
   - 2.2 Water
   - 2.3 Energy
   - 2.4 Waste
   - 2.5 Telecommunications
3. Social infrastructure
   - 3.1 Spaces and places
   - 3.2 Affordable living
   - 3.3 Health and wellbeing
4. Environment
5. Security

ACTION PLANNING

Implementation Evaluation

The State Planning Strategy is directional, not directive

The legacy

Western Australia enjoys a proud planning history that dates back to the *Town Planning and Development Act 1928* and the appointment in July 1929 of the State's first Planning Commissioner, David Lomas Davidson, to oversee the inaugural Town Planning Board.

Post-war nation building is reflected today in the Perth Metropolitan Region Scheme (Stephenson and Hepburn) which remains an international benchmark for urban and regional planning.

The first State Planning Strategy was published in 1997 as the first document of its kind in Australia required by State law. It subsequently won the 1997 commendation award from the Royal Australian Planning Institute.

The primary focus of that document was land-use planning. Many of its land-use priorities were implemented through a series of annual audits up to the year 2000.

Since 2000, Western Australia has been shaped by global and domestic influences such as climate change, population growth, the global economy, regional expansion, technology, and access to water, food and energy in a cost-competitive economic environment.

This document offers an integrated whole-of-government view of the strategic planning needed to respond to the challenges and opportunities these factors present for the land-use planning and development of Western Australia.

In this regard the release of the State Planning Strategy 2050 builds on the proud legacy of the Western Australian planning system.

The Planning and Development Act 2005

The *Planning and Development Act 2005* was enacted by the Parliament of Western Australian to provide for a system of land-use planning and development in the State and for related purposes.

The purposes of this Act are to:

- provide for an efficient and effective land-use planning system in the State; and
- promote the sustainable use and development of land in the State.

To help achieve these objectives the Western Australian Planning Commission (WAPC) is required to, among other things, prepare and keep under review a State planning strategy for the guidance of public authorities and local governments.

The State Planning Strategy 2050 is required to be a credible State strategic context and guide for coordinating and promoting land use planning, transport planning and land development in a sustainable manner.

Delivery culture

The State Planning Strategy 2050 signals the transition of the WAPC and the Department of Planning into a strategic lead role in the planning and development of the State.

This transition seeks to build strategic planning capacity and capability around a State vision that is based on a set of State planning principles, strategic goals and objectives.

Reaching beyond traditional land-use planning this Strategy places a priority on economic and population growth as the key drivers of land use and land development.

The success of this document relies on a collaborative approach to strategic planning that is based on a 'can do' attitude and an integrated long-term view of land use planning and development.

State planning and development framework

The State Planning Strategy 2050 is the highest order planning instrument in the Western Australian planning system. It is built on the web of interconnections that currently exists across Government.

It provides the strategic context for future strategies, plans, policies and decisions related to the sustainable use and development of land throughout the State.

This Strategy will be used to guide, shape and inform a hierarchy of State, regional and local planning tools, instruments and decisions within the Western Australian planning system (Figure 3).

The State Planning Strategy 2050 ensures that regional planning expresses a whole-of-government view within the wider context and frame of State strategic planning principles, goals and objectives.

This will help to align and deliver regional development programs and services through region scheme amendments, regional planning and infrastructure frameworks, regional investments, sub-regional structure plans, local community plans, and local planning schemes and strategies (Figure 4).

Specifically, it provides the State context for regional planning and development to focus on regional 'shapers' capable of delivering transformative change within and between regions.

Application

The State Planning Strategy 2050 is a guide through which public authorities and local governments can express or frame their legislative mandates and/or influence in land-use planning, land development and related matters.

In providing a set of State planning principles, strategic goals and objectives this Strategy can be used as a basis to find synergies between competing, complex and often inter-related land-use planning and development issues.

Importantly the Strategy can also be used to guide, inform and unite:

- local community plans, growth plans and local planning schemes and strategies;
- structure planning and development assessments;
- project approvals through the Government's Lead Agency framework;
- planning for the coordination of physical and community infrastructure;
- region scheme amendments, regional planning and infrastructure frameworks, regional investments and service delivery programs; and
- investment proposals into areas and sectors of the State most likely to generate a return in the public interest.

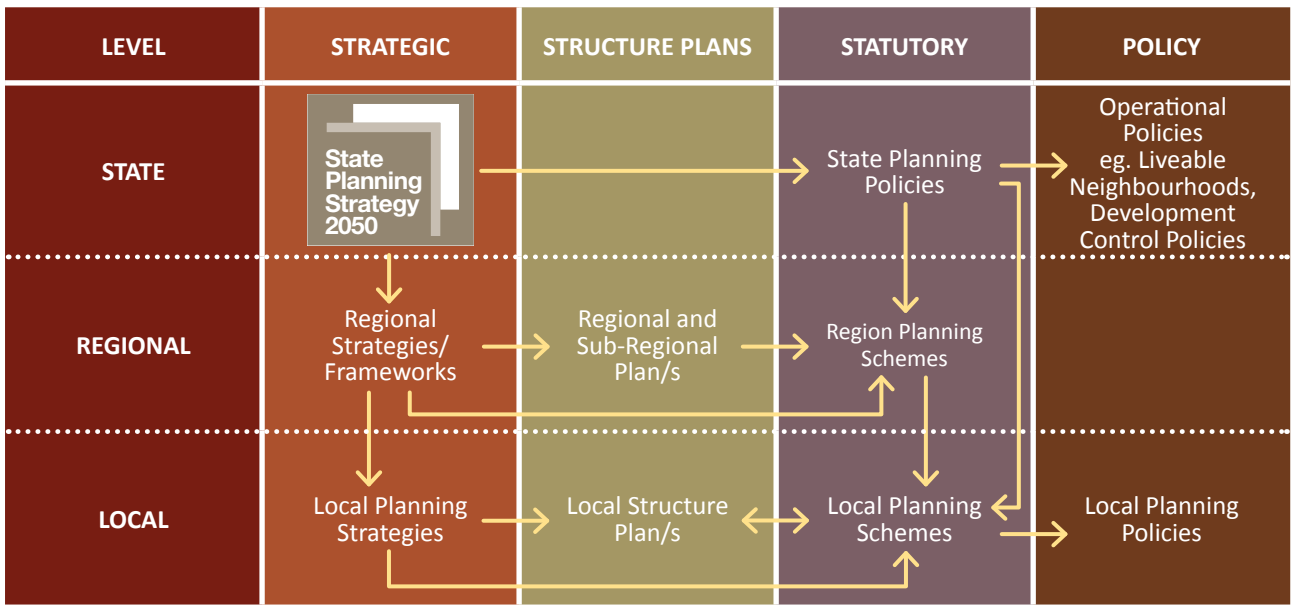
Figure 40: At a Glance - State Planning Strategy Checklist summarises the matters of key importance when applying this document.

Assumptions

The application of this document is based on the following assumptions:

1. Western Australians are willing to work together in the pursuit of sustained growth and prosperity. People are willing to commit and pool their resources and efforts towards a common State vision.
2. The land-use planning and development of the State is increasingly complex (a volatile global economy, rapid policy responses, competing priorities and diverse technical matters) requiring a more strategic and collaborative approach.
3. Collaborative action can achieve State strategic goals and objectives more effectively than any single organisation acting alone.
4. The fundamental role and function of planning is that of a collaborator, enabler, coordinator, facilitator, decision-maker and catalyst.

Figure 3 - Overview of the Western Australian planning system

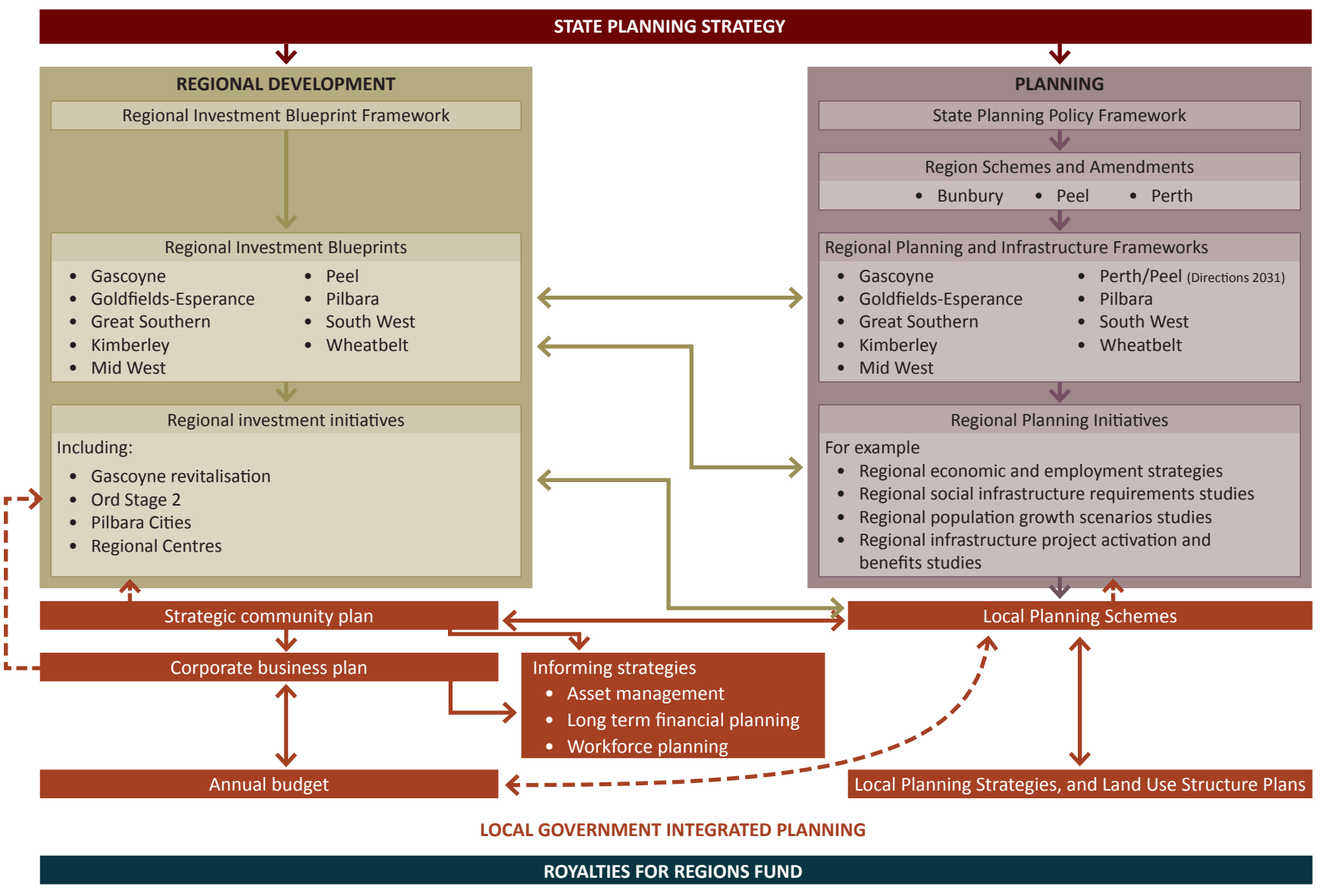


5. An efficient and effective land-use planning and development system is one in which State strategic settings are delivered in an integrated way that reduces process duplication and overlap across Government and between the various layers of the planning system.

6. A strategically-led planning system is one that enables streamlined development assessment pathways, unless the proposed use and development of land significantly departs from State planning principles, strategic goals and objectives.

This will improve public confidence and business certainty in land use planning and development decisions.

Figure 4 - State planning and development framework



Supporting documents

The State Planning Strategy 2050 in context

The State Planning Strategy 2050 is an overarching strategic document that provides direction for all State, regional and local planning strategies, policies and approvals.

To facilitate change at the local level, the State Planning Strategy relies on, links to and builds upon other strategic settings put in place by the WAPC. These include:

- *Better Urban Water Management*: A guide to facilitate better management of urban water resources through each stage of the planning system (WAPC et al, 2008).
- *Directions 2031 and Beyond:* A high level spatial framework and strategic plan for the future growth of the metropolitan Perth and Peel regions (WAPC, 2010).
- *Economic and Employment Lands Strategy: Non-heavy Industrial, Perth Metropolitan and Peel Regions, WA:* (Department of Planning and WAPC, 2012).
- *Liveable Neighbourhoods:* An award-winning policy that outlines objectives and criteria for the siting, design and assessment of structure plans and the built form (WAPC, 2009).
- *Outer Metropolitan Perth and Peel Sub Regional Strategy and Central Metropolitan Perth Sub-regional Strategy*: Designed to inform the preparation of sub-regional structure plans and local planning strategies to ensure that the vision of Directions 2031 can be implemented (draft, Department of Planning and WAPC, 2010).
- *Pilbara Planning and Infrastructure Framework:* A regional framework from which land for major industries and sites and corridors for major infrastructure can be set aside (WAPC, 2011).
- *Urban Development Program (including Regional Hotspot reports; Urban Growth Monitor; Perth and Peel Development Outlook)*: This program coordinates and promotes the development of serviced land. It tracks land demand and supply as well as proposed development and infrastructure in Western Australia's major urban centres.
- *WA Tomorrow:* Population forecast of Western Australia's planning regions 2006 to 2026, Report No. 7 (Department of Planning and WAPC, 2012).

This strategy is supported by a suite of planning documents, schemes, frameworks, implementation plans, codes and regulations administered through the Department of Planning, local government and the Western Australian Planning Commission. Initiatives recently produced across Government that also contribute to the outcomes of the State Planning Strategy include but are not limited to:

- Department of Agriculture and Food, Western Australia: Report card on sustainable natural resource use in agriculture (2013) highlights the need for strategic planning to secure basic raw materials, particularly lime and gypsum resources, to sustain agricultural production.
- Department for Communities: *An Age Friendly WA: The Seniors Strategic Planning Framework 2012-2017* (2012) is a joint approach to help all Western Australians to age well in communities where they matter, belong and contribute.
- Department of Culture and the Arts: *Cultural Infrastructure Directions 2012-2014* (2012); *Creating Value – An Arts and Cultural Sector Policy Framework* (2010). The Directions and Framework define cultural infrastructure and outline key principles for arts and cultural investment in the State.
- Department of Education: *Excellence and Equity, Strategic Plan for WA Public Schools (2012)* provides direction on objectives for education service delivery.
- Department of Education Services: Future Directions for the Role of the State in Higher Education (2013) provides direction on the level of engagement between the higher education sector and the State Government and its agencies to achieve outcomes for workforce needs, regional development, international engagement, social inclusion, knowledge development and transfer, and innovation.
- Department of Environment and Conservation: *Adapting to our changing climate (2012)* focuses on climate change responses appropriate for Western Australia and outlines key policies the State Government will adopt to tackle this important issue.
- Department of Finance – Office of the Government Architect*: Better Places and Spaces: a Policy for the Built Environment in Western Australia* outlines strategies for improving architectural quality in the public realm; for recognising value for money across the life of a project; and for promoting sustainable design principles.
- Department of Health*: WA Health Promotion Strategic Framework 2012– 2016* sets out strategic directions and priorities for the prevention of avoidable chronic disease and injury over the next five years.
- Department of Housing: *Housing 2010-2020: Opening Doors to Affordable Housing* (2010) is a strategy which outlines ways to reform long-term low to moderate income accommodation needs.
- Department of Local Government: *Integrated Planning and Reporting Framework and Guidelines* (2010) is a framework that enables local governments to articulate and plan for their local communities' long-term aspirations and priorities, based on their resourcing capabilities and capacity.

- Department of Local Government - Office of Multicultural Interests: *Implementing the Principles of Multiculturalism Locally* (2010) assists local governments in responding to the needs of residents from culturally and linguistically diverse backgrounds.
- Department of Planning, Department of Local Government and Communities and Department of Regional Development*: Aligned and integrated delivery of services to regional Western Australia (2013)* outlines a collaboration between State and local governments in the delivery of regional services.
- Department of the Premier and Cabinet: *Lead Agency Framework* (2009). Through this framework, major projects are assigned to a Lead Agency that assists project proponents to manage Government interactions and navigate statutory approvals, in the public interest.
- Department of Regional Development and Lands: *A Regional Development Policy Framework: An Action Agenda for Regional Development* (2011) helps to prioritise investment decisions that are likely to achieve more effective regional development outcomes.
- Department of Regional Development and Lands: *Regional Centres Development Plan Framework* (2011) outlines funding structures and planning support for selected regional communities in Western Australia's south-west.
- Department of Regional Development and Lands: *Pilbara Cities* (2012) provides a vision for the development of Port Hedland and Karratha as vibrant cities of 50,000 each to support a skilled workforce for the major economic developments planned for the region.
- Department of Training and Workforce Development: *Skilling WA: A Workforce Development Plan for Western Australia* (2010) guides workforce development in the State. This strategy helps to increase the capacity of the Western Australian workforce to meet the high skill needs of the State's economy.
- Department of Treasury: *Strategic Asset Management Framework* (2012) provides policies and guidelines to improve asset investment planning and management across the State public sector.
- Disability Services Commission: *Disability Future Directions - Count Me In* (2011) is a framework of principles, directions and commitments to support the changing needs of people with disabilities, including their families and carers.
- Government of Western Australian – Physical Activity Taskforce: *Active Living for All: A Framework for Physical Activity in Western Australia 2012-2016* (2012) provides a coordinated approach to ensuring physical activity opportunities exist for all Western Australians.
- Landgate: *Realising the Power of Location: A Location Information Strategy for Western Australia* (2010) is a framework for the delivery of integrated consolidated and interactive information across government.
- Office of Road Safety: *Towards Zero Road Safety Strategy* (2009) outlines strategies for safe road use design and speeds across the State.
- Public Utilities Office: *Strategic Energy Initiative, Energy 2031* (2012) addresses the State's future energy needs to ensure continued energy supply, provision, efficiency and access.
- Swan River Trust: *River Protection Strategy for the Swan Canning Riverpark* (2012) is a holistic management approach designed to improve the ecological health and community benefit of the Riverpark.
- Tourism WA: *State Government Strategy for Tourism in Western Australia 2020* (2012) is the major policy framework guiding the development of tourism in Western Australia over the next decade.
- Waste Authority: *Western Australian Waste Strategy, Creating the Right Environment (2012)* sets the long-term strategic directions and priorities for waste management in the State.
- Water Corporation: *Water Forever, Towards Climate Resilience* (2009), *Whatever the Weather, Drought-proofing Perth* (2011) and *Water Forever, A 10-year Plan for Western Australia* (2012) together outline plans for the State's water supply resources.

The context

Drivers of change

From a small sparsely populated State with an agricultural-based economy, Western Australia has grown into the powerhouse of the Australian economy, contributing, for the most part through its regions, disproportionately to the nation's gross domestic product (GDP).

All indicators suggest that Western Australia is experiencing a period of substantial growth in its population and economy; it is a period of great promise and opportunity for all Western Australians.

A range of factors provide a context for, and directly influence, Western Australia's future development. These drivers of change include:

- Population
- Workforce
- Global economy
- Diversification
- Urbanisation and regional expansion
- Technology
- Climate change.

The State Planning Strategy 2050 through its principles, strategic goals and strategic directions offers an integrated approach to managing and adapting to these drivers of change.

Population

Western Australia's population make-up is undergoing change that is set to continue into the future. This change in population growth and diversity is having a direct impact on the demand for resources, the productive capacity of the State.

The population of Western Australia has grown at a steady rate since 1961 (Figure 5). This growth in population has not been uniform across the State, with some regional areas (Pilbara, Peel and Kimberley) showing markedly higher rates of population growth.

Migration, both from overseas and interstate, has been the principle source of population growth in Western Australia, with migration trends showing that new arrivals to the State will largely settle in Perth. Regional centres also benefit from migration, with internal intrastate migration being a major driver in population growth.

Economic conditions directly influence Net Overseas Migration which is higher during good economic conditions (Figure 6). For example, the Global Financial Crisis of 2008-09 caused a sharp drop in migrants during that period.

Western Australia's experience with high migration goes back to the gold rush of 1890s in the Goldfields and a similar period of growth has occurred in recent years due to the investment phase of the current economic cycle.

Overseas students and temporary skilled workers comprise a significant proportion of overseas migrants to Western Australia, which proportionally attracts more migration than its share of the national population.

Western Australia's population is expected to increase at a faster rate than the Australian average commensurate with the sustained growth of the State's economy (Figure 6).

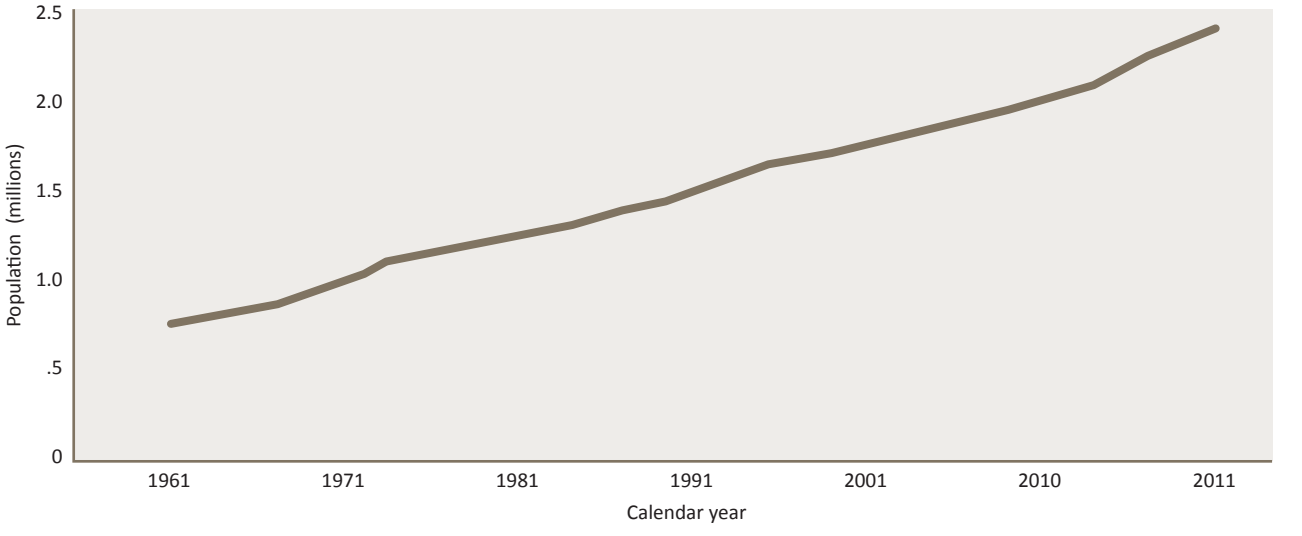
Western Australia Tomorrow proposes three scenarios for future population growth (Figure 7):

High Scenario – based on high growth assumptions

Medium Scenario – based on current trends

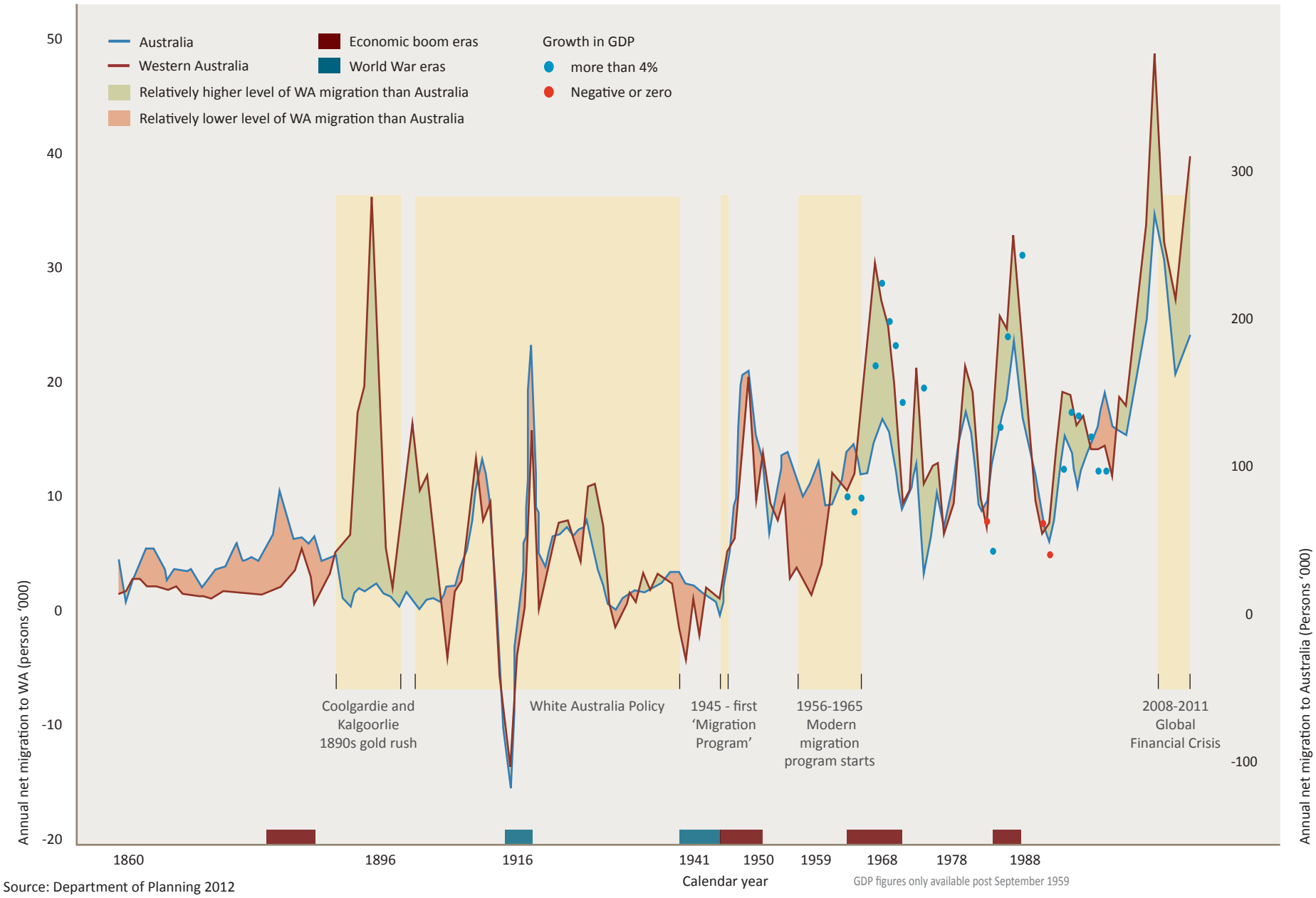
Low Scenario – based on low growth assumptions.

Figure 5 - Western Australia's population growth



Source: ABS cat. no. 3105.0.65.001 Australian Historical Population Statistics; and Regional Population Growth, Australia, 2009-10 (cat. no. 3218.0) *9 year average annual growth

Figure 6 - Net migration compared with policy and economic influences



Source: Department of Planning 2012

These projections demonstrate that the population of Western Australia could increase from 2.5 million currently to at least 4.4 million and possibly more than double to 5.6 million by 2056. This represents an additional 1.9 to 3.1 million people living in the State.

It is prudent to plan for the high growth population forecast so that consideration can be given to sustainable settlement patterns and population compositions within and between the greater Perth metropolitan area and regional Western Australia.

The State's continued economic growth will enable the means to provide for increased infrastructure and the improved services that are necessary to support its future population.

To encourage a more balanced population distribution the planning of regional communities and their populations will become increasingly important.

There are a suite of regional planning initiatives currently underway which include the Regional Centres Development Plan, Regional Planning and Infrastructure Frameworks and Regional Investment Blueprints.

Similarly, Directions 2031 and Beyond provides strategic direction on the development of the Perth and Peel region.

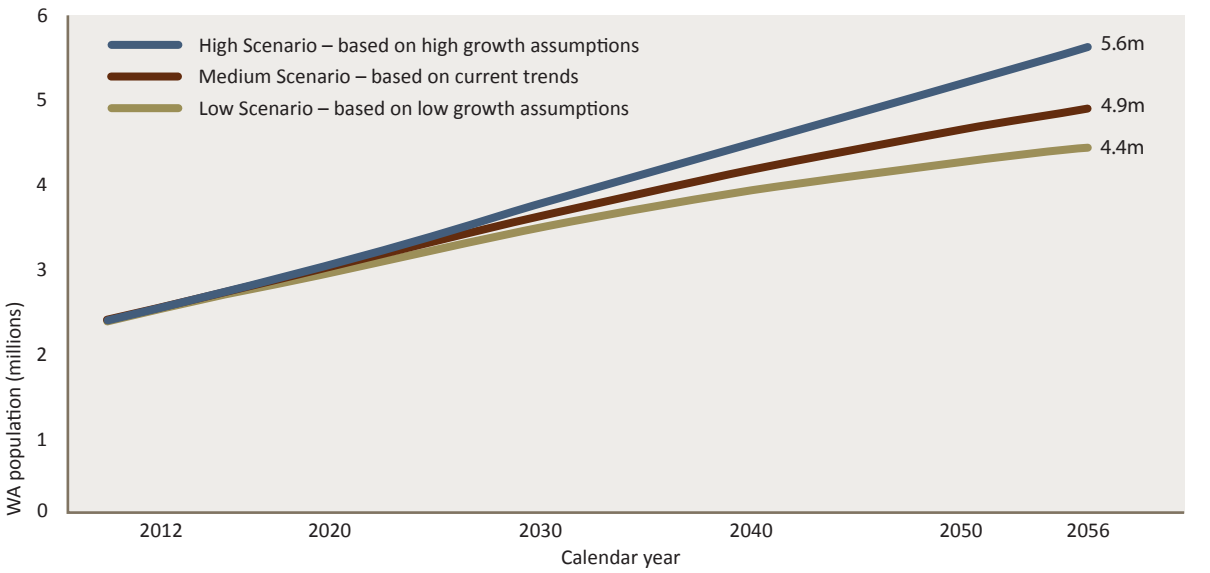
The Western Australian population is ageing (Figure 8). Over the next 40 years the proportion of the population aged 65 or over is likely to increase from 13% to 22% and, in contrast, the proportion aged 15 or under is likely to decrease slightly from 19% to 18%.

Such a change in the State's demographics has direct impacts on planning directions and priorities (e.g. access to health care, mobility, labour pressures and internal migration).

The ageing of our population will increase the demand for dwellings such as apartments or units in suitable locations.

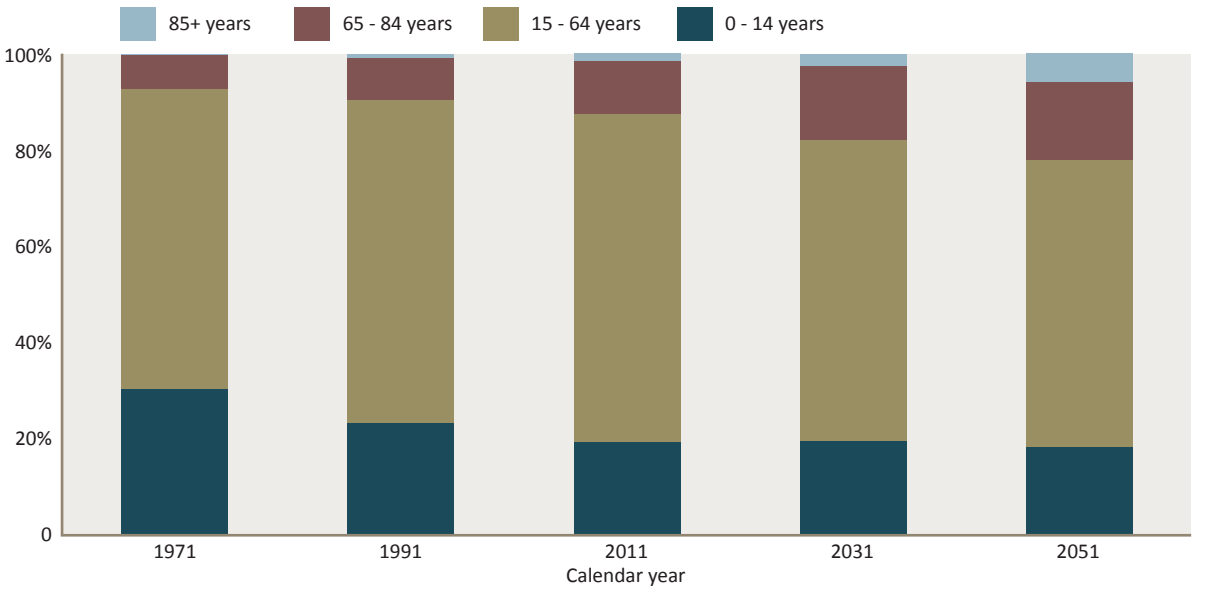
This demographic shift will impact on most aspects of the economy, in particular the composition of the labour force, healthcare requirements, education and social services, and the mix of dwelling types.

Figure 7 - Projected population growth



Source: Western Australia Tomorrow Long-term Population Forecasts for Western Australia, 2031 to 2061 (DoP 2014)

Figure 8 - Age distribution



Source: ABS 3105.0, Australian Historical Population Statistics 2008, (for year 1971 and 1991); ABS 3222.0, Population Projections, Australia 2006 to 2101 (Series A: for years 2011, 2031 and 2051); Department of Planning.

Workforce

It is estimated that by 2056 Western Australia's workforce will be 2.2 to 2.9 million, up from 1.2 million in 2012 (Figure 9). This infers that an additional 1.0 to 1.7 million workers may be required to maintain the State's anticipated level of economic development.

Therefore, if the anticipated workforce in 2056 is to be fully employed, 23,000 to 39,000 jobs per year will need to be created.

The changing face of the global economy and the continued diversification of the State's economic base will further intensify the competition for labour. The recruitment and retention of a skilled workforce will continue to be an important issue.

Global economy

Much of the world's economic growth during this century will come from Western Australia's trading partners in the Asia Pacific region (Figure 10 and 12).

Growing global demand for the State's mineral and petroleum resources, agricultural products (food and fibre), renewable energy technologies and scientific and technological skill base will create significant opportunities.

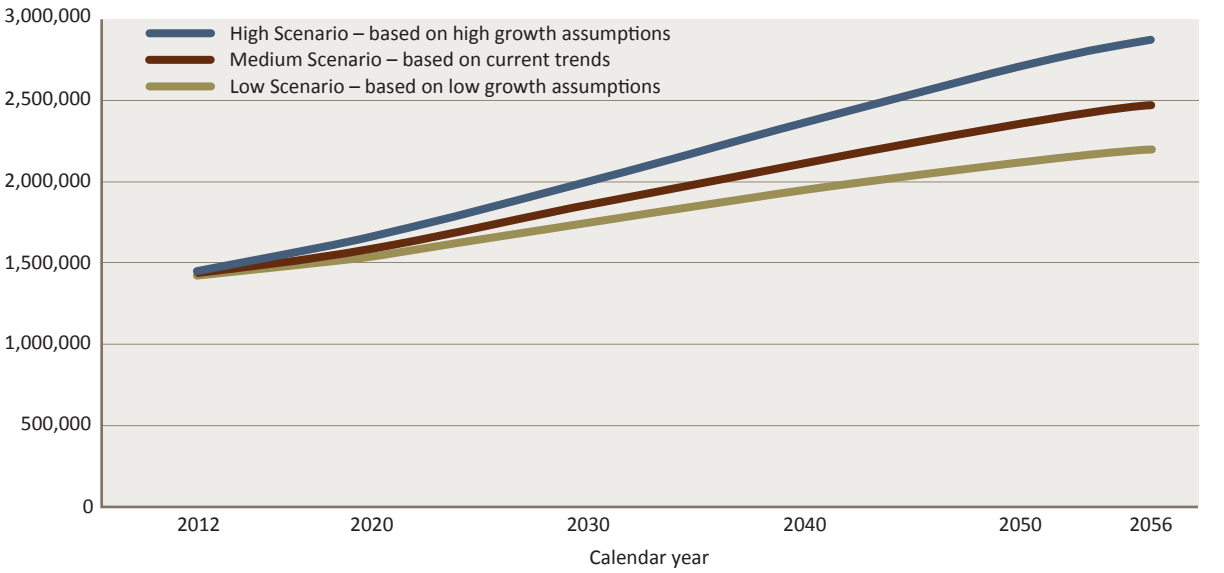
However, the volatility of the global economy, with changes to factors such as commodity prices, exchange rates, global demand and mobile capital investment will directly influence the State's economy.

State Government forecasts predict that economic growth (GSP) will slow from 5.75% in 2012-13 (actual) to 3.25% in 2013-14 and 2.5% in 2014-15.

The key drivers of the Western Australian economy to 2050 and beyond are likely to emanate from India, Africa, China and the Asia-Pacific (Figures 10 and 12).

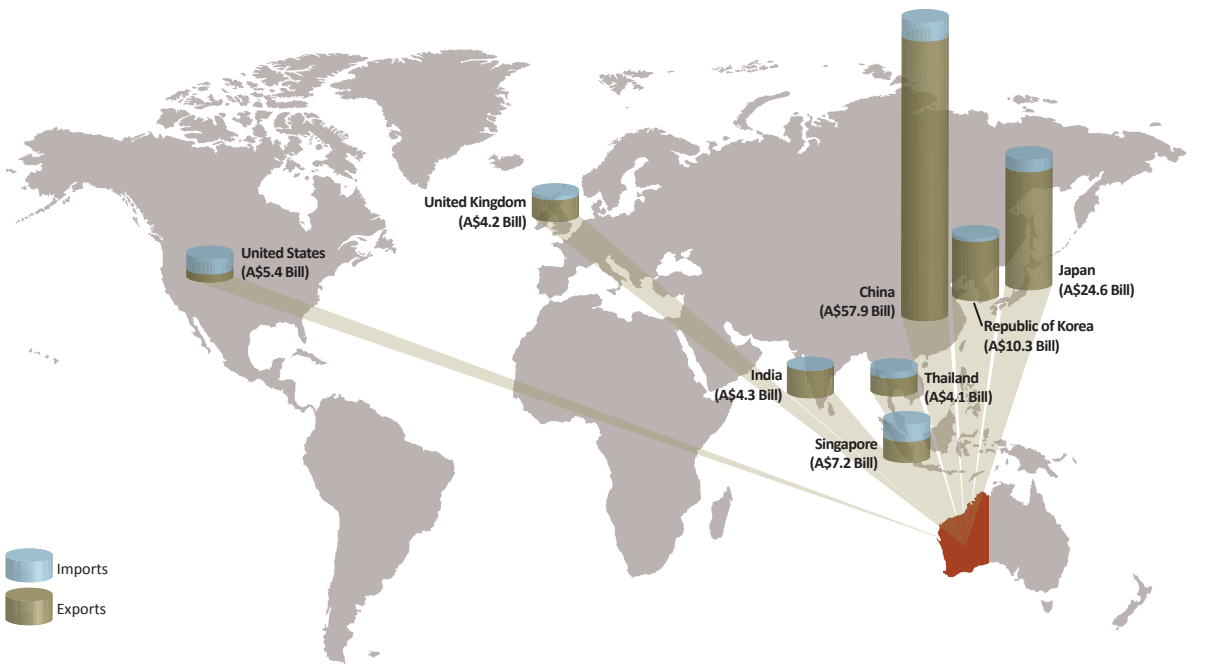
The State's agrifood sector is well placed to respond to projected global food demand particularly from the Asian region. There is also great potential in exploring trade with emerging international markets outside the Asia Pacific region.

Figure 9 - Projected labour force



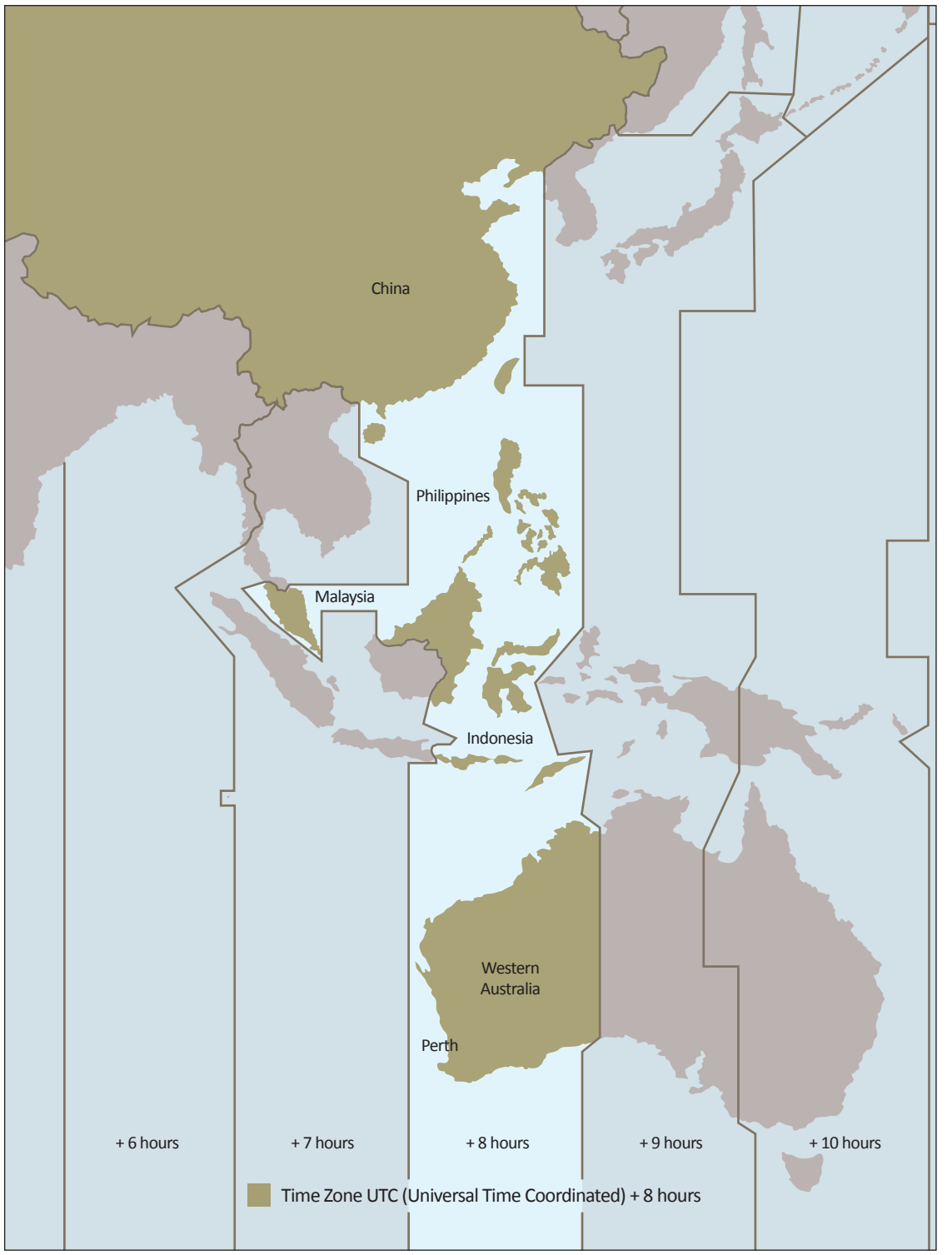
Source: Department of Planning – derived estimates

Figure 10 - Western Australia's key trading partners 2012-13



DFAT publication Australia's Trade by State and Territory 2012-13

Figure 11 - International time zones



That most of the State's major trading partners are in the same time zone as Western Australia (Figure 11) exemplifies the potential opportunities for close cooperation and business development.

Diversification

Western Australia must continue to diversify its economy to facilitate a broader mix of industries and occupations that can make for a resilient and ultimately prosperous society.

Agriculture in the 'Asian century' will provide significant opportunities for increased diversities in the State's economic base that will give resilience to economic fluctuations, such as for commodity prices.

Western Australia will continue to be a global resources hub due not just to the resources themselves, but also to the expertise and technology that has made this State a leader in extractive industries. This will place importance on the capacity, capability and retention of a highly skilled workforce.

Diversification can take place on many levels, ranging from economy-wide diversification to the individual business level. Investment in infrastructure to support appropriate diversification in economic sectors with comparative advantages is a priority.

Enhanced private sector involvement and investment will assist in diversification, essential for regional Western Australia, where economic diversity and (non-resource sector) business development is of particular importance.

Western Australia is well placed, in terms of natural resources and lifestyle choices, to compete globally for skills. To continue to compete successfully, Western Australia must build on its assets and link economic development opportunities to a high quality of life.

Urbanisation and regional expansion

For the purposes of this document, Perth is projected to become home to 75% of the State's population by 2056, being up to 4.05 million people (based on the high growth scenario in Figure 7) in an increasingly urbanised society.

Currently 78% of Western Australia's population lives in the Greater Perth Metropolitan Region. This region is expected to grow at a rate of up to an additional 50,000 persons a year. The Perth, Peel and Greater Bunbury regions are in the midst of becoming a 'conurbation'.

Continued urbanisation around Perth is being driven by relatively easy access to:

- employment
- education
- health and services
- entertainment and community activities.

Urban intensification and regional expansion at appropriate locations can counteract a tendency towards development that leads to urban sprawl and the convergence of urban settlements.

This will increase the need for well-planned, integrated and compact regional centres and towns generating local and regional economic activity.

Regional expansion through programs such as the State Government's Regional Centres Development Plan will relieve population pressure on the Perth metropolitan region by planning to accommodate for up to 1.2 million people by 2056.

Technology

Planning must prepare for technological change and ensure that the whole community benefits from the results of such change.

An important consideration in technology and innovation is that industries at the cutting edge often enjoy the benefits of enhanced profitability, but also experience high risk.

Australia's geographic and regional neighbours are committing significant resources to their quests to lift standards of living to levels comparable with the developed world. They are therefore looking to developed nations for innovative solutions that can deliver these outcomes efficiently.

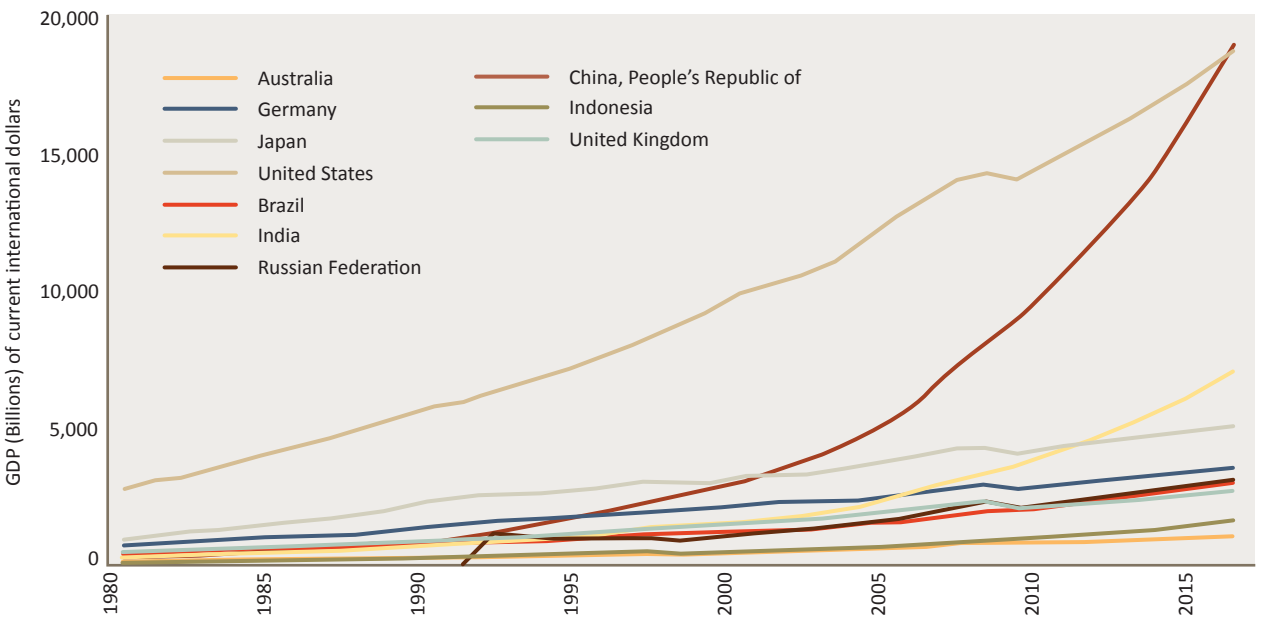
Western Australia is in an ideal geographic, temporal and technological position to take advantage of this quest. From a regional development perspective, promoting science, technology, innovation and research as important contributors to the State's economy will underpin the State's success towards 2050.

Over the next 40 years China and India may commit up to 30%-40% of their GDP to innovative technologies such as renewable energy, compared to the UK and Germany which are expected to invest 17%-18% of GDP.

Further, as the GDP of countries including China and India grow and surpass those of other leading nations, major opportunities for diversity in the Western Australian economy, based on exporting existing technologies and newly developed frontier technologies will be substantial.

Australia's expected growth in GDP (based on PPD - purchasing power parity), compared to those of other key developed and developing countries, is illustrated in Figure 12.

Figure 12 - Gross domestic product (based on PPP)



Source: IMF Data Mapper 2010

Climate change

Climate projections for Western Australia from 2030 through to 2070 indicate an increase in temperatures across the State, accompanied by a decline in winter rainfall in the South West and a seasonal increase in the North.

The Intergovernmental Panel on Climate Change projections related to Western Australia take into account a number of climate models and greenhouse gas emission scenarios.

These projections (Figure 13) use low, mid-range and high emission scenarios. The scenarios include various assumptions about demographic, economic and technological factors likely to influence future emissions.

Changing temperatures and rainfall patterns (Figures 13 and 14), along with rising sea levels and more frequent and intense natural disasters such as cyclones, flooding and bushfires, will contribute to:

- changes in the location and productivity of agricultural land;
- adjustments to public health and disaster preparedness/response;
- changes in water availability;
- risks to coastal communities and marine infrastructure;
- economic models that underpin emerging water and energy policy settings; and
- changes in the siting and design of major infrastructure and the built form of development.

Adapting to the impacts of climate change will be critical, as will reducing carbon emissions and the development of eco-technologies that promote the efficient use of natural resources.

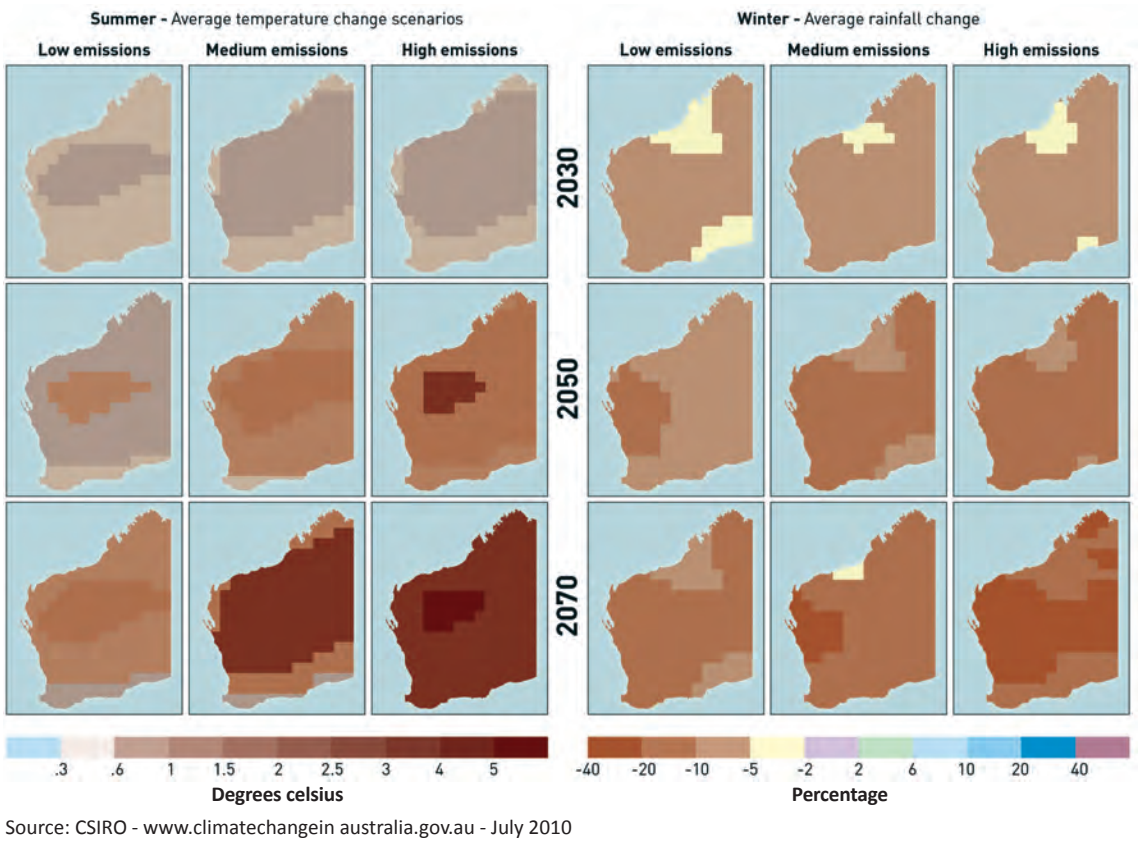
Western Australia has abundant renewable energy sources that make it well-placed to mitigate and adapt to the effects of climate change.

There are also significant opportunities to develop new technologies that can aid Western Australia to adapt to climate change.

The impacts from climate change are being experienced through an increase in the frequency and intensity of tropical cyclones, severe storms and flooding. Bushfires and decreased rainfall are most noticeable in the State's southwest region.

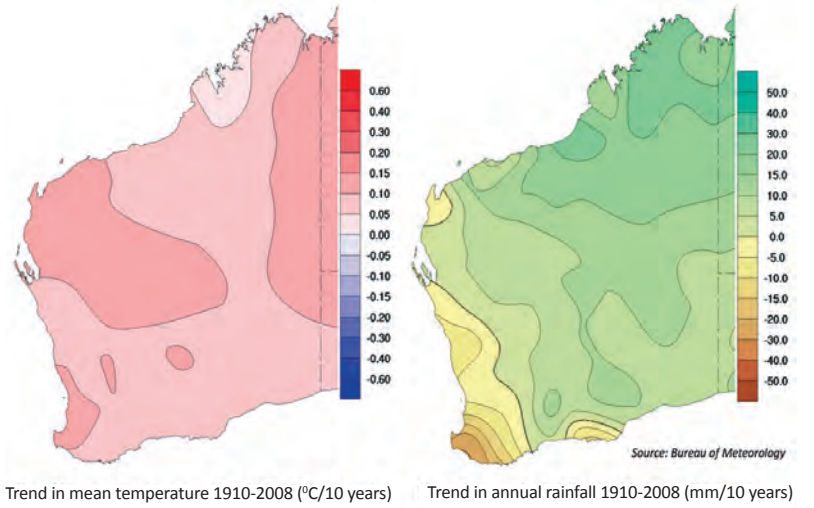
Local responses to the impacts of climate change are being delivered through a combination of natural resource management initiatives.

Figure 13 - Climate change scenarios: temperature and rainfall projections 2030-70



Source: CSIRO - www.climatechangein australia.gov.au - July 2010

Figure 14 - Trends in Western Australia's temperature and rainfall 1910-2008



Trend in mean temperature 1910-2008 (^{0}C/10 years)

Trend in annual rainfall 1910-2008 (mm/10 years)

Lake Macleod with clouds reflected, north of Carnarvon, Western Australia.

The vision

Sustained growth and prosperity

The vision of sustained growth and prosperity envisages a future where Western Australians enjoy high standards of living, improved public health and an excellent quality of life for present and future generations.

Sustained growth and prosperity can be summarised by four reference points: diversity, liveability, connectedness and collaboration.

A diverse state; offering a diversity of ecosystems, landscapes, enterprises, people and cultures.

In 2050, the diversity of Western Australia's natural assets and unique landscapes, ecosystems, peoples, enterprises, cultural landscapes and historic heritage places will be celebrated, protected and recognised as an important contributor to sustained prosperity.

Communities will access diverse housing and services that complement their values and lifestyle choice.

A liveable state; the place of choice for the brightest and best.

By 2050, Western Australia will be recognised internationally for its capital city and regional centres, each with a unique identity, culture and landscape. Perth will retain and enhance its high liveability rating in global terms.

Regional Western Australia will be robust, interconnected and have timely, cost-effective and superlative access to education, health, housing, social welfare and cultural pursuits.

People will have access to well-designed places and spaces, natural and recreational open spaces, and services that enhance confidence and wellbeing.

A connected state; as connected to the rest of the world as any other place.

In 2050, distance will not be a barrier to connecting people, places and enterprises to resources and information.

Affordable and secure high-speed communication and transport options will connect communities and enable regions to collaborate to build diversity, resilience, international competitiveness and employment.

A collaborative state; enabling alignments that progress the State's sustained growth and prosperity.

Collaboration brings together the knowledge, experience and skills of people, organisations and sectors, to collectively achieve outcomes that cannot be achieved individually.

A collaborative state will be built on partnerships, alliances and networks that encourage new ways of doing business in order to achieve sustained growth.

Encouraging cross-regional collaboration by embracing and aggregating the distinct identity and competitive advantages of each region will offer greater choice for long-term global and domestic capital investment.

By 2050

By 2050, Western Australia will have a diverse range of interconnected and vibrant local communities and regional centres. The people in these communities will be healthy, resilient, active, prosperous, respectful of cultural difference and participate in the public domain.

Standards of living will continue to be amongst the highest in the world. Improved connections and smarter technologies will enhance the State's ability to attract global and domestic investment capital where and when it is most needed.

A 'can do' attitude will prevail, inspiring new ways of thinking and working, which will deliver optimal outcomes for the economy and communities of Western Australia.

Abrolhos Islands

The principles

Six interrelated State planning principles underpin and inform the State Planning Strategy 2050, which apply across all regions, local government areas and communities.

Community: Enable diverse, affordable, accessible and safe communities

Planning for community betterment can balance aspirations for creating wealth, caring for the environment and building communities of which people feel proud.

Community growth and betterment can be achieved while retaining a community's sense of identity and its history through the identification and conservation of its historic heritage places, and through the telling of Western Australia's stories on stage and screen.

A community which generates a sense of belonging and identity creates the social capital and culture which provides acceptance of diversity, safety and the ability to manage change.

As the size and growth rate of the population continues to change, so too will people's needs, demands and aspirations.

Sustained growth can be achieved through communities becoming desirable environments in which to live, supported by choice and excellence in housing, health and educational opportunities.

Aboriginal people represent a significant part of the State's community. Accordingly, it is important that Aboriginal people are economically engaged in the planning and development of Western Australia.

Economy: Facilitate trade, investment, innovation, employment and community betterment

Western Australia is one of the largest exporters of commodities in the fastest growing region of the world, the Asia-Pacific region. Ports are of great importance in facilitating this trade.

The State's enterprises accounted for 16% of Australia's GDP in 2011-12, and 46% of the total value of Australia's merchandise exports in 2012-13.

Harnessing existing and emerging competitive and collaborative advantages can present opportunities to stimulate job creation, wealth and wellbeing. The rapid acceleration of investment that is occurring in the State's agricultural industry is transforming it into a global industry.

Western Australia is well-placed to build on its strong economic and stable political base by enabling value adding industries, including emerging knowledge and low carbon economies.

An important aspect of this is the contribution of culture and the arts, including creativity, to economic development and diversification. In recognition of this contribution, ScreenWest won the 2013 Premier's Award in the 'Developing the Economy' category for an initiative to maximise funding opportunities for independent filmmakers.

Planning for the State's economic development will help ensure the release or redevelopment of land for agriculture, resource development, infrastructure and industrial ecology in the right place at the right time.

Environment: Conserve the State's natural assets through sustainable development

Western Australia occupies one-third of the land mass of Australia and has vast mineral and natural resources across a wide range of temperate to tropical environments.

Research reveals a correlation between human health, economic wealth and ecosystem health. For the people of Western Australia this takes shape in the form of wellbeing, fresh produce, clean air, abundant natural resources, a range of lifestyle choices and high standard of living.

The intrinsic value of the State's environmental assets and their potential for future economic opportunities needs to be recognised through conservation and management. This includes conserving areas of native vegetation and the biodiversity of species populations and ecological communities.

A careful and managed balance of conservation and development will ensure the State can sustain its growth and prosperity over the long term.

It is imperative therefore that the State's biodiversity and natural resources are well-managed so that short-term gains do not compromise future opportunities.

Infrastructure: Ensure infrastructure supports development

Demand for Western Australia's goods and services will continue to rise in the foreseeable future, which will increase the pressure on the State's infrastructure.

Western Australia's vast distances and sparse population present complex challenges for its sustained growth in terms of productivity, capital investments, liveability and workplace participation.

Planning for the integration and coordination of both physical and social infrastructure is critical in achieving the strategic vision and goals of this document.

Of particular importance will be the continued collaborative approach to define the roles within all tiers of Government; and between the Government and the private sector.

Social infrastructure is by nature highly complex and multidimensional. All levels of government have a role to play in the coordinated delivery of the 'hard' elements of community infrastructure, including schools, hospitals, civic centres, aged care facilities and public open spaces, as well as the 'soft' elements of community infrastructure, which include social services, community building, and culture and arts programs.

Regional Development: Build the competitive and collaborative advantages of the regions

In order to achieve sustained growth as a state, each region must capitalise on its unique characteristics, assets, resources and supply chains, both independently and by collaboration with all the other regions. Synergies between regions should be the impetus for collaboration.

The opportunity to develop agriculture and the food production sector to meet demand in neighbouring countries is vast. This creates a need for labour, workforce development, new agriculture precincts and liveable communities in the regions to support the development of the economic base.

A strong partnership between local governments, the Department of Regional Development, Regional Development Commissions and the Western Australian Planning Commission (Figure 4) can help regional investments and ensure the devolution of planning and development powers are effective and appropriate to achieving 'on the ground' and timely decisions.

Regional planning will inform the capacity, structure, commercial and industry base that is needed to provide an attractive choice for people wanting to live in regional towns and centres.

Governance: Build community confidence in development processes and practices

The State's development is substantially affected by investment decisions which often need to be made many years ahead of the commencement of a project.

Governance manages, coordinates and improves the interconnections between policy, development decisions and on-the-ground outcomes in the public interest.

It involves the application and alignment of many government regulations, statutory approvals, agreements, judgements, transactions and investment commitments.

Good governance is participatory, collaborative, accountable, transparent, responsive, effective and efficient, equitable and follows the rule of law.

In this way the State Planning Strategy provides a contemporary State strategic context for an efficient and effective land-use planning system in which State strategic settings are delivered in an integrated way that reduces process duplication and overlap across Government and between the various layers of the planning system.

This approach enables streamlined development assessment pathways, unless the proposed use and development of land significantly departs from State planning principles, strategic goals and objectives.

It will also improve public confidence and business certainty in land use and development decisions.

The strategic goals

There are many pathways to achieve sustained growth and prosperity

Western Australia's development since 1850 illustrates the dynamics of the economy and population. The emergence of the Pilbara region as a hotspot for global investment and the engine room of the national economy indicates the diverse opportunities that lie ahead.

Trends that are evident and likely to influence the development of the State include a doubling of the State's population, a changing climate, drying in the southwest, urbanisation and rapid shifts in the global economy. These present challenges for the sustained growth and prosperity of Western Australia.

Five interrelated strategic goals have been identified with the view to realising a vision of sustained prosperity for Western Australia:

- **Global competitiveness** will be enhanced through continued economic diversification.
- **Strong and resilient regions** will be built through economic expansion and inter-regional collaboration.
- **Sustainable communities** will be enhanced by investment in infrastructure and social capital.
- **Infrastructure planning and coordination** will achieve efficiencies and synergy in pursuit of economic growth.
- **Conservation** of the environment will be enhanced by sustainable development and efficient resource use.

Strategic Goal 1 - Global competitiveness

To achieve sustained growth the priorities of this strategic goal are:

STATE VISION	PRIORITIES
Diversity	a diversified economic base
Liveability	attraction and retention of human and monetary capital
Connectedness	global trade and high speed movements
Collaboration	generating innovative ideas and enterprises

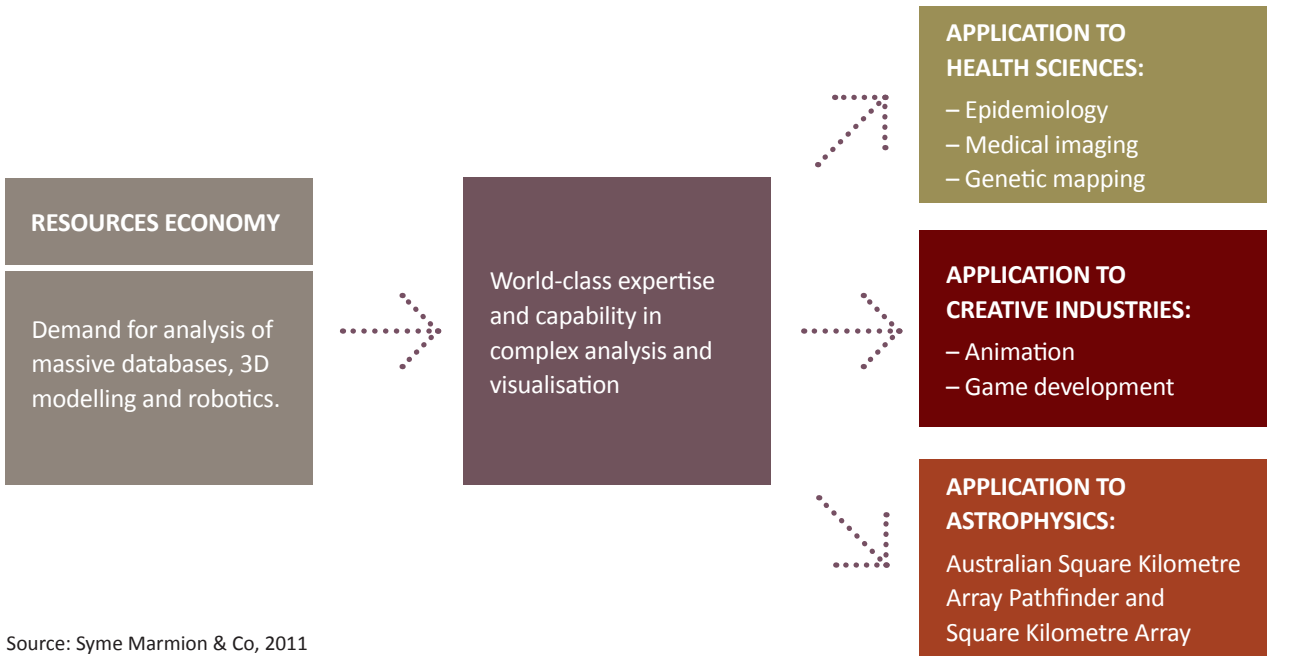
Global competitiveness reflects the degree to which a country can produce goods and services that are in demand in both domestic and international markets at the desired cost and quality.

Western Australia is one of the most resource-rich regions in the world. The State will secure long-term economic prosperity by growing and developing its mineral, petroleum and geothermal energy resources sector through exploration activity, and major product and infrastructure development.

The attraction and retention of skilled workers, who require access to well-developed social infrastructure and social services, is a critical issue.

Culture, heritage and the arts, which contribute to the identity, sense of belonging and desirability of communities, is also important to people.

Figure 15 - Towards an advanced economy: building on economic strengths



Source: Syme Marmion & Co, 2011

There is a significant opportunity to enhance competitiveness by leveraging the State's natural environment, cultural assets, stable government, great lifestyle choices, abundant natural resources and economic strengths.

Diversifying the economy by building a high-level knowledge and skill base can be augmented by attracting the world's most skilled workers and creative thinkers.

Western Australia's significant advantages will enable it to further develop the capacity to compete successfully in the global market across many sectors, most notably, mining, oil and gas, agriculture and education.

The State's knowledge economy includes a range of activities around the energy and resources sector (including mining and construction engineering, mapping and remote sensing), as well as defence and marine related engineering.

The knowledge and expertise developed for our resources sector has application for many other sectors (Figure 15). For example, there are opportunities for the application of robotics, three dimensional modeling and database management in biotechnology, education and health services, and a range of related design, research and technical services.

Enterprises and technology developments that capitalise on renewable energy resources, the State's unique arts, places, technologies and cultures will be well-placed in the global economy.

Strategic Goal 2 - Strong and resilient regions

The priorities of this strategic goal are:

STATE VISION	PRIORITIES
Diversity	embracing diverse economic and social opportunities
Liveability	creating places where people want to live and work
Connectedness	building strong relationships and accessibility
Collaboration	enabling collaborative advantages across and within regions

Strong and resilient regions are able to deploy their resources and capabilities to respond proactively to opportunities and challenges as they arise.

Resources that support resilience include economic development and capital, physical infrastructure, social capital, information and communication systems. Core capabilities include skills, motivation, community strength and leadership.

Each region of Western Australia has a unique character, natural resources, climate and competitive advantage which can be built upon to generate a diverse range of economic opportunities.

Some regions are growing exponentially and competing globally for large scale investments, while other regions are not.

The key to strong and resilient regions is an understanding of each region in terms of its composition, strengths, opportunities, and vulnerabilities. It is also the capacity and ability to respond in a calm and measured way to changing circumstances through regional planning and associated investment strategies.

Royalties for Regions is a $10.9 billion (to 2016-17) program to help Western Australia's regional areas grow into thriving and sustainable communities through the funding of approximately 3500 projects aligned with the State's Planning and Development Framework (Figure 4).

Inter-regional collaborations through partnerships, networks and alliances harness the competitive and collaborative advantage of each region. This offers greater choice for global and domestic capital investment and equips individual regions to better manage change.

Strategic Goal 3 - Sustainable communities:

The priorities of this strategic goal are:

STATE VISION	PRIORITIES
Diversity	community-specific development, responsive to diverse needs, places and contexts
Liveability	communities with attractive, liveable environments
Connectedness	providing natural and built connections within and between communities
Collaboration	collaborative and inclusive planning

Sustainable communities are those that manage community expectations, financial capacity, service delivery, infrastructure and asset quality through collective capabilities and resources.

They are provided with fresh local food and diverse work opportunities, and have good connections between their settlements and landscapes.

Liveability is a key determinant of the State's ability to attract an internationally mobile workforce, which depends, in part, on the cost of living, adequate social services (including schools and hospitals) and amenity in key regional centres.

External influences that are harder to manage are driven by urbanisation, climate change, population growth, legislative requirements and government policy.

Urbanisation, decreasing affordability, ageing populations, and socio-economic differences across the State all require an increased focus when planning for sustainable communities.

A significant part of the State's settlement patterns are largely in place now and need to be supported through the provision of infrastructure and services.

There is a need to plan proactively for integrated 'hard' and 'soft' infrastructures so that these communities account for the different and changing needs of an ageing population, migrant communities, indigenous communities, people with disability and a range of other groups within the community.

As each community has different social infrastructure needs, a detailed understanding of a community's make-up, cultural and social connections, and social pressures is required.

Integrated settlement structures and mixed built form create liveable places and spaces. They provide active transport options, functional green spaces and networks with connections to natural landscapes.

Adaptation of buildings for new uses makes an important contribution to sustainable communities. It both limits the requirement for new materials and reduces the amount of demolition waste. Adaptive reuse of heritage buildings also provides continuity for the community and helps to maintain its identity in the face of ongoing change.

Strategic Goal 4 - Infrastructure planning and coordination

The priorities of this strategic goal are:

STATE VISION	PRIORITIES
Diversity	supporting economic diversity, innovation and resilience
Liveability	providing contemporary, effective, resource-efficient services
Connectedness	linking regional economic opportunities to the movement of people, goods and services across the State
Collaboration	sharing new ideas and creating new business and lifestyle opportunities

The planning for the coordinated provision of State infrastructure is related to the strategic objectives of Government having regard to the likely rate of economic and population growth.

Infrastructure planning and coordination encompasses diverse forms of physical and social infrastructure elements and the linkages between them. It is complex because it involves arranging often highly technical infrastructure elements in an order of importance within an overall infrastructure framework and limited capital investment environment.

In addition to a focus on the 'hot spots' of significant economic growth, appropriate infrastructure services need to be consolidated in areas of identified public health and environmental needs, such as in towns affected by emissions from industry, and where sewerage infrastructure including onsite effluent disposal systems or managing drinking water supplies are of particular importance.

The Infrastructure Coordinating Committee (ICC) has legislative responsibility to advise the WAPC on planning for the coordinated provision of physical and community infrastructure throughout the State.

This coordination reaches beyond 'hard' infrastructure such as airports, roads, railways, seaports, green networks and cycling and pedestrian links to include 'soft' infrastructure such as education, health and cultural services and cultural, science and arts programs. The combination of both 'hard' and 'soft' infrastructure is fundamental to achieving healthy, active and liveable communities.

The design, location and operation of infrastructure networks will need to balance building capacity for present and emerging enterprises with the infrastructure needs of a growing and ageing population.

The development of activity centres can create an affordable, attractive lifestyle, facilitating free movement and a desirable style of living. This will also need to be done cognisant of a natural environment susceptible to the effects of climate change.

It is proposed to develop a set of infrastructure prioritisation principles through the ICC, which will enable improved consideration and advice to be provided to Government on recommended future infrastructure priorities.

The ICC will use this Strategy among other documents to consider alternative frameworks and methodologies in order to maximise the use of existing infrastructure and improve the assessment of infrastructure proposals. The ICC will regularly review mechanisms that identify, secure, protect and manage infrastructure corridors throughout the State.

Strategic Goal 5 - Conservation

The priorities of this strategic goal are:

STATE VISION	PRIORITIES
Diversity	understanding, maintaining and conserving biodiversity, landscapes and natural environments
Liveability	securing our natural environments and resources
Connectedness	connecting ecosystems, people and natural resources
Collaboration	realising opportunities through collaboration for environmental conservation and sustainable resource use

Western Australia's unique natural environment encompasses pristine and diverse natural areas both onshore and offshore, with world-renowned biodiversity, scenic landscapes, heritage sites, marine and coastal areas and places of cultural significance. The clean and beautiful natural environment is a major contributor to the State's liveability and attractiveness.

The Kimberley region has a particularly unique natural landscape that is rich with biodiversity, with its islands being an important refuge for many species now extinct on the mainland.

South West Australia (Figure 16) is a global biodiversity hotspot that includes Mediterranean-type forests, woodlands and scrub eco-regions. The region has highly diverse landscapes and species, and has a wet winter, dry summer Mediterranean climate. It is one of five such regions in the world.

Historically, land management practices have led to native vegetation being extensively cleared, with less than 40% remaining in the southwest. It is important that the conservation of this region continues to be achieved.

Conservation will increase the resilience of the State's natural environment by limiting the clearing of native vegetation, maximising natural habitat protection and rehabilitation, avoiding development in environmentally sensitive areas, and reducing the fragmentation of vegetation by urban and industrial development.

Conservation also safeguards the State's biodiversity and the ecosystem services that Western Australians depend upon such as water and air purification for their health and wellbeing.

Consumption of natural resources in the development of cities and regional centres needs to be managed in a way that will secure these assets for future generations.

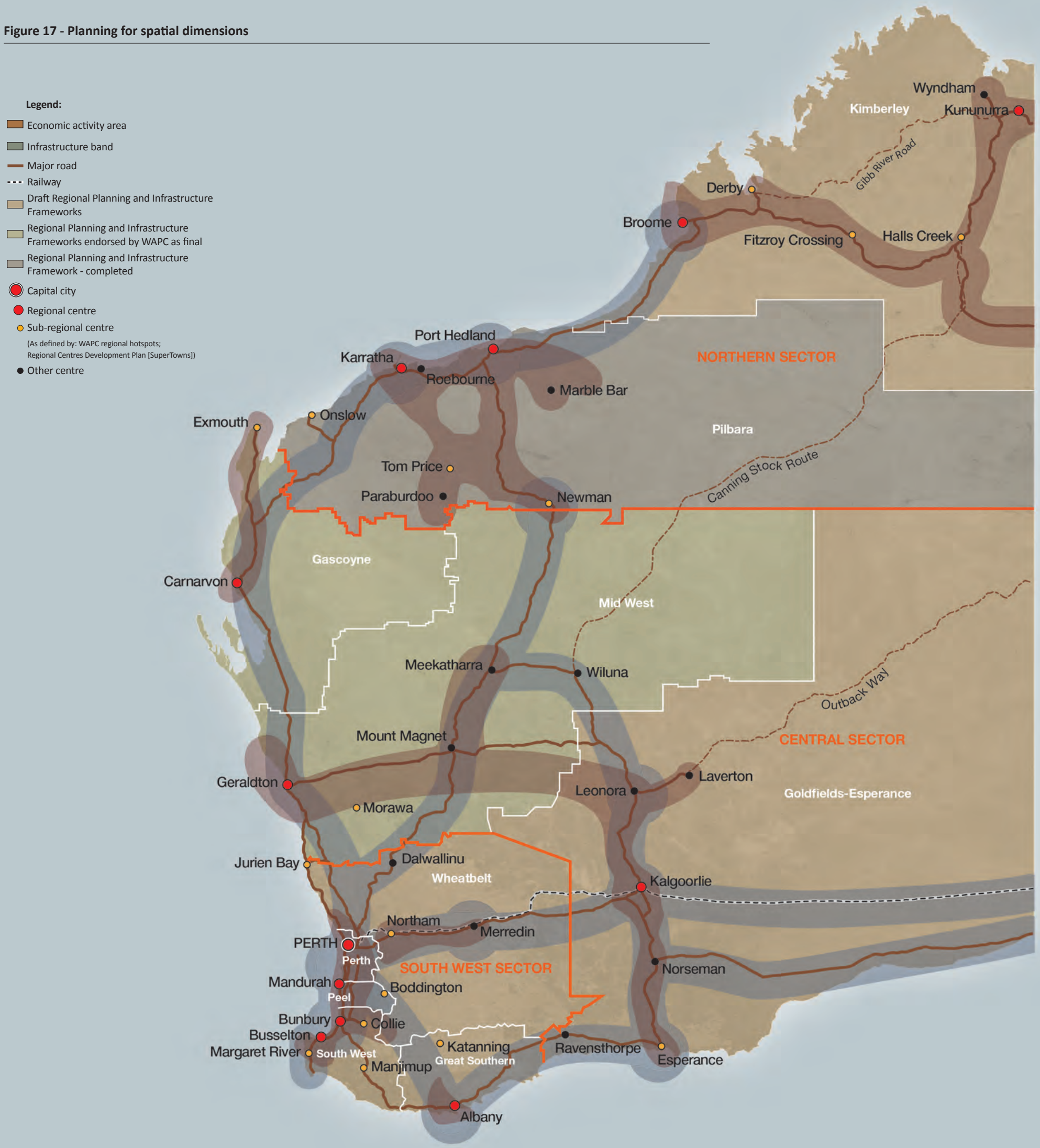
Streamlined project approval decisions will be achieved through collaboration, partnerships, alliances and common understanding on environmental issues, informed by evidence-based research and environmental studies.

Western Australia is a significant global competitor in the provision of natural resources and is emerging as a strong competitor in the development of eco-technologies that reduce environmental impact. Ongoing innovation in these technologies will ensure the sustainable use and consumption of our natural resources.

Figure 16 - South West Australian global biodiversity hotspot

Source: Conservation International 2007

Figure 17 - Planning for spatial dimensions



The spatial dimensions

For the purposes of this Strategy, Western Australia is considered in the context of three sectors each consisting of two or more designated planning regions:

- Northern sector
- Central sector
- South West sector.

Figure 17 envisages a statewide network of regional centres, infrastructure bands and projected economic activity areas resulting from the application of the strategic goals and directions in this document.

It reveals the potential for growth in regional Western Australia, which reinforces the importance of regional planning.

Figure 17 also recognises that while the South West sector is the most intensely developed part of Western Australia, the Northern sector has rapidly gained importance in national and global trade, investment and commerce.

For the purpose of this document regional centres, subregional centres other centres and towns include those identified in the Government's Regional Centres Development Plan and Regional Hotspot publications.

Regional planning and infrastructure frameworks express a vision on the form and function of centres, subregional centres, towns and remote settlements. They also outline regional land use priorities within the context of this State Planning Strategy.

The State Government's Regional Centres Development Plan, supported by the Royalties for Regions program and including the Pilbara Cities initiative, is a targeted program to build strong and resilient regions within the context of regional planning and infrastructure frameworks.

Growth plans for regional communities bring together the objectives from all tiers of government for sustainable growth and an implementation schedule for how that growth will be realised.

This Strategy, together with regional frameworks, investment programs and projects, seeks to provide the regions with the capabilities and resources to expand resident populations and enhance economic development opportunities.

Northern sector

Planning of the State's Northern sector (Figure 18) must be considered within the context of northern Australia to further the development of its untapped potential and continue to build collaborative advantages with the Northern Territory and Queensland.

The Northern sector, comprising the Pilbara and Kimberley regions, each with distinct strengths, issues and challenges, significantly contributes to Australia's GDP.

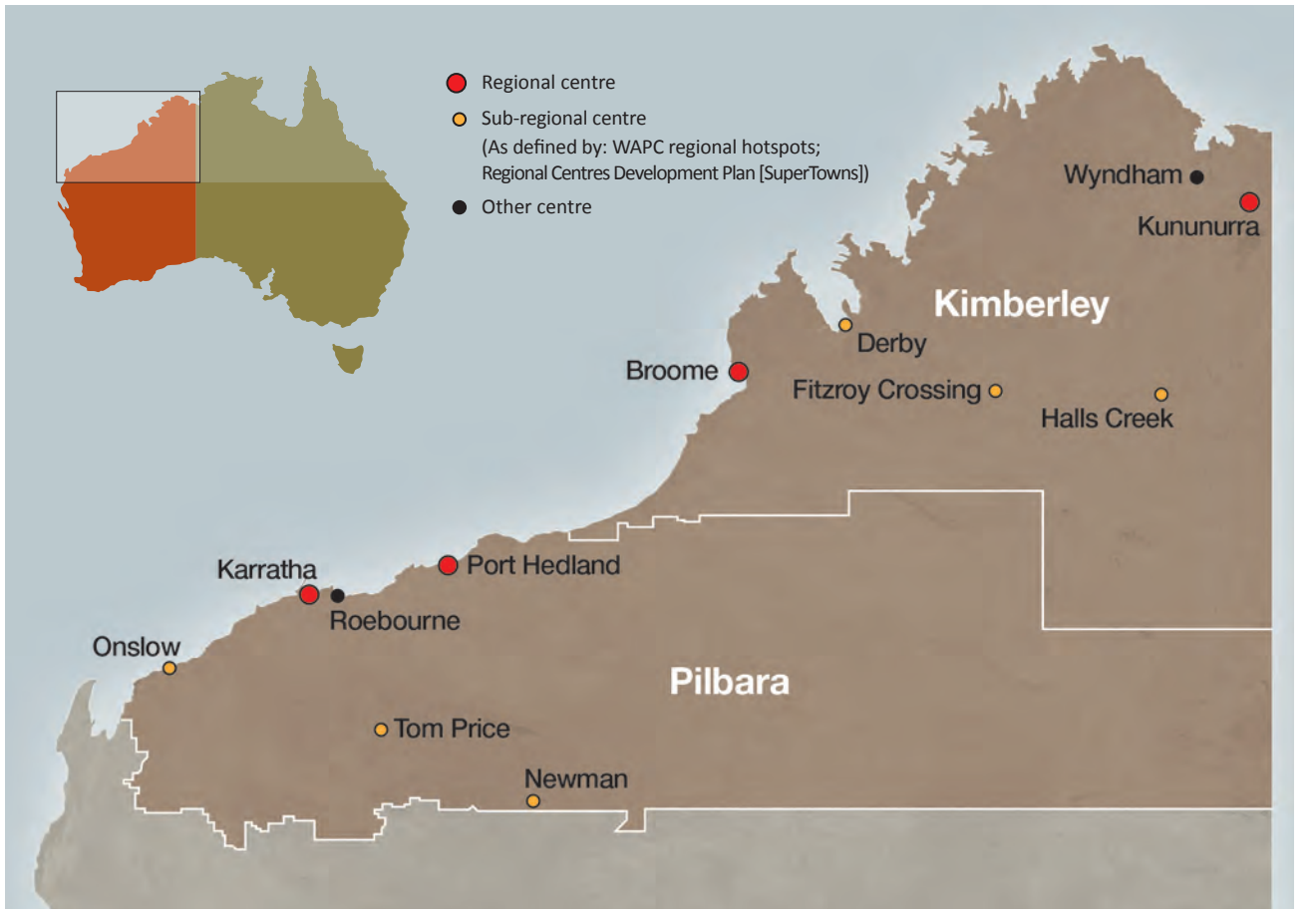
The continuing development of agricultural and resource projects within this sector is set to ensure that it remains a key driver for the economy.

The Northern sector can also further promote its unique natural environment through the sustainable development of ecotourism and it has the potential to become a mineral and energy resource (including renewable energy) province.

Harmony must be found between conservation of the Northern sector's unique environment and its opportunities for economic development.

Periods of further economic growth and development are expected, given the proximity to present and emerging trading partners in South East Asia, India and Africa. This is expected to be fuelled by demand for high quality

Figure 18 - Northern sector



commodities, goods and services in the State's resources, agriculture, tourism, education and environmental science sectors.

However, in the ongoing economic growth and development of this sector there are a number of challenges that relate to the amenity, character, social cohesion and the capacity to deliver goods and services for some local communities.

Mining, oil and gas enterprises will continue to support local supply chains. The cost of construction in the resources sector (such as the cost of building materials, trades and allied professions) may require goods and services to be imported, which will add further challenges to local communities and place additional strain on the capacity of existing infrastructure.

To ensure the continued strength and resilience of the Northern sector it is important that regional centres have a local construction industry and higher education facilities that lead to enhanced employment opportunities.

A key challenge is to secure, attract and retain people and businesses not necessarily involved in the mining, oil and gas industries and to deliver a reasonable standard of social services.

The Pilbara Cities initiative will develop Port Hedland and Karratha into cities where people choose to settle on a permanent basis, a place to raise families with access to education, health and diverse employment and career opportunities. Broome is also a significant regional population centre, an air transport hub for the region and gateway to South East Asia.

The Canning Basin area holds significant mineral and petroleum resource potential. In the Rangelands, diversification of land uses will generate further economic opportunities, particularly tourism and agriculture.

Water resources will play an increasingly important role in enhancing the State's food security, especially in the Ord River irrigation area and more generally in the Kimberley and the Pilbara hinterland.

Under the Ord-East Kimberley Expansion Project, Kununurra will become a vibrant, major regional centre. The project will also increase the size of the Ord irrigation area to about 22,000 ha of agricultural land.

This significant expansion, supported by a patchwork of agricultural prospects across the State, will provide opportunities for growth and a basis for improved community and common-use infrastructure.

Global political dynamics, regional energy security and increasing investment in nationally significant assets have resulted in the need for a greater defence presence.

This includes the need for infrastructure that can support strategic agricultural investments as well as regional defence operations and allow greater logistics access for humanitarian or military purposes.

The embracing and celebration of Aboriginal culture and the positive aspects of life in a remote region will instil a strong sense of place, belonging and community spirit.

Minigwal, north-east of Kalgoorlie

Central sector

The Central sector (Figure 19) has a diverse economy underpinned by mining, agriculture, fisheries and tourism, contributing significantly to the Western Australian economy. The sector is set to further contribute to the nation's mining, scientific, technological, research and innovation industries by 2050.

This sector encompasses some of the most iconic landscapes and diverse climatic conditions in Australia.

Shark Bay has three exceptional natural features: its vast sea-grass beds which are the largest and richest in the world; its dugong population; and its stromatolites, which are amongst the oldest forms of life on earth.

The Ningaloo Coast includes one of the longest near-shore reefs in the world. On land the site features an extensive karst system and network of underground caves and water courses, which support a variety of rare species that contribute to the exceptional biodiversity of the marine and terrestrial site.

It contains regional centres such as Geraldton and Esperance that offer strong lifestyle alternatives to Perth and have substantial growth potential with the investment of appropriate infrastructure. It also contains the most remote settlements in the State, where infrastructure and services will continue to be difficult to deliver.

Cropping in the Mid-West and Esperance and irrigated horticulture and agriculture in the Gascoyne are significant contributors to regional and export economies and food security. The Carnarvon irrigation district is set to undergo a 30% increase in its cultivated area in the near future.

The mining industry is a major contributor to the Central sector's economy and the State's gross product, with a diverse range of mineral resources including gold, iron ore, nickel and other metals.

Iron ore mining can become a major driver of the sector's economy with investment in a number of projects at different stages of development, from exploration through to production and export.

The Oakajee Port and industry precinct has the potential to become one of Australia's most significant industrial and resource downstream processing centres with the effective success of this zone dependant on the provision of key utilities such as power, water, gas and rail.

The Gascoyne Revitalisation Plan involves an investment by the State's Royalties for Regions program into major infrastructure, headworks and community priority projects over six years commencing 2010-11.

The Mid West Investment Plan will see further investment to projects identified as strategic priorities and designed to have an impact across the Mid West region over the years to 2021.

Figure 19 - Central sector

South West sector

With a diverse economic base, the South West sector (Figure 20) provides a unique environment and lifestyle making it an attractive place to live, work and invest.

Projections indicate that the South West sector will continue to be the population centre of the State. This means that the highest level and greatest range of social services (health and education services, cultural activities) and employment opportunities will continue to be available in the South West.

Perth, the State's capital, will remain a main international gateway to Western Australia and will function as its financial, administrative and social centre, while Bunbury is positioning to become the State's second CBD.

The large majority of the sector lies within an international global biodiversity hotspot. The area's native flora, approximately half of which is endemic, is especially impressive. It also has the highest concentration of rare and threatened species on the Australian continent. This unique biodiversity provides significant economic opportunities.

Agriculture plays a significant role within the South West sector, which will continue to supply fresh local food to Western Australia's growing population. The Wheatbelt region alone contributes 35% of the State's agricultural production.

Mining and downstream processing continues to be a key economic driver for the South West sector. The region hosts nationally and internationally significant resource projects for bauxite, gold, titanium-zircon (heavy mineral sands) and spodumene (lithium carbonate). Bauxite is processed into alumina at four refineries, making it one of the world's largest alumina producing hubs. Heavy mineral sands are upgraded locally and processed into titanium dioxide pigment. The South West also produces all of the State's coal supplies for electricity generation and other industrial uses. The total value of resource production for 2013 was $6.04 billion.

Challenges include the competition for land and water resources from urbanisation and other industry sectors. A balance between land development and the maintenance of conservation values is a key challenge.

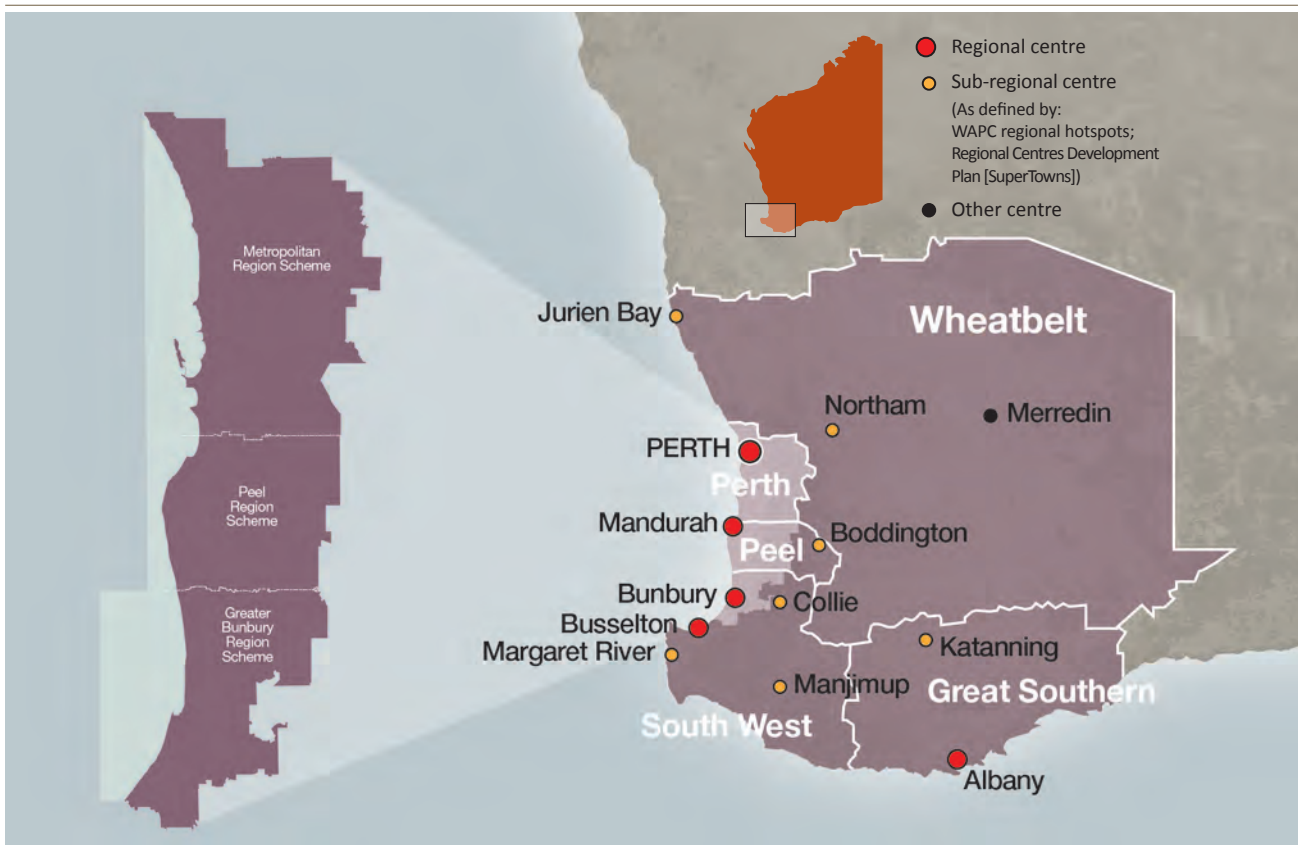
Through the Government's *'Regional Centres Development Plan'* communities in the South West are being provided with the capabilities and resources to plan for and build strong and resilient regional communities.

The Government's *'Directions 2031 and Beyond'* spatial framework and strategic plan for the Perth and Peel regions foreshadows an increase in density and urban land supply.

A number of other regional planning strategies and region schemes outline landuse planning priorities and directives, including development controls, for each planning region. These include:

- Perth Metropolitan Region Scheme
- Peel Region Scheme
- Greater Bunbury Region Scheme
- Greater Bunbury Strategy
- South-West Framework
- Wheatbelt Land Use Planning Strategy
- Urban Development Program
- Lower Great Southern Strategy
- Economic and Employment Lands Strategy: Perth metropolitan and Peel regions.

Figure 20 - South West sector



Interrelated State strategic directions

Shaping Western Australia to 2050 and beyond

There are many challenges ahead in the land-use planning and development of the State that requires a different way of thinking in order to achieve sustained growth and prosperity.

Based on research and collaboration across the State, the set of interrelated and interdependent strategic issues of key importance to Western Australia's sustained growth and prosperity have been identified as:

- Economic development
  - Resources economy
  - Education, training and knowledge transfer
  - Tourism
  - Agriculture and food
  - Remote settlements
  - Land availability
- Physical infrastructure
  - Movement of people, resources and information
  - Water
  - Energy
  - Waste
  - Telecommunications
- Social infrastructure
  - Spaces and places
  - Affordable living
  - Health and wellbeing
- Environment
- Security.

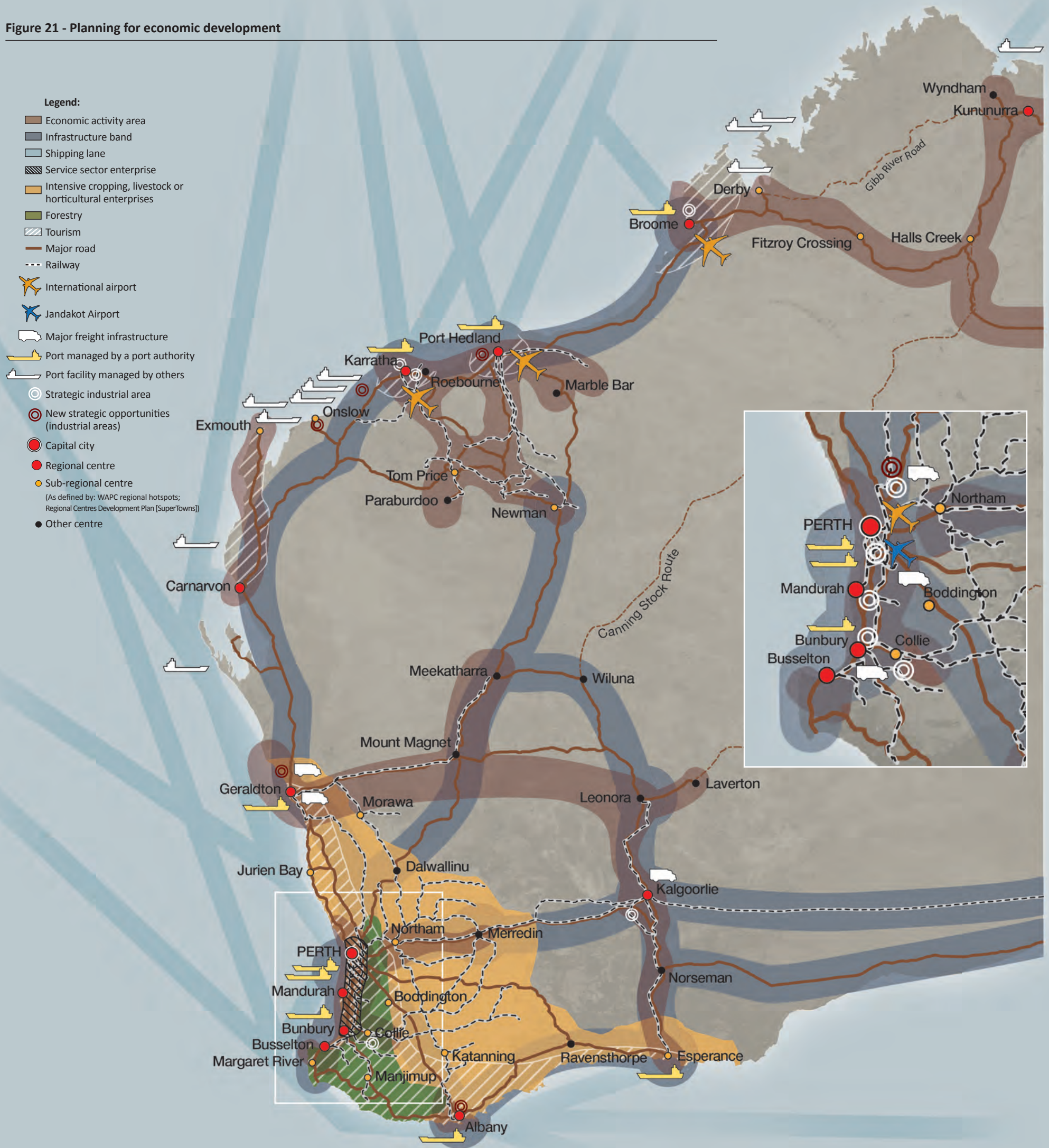
Each State strategic direction is structured in the same way except for the headline chapters of physical and social infrastructure (Table 1).

The pursuit of every objective in each strategic direction will require people and organisations involved in the land-use planning and development of Western Australia to work collaboratively, and to share information, ideas and resources.

Table 1 - Structure of strategic directions

STRATEGIC DIRECTION	PURPOSE/FUNCTION
The objective	The desired outcome of a strategic direction
Overview	Summary of a strategic direction as it relates to the State's sustained growth
Key facts	The latest available information about a strategic direction
The approach	Key elements of a strategic direction that will contribute to the objective
State challenges	Issues that must be considered when undertaking the approach

Figure 21 - Planning for economic development



1. Economic development

Objective

To facilitate coordinated and sustainable economic development

To achieve sustained growth, Western Australia will improve its productivity, and maintain high rates of employment.

To enhance its global competitiveness and provide resilience to changing economic conditions, Western Australia will seize the opportunity to diversify its economy through innovation, research and development, in addition to capitalising on the State's comparative advantages.

Innovation will drive productivity growth by enabling inputs such as capital and labour to be combined in new ways to produce higher value-added goods, services and increased efficiencies.

Investment in infrastructure will enhance productivity, and will attract global investment and the physical and human resources needed to sustain the State's growth and prosperity.

Overview

Growth rates in Western Australia have been significantly higher than most other states and this is expected to continue.

This is part of an overall structural transition in the Australian economy that will result in Western Australia increasingly being home to some of Australia's most important business activity.

While most jurisdictions in Australia and globally struggle to recover from the global economic downturn, Western Australia has prospered with strong population growth from inwards migration, major new resource project investment and an influx of new workers across engineering, financial and allied services.

In 2011-12 mining accounted for 34.6% of the Gross State Product (GSP), up from 15% 20 years earlier.

Western Australia's mining, agriculture and energy sectors are built around long-term investments which satisfy growing global demand from countries like China and Japan. This can act as the platform for the long-term economic development of regional Western Australia.

It is a significant base from which to compete for global technical, scientific and entrepreneurial skills.

Competition for skills and labour will intensify as former low-cost countries like China and India commit to transforming their economies to ones based on education and technology.

The abundance of renewable energy resources and natural assets will be increasingly valuable as global technologies enhance the sustainable use of these resources.

A conscious effort to broaden the development of these assets to build diversification into and thereby enhance the State's economic strength and resilience over time will be required.

Common use facilities can provide strategic industrial, research and global infrastructure to support regional economic development.

They can enable the ongoing development of a wide range of business and industry sectors including marine, oil and gas, mining, housing, construction, defence, paramilitary, emergency response and training and education related to research and development.

The State Government has implemented significant reform of the project approvals process through a 'Lead Agency Framework', to provide a more efficient and coordinated process for development decisions.

Key facts

- Western Australia is Australia's premier growth state, with a quarterly State final demand value that has not decreased in trend terms for over 10 years, a record unmatched by any other State or Territory.
- Western Australia is part of a global economy. Its annual goods and services exports grew by 32.7% in 2010-11 and 16.2% per annum on average during the five years to 2010-11.
- The State's economy is oriented towards Asia. China, Japan, South Korea and India are the State's top export destinations and collectively accounted for 77% of the State's total export value in 2012-13.
- In 2012-13, 66% of Australia's mineral exports (by value) came from Western Australia. In 2012-13 the value of Western Australia's mineral and petroleum production was nearly $104 billion and the value of resource projects either committed or under construction was $146 billion and a further $97 billion were planned or possible in coming years.
- In 2012, Western Australia accounted for 85% of national LNG exports, 100% of Australia's crude oil exports and 98 per cent of its iron ore exports.
- Mining activity, with the sector's gross value added growing on average 5% annually in the 10 years to June 2012, drove employment across all economic sectors. Together, the mining and the construction industries represented 18% of total employment in 2012-13. The Department of Education, Employment

and Workplace Relations projected growth in Western Australia's total employment to average 1.8% annually over the years to November 2017.

- The value of agricultural production in 2011-12 was $7.2 billion, which included $2.8 billion of wheat or about one-third of Australia's wheat production.
- The State's building and construction industry contributes 11.7% towards GSP and employs 12.2% of the full-time workforce. Together with the mining industry, 25% of the full-time workforce is employed within these industries.
- The Western Australian marine industry leads in high speed ferries, car/passenger ferries, patrol boats and para-military vessels and luxury super yachts. In 2009 this industry's output was $1.5 billion and its direct employment exceeded 6,000 people.
- The services sector, which includes financial, education, communications, tourism, legal, business and medical services, accounted for almost 40% of Western Australia's GSP in 2010-2011.
- The Western Trade Coast, the region comprising the Kwinana Industrial Area, Rockingham Industry Zone, Latitude 32 Industry Zone and Australian Marine Complex, currently produces over $15 billion annually and employs over 11,000 people.

State challenges

Promoting the ongoing development of existing industries (such as mining, petroleum, tourism, agriculture, pastoralism and horticulture) alongside new emerging economies (such as health sciences, genetic mapping, animation and game development) will raise the State's productivity.

A concerted effort will be required to further diversify the State's economy. New strategies will be required to develop supportive environments for human and capital investment into emerging economies.

Recent economic growth in Western Australia and projected labour market shortages highlight the global competition for skilled workers as a critical element in future economic development. Global competiveness in the future will be largely defined in terms of the competition for talent.

Western Australia competes globally for skills successfully because it capitalises on the State's assets; that is to link economic development opportunities to a high quality of life. This includes access to world-class cultural and artistic activities.

Attracting and retaining skilled people will become increasingly difficult, as they will have greater choice about where they live, work and develop businesses.

A key challenge will be creating the level of livability in the regions that can attract a varied workforce in order to stimulate and maintain diverse economic activity.

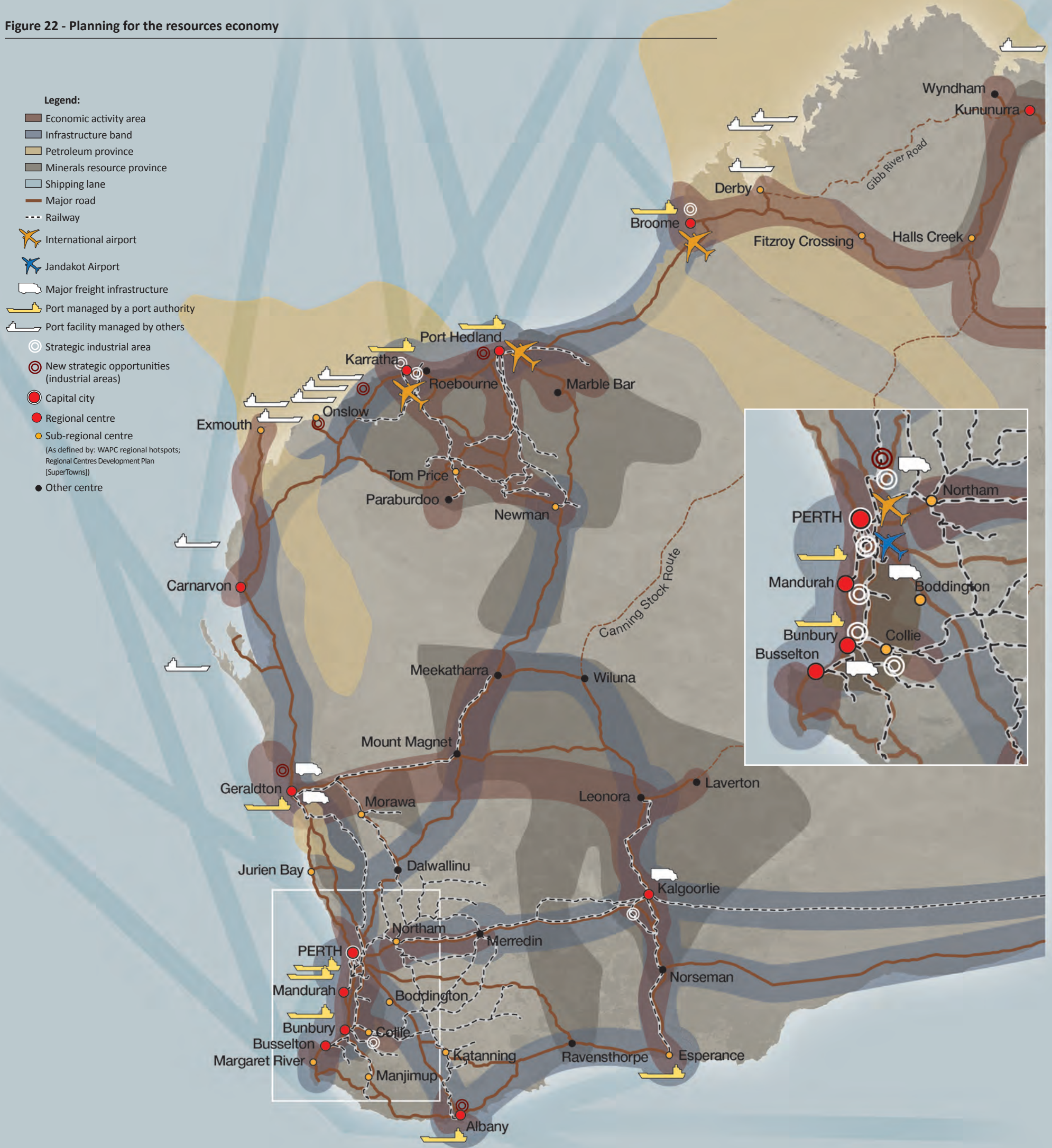
Attracting and retaining the right people will require planning and delivering world-class urban and rural environments, transport and social services (health, education, law and order).

Approach

Table 2 - A strategic approach to economic development

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Land availability	Land is available to meet the needs of enterprise	Availability and affordability of land for enterprise	• A suitable and affordable supply of land is made available for the long-term needs of people across the State • Suitable land is allocated and zoned for enterprises, business and industry, including project ready industrial lands, buffers and infrastructure • Crown land transactions are considered at the earliest stage of the land-use planning process and project delivery initiatives
Infrastructure	WA invests in infrastructure that stimulates productivity and economic growth	Infrastructure capacity and investment levels	• Infrastructure is well-connected and coordinated for modern living and emerging economies • WA operates on the technological frontier integrating the most modern infrastructure and ICT • WA responds to hard and soft infrastructure challenges with flexible financing and delivery approaches • Land is zoned or reserved for economic activity including strategic industrial sites and supporting infrastructure and buffers
Global competiveness	WA out-competes other areas for global investment in a range of new enterprises	Attracted global capital	• The regions consistently attract and retain skilled workforce • Key regional centres emerge as global gateways that capture trade supply chains • WA consistently attracts global investment that enables emerging enterprise to develop and raise productivity • Perth continues to attract and retain corporate headquarters • The State's airports and seaports provide increased access to global trade and resources • GSP/capita growth rate is maintained at 2% per annum
Economic diversity	The State's economic diversity enables resilience to changing economic conditions	Economic resilience and diversity of the WA economy and regional areas	• WA continues to provide a range of goods and services to the global economy • WA provides international standard research infrastructure • The regions have become more economically diverse • WA has developed globally-recognised industries in the fields of medicine, agriculture, environmental science, value-added manufacturing, tourism and game development
Industrial ecology and economic clusters	The State's industrial areas are eco-efficient and encourage co-location of similar enterprises	Levels of efficiency, synergy and innovation in strategic industrial areas	• Industrial areas are structure planned to produce optimal output with minimal waste • Clusters of industry drive productivity and stimulate new ancillary businesses • Research and technology clusters support and foster economic diversity • All strategic industrial areas are developed to an approved structure plan
Innovation, knowledge, research and development	WA is a world leader in technological, organisational and service innovation	Level of innovation and creativity in WA for all areas of enterprise	• WA continues to be a world leader in mining and energy sectors, as well as in the supply of environmental and community services (health, education, culture and the arts) • WA has built on research in the bio and life sciences to develop world class food processing centred on supply chain integrity and the targeted marketing of high value-added products • WA continues to be a leading international education provider and a leading supplier of research services in science and technology

Figure 22 - Planning for the resources economy



1.1 The resources economy

Objective

To maintain and grow Western Australia as the destination of choice for responsible exploration and development of resources

Western Australia is one of the most resource-rich regions in the world.

The State will secure its long-term economic growth and prosperity by growing and developing its mineral, petroleum and geothermal energy resources through exploration activity and major project and infrastructure development.

Technology and innovation, enabled through the State's internationally renowned mining services industries and research facilities, will contribute to the industry's global competitiveness.

The State will be a stable partner for resources investment and supply in Asian markets. Industry and Government will continue to engage within and between regions to strengthen trade and international relationships.

Overview

The past decade saw high commodity prices and strong demand for Western Australia's natural resources, driving industry investment to record levels.

During this period, the Western Australian economy increased its resource exports, with the sector accounting for more than a third of gross state product in 2012-13.

Western Australia is located strategically close to Asia's growing economies. Growing demand for mineral and petroleum resources from the State's regional trading partners underpins continuing resource investment.

Growth in the iron ore and liquefied natural gas (LNG) sectors has cemented the State as a major and reliable global supplier of these essential commodities.

A decade ago, Japan and China alone accounted for some 40% of the State's merchandise exports and this proportion has now grown to almost 75%. In 2013, Western Australian iron ore production was 556 million tonnes, valued at $68 billion.

The resources economic cycle is moving beyond the peak in commodity prices and the intensive investment stage into a period of increased production and exports.

The State is well-positioned to increase exports of iron ore and LNG. Over the next four years, iron ore capacity is expected to grow to more than 692 million tonnes per year, and LNG from 21 million to about 50 million tonnes a year.

This growth is the result of new investments in LNG projects such as Pluto, Gorgon and Wheatstone and major iron ore expansions by BHP Billiton, Rio Tinto and Fortescue Metals Group.

Investment in the resources sector benefits the State and Australia. As the sector expands, direct and indirect labour demand increases.

Western Australia is already home to many multi-national resource companies and a leading centre for resource exploration, production innovation, research and development.

The State benefits directly from royalty revenues, which have increased from a 5% share to more than a 20% share of State revenue over the past decade.

In addition, large numbers of asset transactions provided the State with significant stamp duty revenues. This revenue enables the Government to provide more community services and essential infrastructure to support the growth of the State.

Much of the State's economic activity occurs in remote regional areas and provides these areas with opportunities for development.

Despite challenges such as access to labour and services, infrastructure availability and high transport costs, the benefits that flow from the resources sector facilitate significant community and economic development throughout the State.

Key facts

- Western Australia experienced an average annual gross state product growth of 4.9% over the 10 years to June 2013. Economic growth, driven by mining investment and exports, reached a 10-year high in 2011-12, with 7.3% yearly growth. The 2013-14 State Budget expects growth of 3.25% in 2013-14 due to more subdued global commodity prices.
- In 2013, Western Australia accounted for 28% of global iron ore production and over 40% of world seaborne trade in iron ore.
- Western Australia's economic development over the past decade was built on the growth of global commodity trade flows, as State merchandise exports grew from $32 billion in 2003 to $125 billion in 2013; of this total nearly $113 billion was attributable to mineral and petroleum exports. This represented a 15% average annual growth as Western Australian mining and petroleum exporters took advantage of growing global demand for their products.
- Western Australia is a globally significant producer of iron ore, LNG, zircon, garnet, alumina, nickel, diamonds, rutile, gold and salt. There are significant downstream processing facilities for minerals including bauxite (to alumina), ilmenite and rutile (to titanium dioxide pigment) and nickel (refined to metal).
- Iron ore dominates Western Australia's exports, representing 41% of all Western Australian exports in the past 10 years to December 2013. Other exports included gold (15%), oil (10%) and LNG (8%). During this period, Western Australia was the largest global iron ore exporter.
- The Chinese, Japanese and South Korean markets represented jointly 79% of Western Australian merchandise exports in 2013. Demand in these markets is expected to moderate.
- The 2013-14 State Budget expects State exports to grow by 6.25% in 2013-14 and 4.5% in 2014-15, sustained largely by expansion of the State's iron ore production.
- While exports represented 52% of Western Australia's gross state product in the five years to June 2012, private investment represented 27% of gross state product. Business investment in the State grew 17% on average each year during the 10 years to June 2013. New capital investment in 2013 was $56 billion, including $47 billion of new capital expenditure from the mining industry.
- Investment in mineral and petroleum exploration is cyclical and dependent on commodity price fluctuations. In 2013, mineral exploration expenditure was $1.51 billion and petroleum exploration expenditure was $3 billion, representing 60% and 66% respectively of total exploration expenditure for Australia.
- Over the past decade, many world-class iron ore deposits were discovered in the Pilbara and Yilgarn regions.
- Western Australia's iron ore exports grew from 216 to 556 million tonnes in the 10 years to 2013.
- The Pilbara region accounts for 95% of the State's iron ore exports and has $149 billion of resource projects under construction or committed and a further $112 billion under consideration. These include Rio Tinto's Cape Lambert port and rail expansion to 360 million tonnes per annum, expansion of its existing mines at Nammuldi, Yandicoogina and West Angelas, and further capacity increases from Fortescue Metals Group and Hancock Prospecting's Roy Hill project.
- The Gorgon and Wheatstone LNG projects are worth approximately $56 billion and $30 billion respectively, with Gorgon 78% complete and Wheatstone 30% complete. Woodside's North West Shelf extension, the North Rankin redevelopment, exported its first gas at the end of 2013, and the $2.5 billion Greater Western Flank Phase 1 gas field is under construction, with an estimated start-up in 2016.
- Significant shale-hosted petroleum resources in the onshore Canning, Carnarvon and Perth basins were identified recently.
- The Mid-West has over $8 billion of prospective projects comprising mainly magnetite iron ore, copper and uranium.
- The South West has at least $6 billion of planned or possible resource projects including the Perdaman Chemicals Coal to Urea plant, Boddington gold mine extension and the Collie South West Hub carbon capture and storage project.
- The Goldfields-Esperance region has $5.8 billion of planned or possible resource projects comprising mainly lithium, nickel, gold, iron ore, uranium and the Esperance port expansion.
- In the Kimberley region, $716 million of resource projects are awaiting environmental approvals for commodities including iron ore, silver, lead and zinc.
- There is $583 million of resource projects under construction or committed across the Goldfields-Esperance, South West and Mid-West regions of Western Australia.

Approach

Table 3 - A strategic approach to planning for the State's resources economy

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Infrastructure	Western Australia invests in strategic infrastructure that stimulates productivity and growth in the resources sector	• Total infrastructure capacity • Level of State investment in physical and community infrastructure	• Government and industry continue to collaborate in the planning and delivery of infrastructure across the State • Ongoing development of and access to multi-use infrastructure at key industry hubs • Flexible funding and financing approaches to infrastructure development are commonplace • Infrastructure bottlenecks and constraints are minimised
Project facilitation	Effective, transparent, timely and efficient administrative and regulatory systems	• Project approval timeliness • Amount of resource investment	• Informed and timely project approvals in which the costs and time of doing business in the State continue to be minimised • The State progressively reviews approvals systems to enhance their transparency and efficiency • Ongoing collaboration with the Australian Government to streamline project approval processes
Strategic industrial lands	Project-ready industrial land to meet the demands of the resources sector	• Number of established project ready industrial sites • Level of investment in mining and petroleum processing	• Appropriate strategic industrial land and infrastructure to support priority sectors is available throughout the State • Strategic Industrial Lands developed to acceptable environmental standards to ensure ongoing investment and sustainable economic growth
Downstream processing	Strong downstream processing industries, particularly in the low volume, high value, high technology Critical Minerals sector	• Total investment in profitable downstream processing of resources and value of processed products	• Western Australia is a world-leader in production and downstream processing of Critical Minerals (e.g. titanium metal, rare earth metals, lithium, tantalum) • Continued investment to add value to resource products • Industrial ecology is maximised in the planning and operation of all strategic industrial areas
Investment	Western Australia is a destination of choice for foreign direct investment in mining and resource activities	• Level of foreign direct investment	• Significant infrastructure and resource projects are developed as a result of foreign direct investment • Investment returns are competitive with overseas destinations, attracting value adding processing and manufacturing investment
Relationship with Asia	Western Australia has deepened business relationship with trading and investment partners in Asia	• Level of trade and exports to Asia • Asian investment in infrastructure, resources and technologies	• Asian firms invest in long-term resource and infrastructure projects throughout the State • There is an ongoing productive dialogue with key Asian Governments and companies
Productivity	Western Australia can extract resources at low cost and continue to be internationally competitive	• Gross state product per capita	• Continuous productivity improvements maintain the State as an internationally competitive, low cost producer • High productivity attracts investment and minimises infrastructure requirements • Mineral and petroleum resource inventories and production are maintained or increased compared to 2013
Resource-based education	The resources sector has access to a highly skilled and flexible labour pool.	• Change in dependence on out-of-state and international skills	• WA continues to be a resources hub that attracts global talent • WA continues to be recognised for its leadership in exploration, mining and resource management • There is sufficient skilled local labour to maintain and expand industries allied to the resources sector • WA has world-leading resources-based educational institutions
Basic raw material (BRM) supply	Accessible and affordable supplies of BRM are available close to demand	• The cost of supplying basic raw materials to the building and construction industry	• Appropriate polices are in place to manage existing and future BRM supplies over the long term • BRM are optimally used for their highest purpose • The securing of BRM sites is managed through robust strategic sequential land use planning and development control prior to final land use • Demand for BRM is partly managed through compact settlement structures that contain high-density built form.
Exploration and resource development	New discoveries of world-class resources continue to be made and developed in Western Australia	• Mineral and petroleum resource inventories and production are maintained or increased compared to 2013.	• Western Australia is the national and global destination of choice for responsible mineral and petroleum investment • The State maintains support for exploration activity and resource development through informed land-use and policy decisions • Western Australia leads the world in exploration knowledge and technology • Collaboration with the Commonwealth Government enhances exploration activity

State challenges

Increased global resource supply and competition

The global resources investment environment is becoming more competitive. Emerging resource provinces and major projects in Africa and South and North America are targeting Western Australia's major markets in Asia and competing with the State for potential mining and petroleum investment.

Global markets

The resources industry is not immune to global economic conditions. The industry's proximity to expanding Asian economies is important, with China, Japan and South Korea accounting for around three-quarters of Western Australia's mineral and petroleum exports. Changes in these economies will affect demand for Western Australian resources and foreign investment in the sector.

Commodity prices and exchange rates

Most of Western Australia's commodity exports are traded internationally and priced in US dollars, leaving the industry exposed to fluctuations in both commodity prices and international exchange rates. While the exchange rate often acts as a 'stabiliser' in response to major commodity price changes, volatility in both of these factors creates management challenges for industry, in terms of international competitiveness and profitability, and for government, primarily through the impact on royalty revenues.

Industry costs and productivity

Increasing capital and operating costs, especially labour costs, affect profitability. Commodity price easing for minerals including iron ore, nickel and alumina has emphasised these cost factors, resulting in project and expansion deferrals and a shift in focus to cost management.

High construction labour costs and capital borrowing difficulties are affecting new 'greenfield' project decisions, especially where new infrastructure is a key component. Industry is developing new technologies, such as remote operations, to further manage costs and improve productivity.

Exploration

Ongoing exploration is essential to the discovery of new deposits for a sustainable mining and petroleum industry. Access to land is fundamentally important. Exploration is a high-risk and capital-intensive activity and increased costs, time delays, and complex approvals process act as a disincentive. This could encourage a shift in exploration investment to other parts of the world considered to have more competitive investment environments with similarly prospective geology. The State needs to maintain support for exploration activity and resource development through informed land use and policy decisions.

Governance

Commonwealth-State relations affect resource project approval processes, particularly in relation to offshore petroleum developments and onshore environmental approvals.

Australian Government involvement in environmental approval issues increases demands on the State to ensure legislative processes are robust and efficient.

Technology that can streamline process management in regulatory and approval functions is also essential to maintain and improve competitiveness.

Industrial lands

Export-oriented heavy industries often require land in strategic industrial areas. These areas generally have multiple proponents and require efficient access to key transport infrastructure. Land suitable for strategic industrial areas is limited and cannot be easily replicated or replaced.

Strategic industrial areas are of significant economic and strategic importance for the State, and require suitable and appropriate integration with surrounding compatible land uses and buffer areas to ensure long-term sustainability.

Regional attractiveness

The attractiveness of regional living and settlements remains a challenge for the resources sector. Improving housing affordability, investment in infrastructure, including multi-use infrastructure, creating attractive places and the delivery of key services will enable a level of liveability that retains families, as well as attracting and growing a regional workforce.

Of particular importance to the State's resources economy will be the planning of:

- regional centres and towns that are desirable places to live;
- regional towns that have services comparable to regional centres; and
- resource projects which can source the majority of their needs from regional supply chains and local knowledge where practical.

Basic raw materials

All industrial, commercial and residential development requires basic raw materials. Beyond construction basic raw materials also have a significant role in mineral processing and refining and in agriculture, and are subject to conflicting supply and access demands.

Development can sterilise resources close to the urban front by limiting extraction, resulting in increased pressure on distant sources. The resultant transport requirements increase direct and other costs, including an increased carbon footprint, congestion and road safety. To maintain current living standards, sand, limestone, rock aggregate and clay need to be affordable.

This presents a challenge for structure planning as supplies of basic raw materials affect the development and industrial capability of Western Australia. The challenge requires an integrated long-term view of current and future sources, improved rehabilitation and post-extraction capabilities, that leads to planning within a multiple land-use framework.

1.2. Education, training and knowledge transfer

Objective

Western Australia becomes globally competitive as a creative, innovative and knowledge-based economy

Stimulating knowledge and innovation within the State's economy allows Western Australia to maintain its economic competitiveness and fully develop and diversify the workforce.

Science, technology, innovation and research will be important contributors to the State's economy in the future. This strategy promotes increased education and research in traditional sectors, most notably regional knowledge-based industries.

Education will aim to achieve excellence and equity for every student, whatever their ability, whatever their circumstance, whatever their background and wherever they live.

Delivering educational outcomes and training opportunities for Aboriginal communities 'in place' will help communities to prosper and grow. Schooled young people who become lifelong learners will help meet the changing needs of their community and the State.

Maintaining and retaining a well-educated and highly trained population and associated workforce will ensure the State continues to be both nationally and internationally competitive.

Through the development of regional education centres, creative knowledge clusters, and virtual classrooms supported by world class information technologies, Western Australia will be better able to compete in the emerging knowledge-based economy.

This provides trading opportunities in the transfer of knowledge with other countries, particularly within the South East Asian market. It also maximises employment opportunities, ensuring a more equitable delivery between metropolitan and regional centres.

Overview

Enabling creativity and knowledge is both vital to the social wellbeing of communities and at the same time critical to advancing the Western Australian economy.

A focus on literacy and numeracy is key to the success of youth education. Confident learners are more able to adapt to the changing needs of the workforce. Improvements in telecommunications will assist in delivering learning across the State.

The changing nature of work and the increased knowledge and skill requirements across occupations will necessitate the development of more innovative, flexible and accessible training opportunities. This will provide greater opportunity for the State's workforce to better participate in the global knowledge economy.

Embracing the knowledge-based economy will change the make-up of the workforce and require higher levels of education, training and skills development. For example, the Square Kilometre Array is building Western Australia's capacity in radio astronomy, engineering and information communications technology.

The education sector has a major role in ensuring young people are prepared for relevant post-school options to enter and participate more fully in the workforce, higher education or vocational training, including for apprenticeships.

Some emerging economies, such as China and India, are making major investments in knowledge capital as part of their transformation away from their traditional role as low cost labour countries. This presents Western Australia with opportunities in the transfer of education, training and knowledge.

Innovation refers to the creation of both new economic opportunities by the application of new knowledge and technology and economic growth by using resources more efficiently. A culture of innovation across the economy will help to improve productivity and competitiveness.

Planning for education, training and knowledge transfer is an approach to secure innovation and a skilled workforce vital to drive enterprise.

One such initiative is the Construction Training Fund, which provides support for apprentices and trainees, as well as for industry workers, to upgrade their skills.

The State's existing technology and research base, rapid growth, strong economy and mobile workforce provide significant opportunities for strengthening innovative and creative industries.

Creative industries include: music and the performing arts; film, television and radio; advertising and marketing; software development; writing; print and digital media; graphic design and visual arts. Planning for these industries is important because they contribute significantly to the State's economy by providing a major new source of employment

Key facts

- In 2013, 419,493 students attended government and non-government schools. Since 2011, total enrolments have increased by 20,000.
- By 2023, it is projected that the number of students receiving primary and secondary education will increase by 150,000.
- Western Australia has five universities which offer regional programs and hosts a number of Centres of Excellence, Cooperative Research Centres and other major research facilities.
- Western Australian education exports were valued at $1.2 billion in 2010-11.
- Research predicts that Western Australia's need for tertiary and professional skills will outweigh vocation and trades-based skills.
- While growth in labour demand in the State is expected to be somewhat moderate over the next few years, broadly similar trends are expected for labour supply. These are key reasons why the State Budget has forecast unemployment rates for Western Australia of around 5.25% to 5.75% to 2016-17.

- Perth's creative industry segments employed almost 40,000 people and contributed $4.6 billion to the metropolitan economy in 2006. The flow-on value was an additional $6 billion, bringing their total contribution to more than $10 billion. In April 2006 there were 11,000 businesses registered for GST in Perth's creative economy, representing 6.6% of firms across all industries.
- Projections from Monash University show that employment growth in Western Australia out to 2016-17 is expected to come mostly from those jobs requiring a Certificate Level III vocational qualification or higher.
- The Australian Innovation Report 2011 suggests innovation will account for 62% of Australia's productivity growth in the long term.
- Western Australia's research and development expenditure was $4.6 billion in 2008-09, out of a total $27.7 billion for Australia.
- Western Australia's higher education research and development as a proportion of GSP is equivalent to the OECD average.
- Western Australian government's expenditure on research and development as a proportion of GSP is just below the Australian average; however, this ratio is impacted by the size of the Western Australian economy. On a per capita basis, the Western Australian Government is one of the leading investors in research.
- In 2009-10, Western Australia had the highest levels of business expenditure on research and development (BERD) as a proportion of GSP (1.59%). Western Australia's BERD as a proportion of GSP has been well above the Australian average since 2004-05.
- The Square Kilometre Array radio telescope is a $2.5 billion global project, with its low-frequency portion to be built in the Murchison area by 2020.

State challenges

Workforce and skills development are critical to capturing and creating knowledge. Current projections indicate Western Australia will not have enough skilled workers to meet the future demands of industry.

Coupled with this, the State consistently loses creative capital and innovative enterprise nationally and internationally to jurisdictions that better foster and support these sectors.

Western Australia must be able to compete not only for project investment but also for the human capital to support this investment.

Competing in a global economy means Western Australia will need to improve the attraction and retention of highly skilled populations.

A challenge will be to further improve educational facilities, broad-based cultural learning, accessibility to educational opportunities and greater investment in research and development.

Of particular importance is the provision of educational opportunities for 18 – 25 year olds in regional centres. Addressing this challenge will enhance the economic diversity, technological expertise and attractiveness of the State.

Equally as important as attracting global talent to Western Australia is the nurturing of talented people in order to stimulate new ideas and research entrepreneurship.

This will require ongoing commitment to the institutions and businesses that develop talent, such as universities, vocational institutes, creative industries and the school system.

Improving housing affordability, investment in infrastructure, creating attractive places and the delivery of key services in the regions will create a level of liveability that can retain rural families, as well as attract a varied regional workforce, in order to both stimulate and maintain education, training and knowledge transfer there.

Telecommunications facilities are also crucial to improving regional and remote education and training outcomes.

Improved teacher training and accessibility to training opportunities will enable a student-centred, demand-driven training entitlement model to develop that responds to the specific skills needs of the State.

The current reforms in the Vocational Education and Training sector aim to drive improvements in quality training, consumer information, and accessibility to training opportunities. These reforms will lead to a training system which is more responsive to the needs of students, employers and industry.

A key component of current reforms is the introduction of Future Skills WA, a new way in which training is subsidised and delivered in Western Australia.

Future Skills WA will provide guaranteed access to priority training opportunities, greater student choice of training provider, investment in skills to meet current and future industry needs and a sustainable training system.

Approach

Table 4 - A strategic approach to planning for education, training and knowledge transfer

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Knowledge and learning	The State provides world class educational opportunities	Knowledge and education attainment levels Number of educational institutions, plus their supporting facilities and programs	• Leader in educational and research activity associated with the mining and energy sectors, health, agriculture and environmental management • Regional knowledge-based industries stimulate economic activity • Specific programs for Aboriginal education and skills training are commonplace across the regions • Consistently high levels of funding for research and development • More regional educational infrastructure through greater use of technology and e-learning • Major university hubs compete globally for students, researchers and investment • Perth is globally recognised as a 'knowledge city'
Creativity and innovation	Increase in innovative enterprise and net gain in creative capital	Employment and economic value of creative industries Level of innovation and creativity in the resource sector Number of recognised centres of excellence	• WA is a world leader in resource-focussed service innovation • A high diversity and number of creative industries locate within WA • Innovative enterprises choose to locate in regional areas • WA consistently attracts and retains creative human capital and industries • Creative, knowledge and industry clusters are established throughout the State • The continued development of cultural infrastructure (such as the new WA Museum) results in a world-class arts and culture sector • WA is a globally recognised leader in the mining and energy sectors, as well as environmental and resource technologies and services. • WA is a global centre of excellence for mining support and research
Research and development	WA is a world leader in science, technological and services research	Level of research and development in WA Level of funding for research and development	• WA is a world leader in resource technologies and services for the mining, agriculture and energy sectors • WA continues to be a leading supplier of research services in environmental sciences and technology • WA is a world leader in the number of patents
Workforce and skill development	The State attracts, develops and retains skilled workers	Skill levels and diversity of the workforce Rates of workforce attraction and retention Change in dependence on out-of-State and international skills	• Regional communities are desirable places to live • Exceptional educational infrastructure for skills development • Timely systems and processes for skilled migration to the State • Skilled Western Australians are retained in the State • WA continues to be a resources hub, which attracts global talent • WA continues to be renowned for its leadership in exploration, mining and resource management • WA has world-leading resources-based education institutions • The resources sector continues to have access to a highly skilled and flexible labour pool

Figure 23 - Planning for tourism

1.3. Tourism

Objective

To access and enhance a range of experiences unique to the State

Tourism, supported by strong investment in, and development of, Western Australia's cultural features and activities, helps to build the State's identity and to generate a sense of place.

Western Australia has a unique range of experiences to offer that includes the celebration of Aboriginal culture, iconic landscapes and biodiversity and major festival events. The infrastructure that supports these activities is an important contributor to the State's economy.

The Government's 'State Tourism Development Priorities' include:

- hotel development in Perth;
- redevelopment and improved aviation access at Perth, Busselton and Broome Airports;
- regional infrastructure, such as caravan parks;
- ecotourism initiatives, such as Naturebank;
- redevelopment of beachfront and waterfront precincts, such as Scarborough Beach;
- cruise shipping; and
- improved cultural infrastructure and tourism opportunities such as an Aboriginal Cultural Centre in Perth and the new WA Museum.

Overview

Tourism contributes to the Western Australian economy through the attraction of people, business investment and new enterprises.

The diverse natural and cultural landscapes of the State offer an array of unique experiences to visitors and communities.

Where potential exists, it enables a region to capitalise on its competitive advantage in terms of the unique experiences it affords.

These experiences include iconic landscapes, spectacular environments, surfing and marine activities, fine wines and dining, local produce, and outback adventures. These experiences support the cultural identity of a place and also the region.

Perth is the key entry point into Western Australia and is recognised as a modern, vibrant, hospitable place that is 'on the move'. Perth plays a crucial role in welcoming tourists to a diverse and unique range of extraordinary experiences throughout the State.

Western Australia's environment and landscape character create a unique and attractive holiday destination and ecotourism is one of the State's key tourism markets.

Ecotourism attractions are popular with locals and visitors alike, and include the coastline and waterways, mountain ranges and ancient land forms, unique karri, tingle and jarrah forests and native animals, as well as a range of nature-based activities such as hiking, rock climbing, swimming, kite surfing, bushwalking, four-wheel driving, and caving.

The identification and release of sites within the conservation estate for the development of eco-accommodation throughout Western Australia is progressing under the Naturebank initiative.

In addition, the Kimberley Science and Conservation Strategy aims to promote nature-based tourism opportunities in regional Western Australia.

With pastoral leases being renewed in 2015, the future use of Western Australia's Rangelands represents a major opportunity to develop additional tourism product and attract third party investment.

An important consideration is the current tenure capabilities under the *Land Administration Act 1997* and future development of tenure options that can facilitate increased opportunities for tourism and at the same time improve the management of these areas.

Planning for cultural experiences provides enhanced social cohesion and helps create a sense of place. This will be reflected in the Aboriginal Cultural Centre in Perth, the new WA Museum and regional cultural and language centres.

Tourism can play a key role in conserving built heritage as well as cultural heritage particularly in regional locations. The development of heritage buildings for commercial tourism may sometimes be the only viable option to securing their future. Heritage tourism can contribute to the rejuvenation of regional and urban areas, and spread economic benefits across a wide geographical area through themed trails and driving routes.

The Meetings, Incentives, Conferences and Events sector provides significant revenue to the State, particularly for small and medium-sized businesses. For example, the attraction of high-profile screen productions to film in Western Australia has economic benefits for tourism operators and local businesses, especially in regional areas. The subsequent cinema release or television broadcast can be leveraged to promote the State as a place to live, work and visit.

Cruise shipping is another important part of the State's tourism industry and Western Australia is well positioned to capture some of the rapid growth of the global cruise shipping market. The Western Australian Cruise Shipping Strategic Plan 2012-2020 identifies priority initiatives to strengthen capacity and improve destination marketing, port infrastructure and destination development.

Key facts

- Western Australia offers a range of experiences for all visitors to the State. For the year ending December 2012, 7 million overnight visitors came to or travelled within the State, as well as an additional 14.3 million day-trippers. These visitors spent a total of $7.5 billion.
- The number of visitors from China and India increased 50% and 16% respectively in 2012, with the increase from China due primarily to direct flights to Perth on China Southern Airlines commencing in November 2011.
- The China market is anticipated to be Western Australia's largest area of growth in the next 10 years, and Western Australia is targeting an increase from 18,000 visitors in 2011 to 100,000 visitors in 2020.
- Recent statistics indicate that the Western Australian tourism industry generates more than 83,000 jobs (directly and indirectly) and contributes over $6.3 billion in GSP.
- It is estimated that by 2020 an additional 1900 hotel rooms will be required in Perth and that an additional 9600 workers will be required in the tourism and hospitality industry in Western Australia.
- Research shows that 78% of overseas visitors to Western Australia are seeking an Aboriginal cultural experience, and that 35% actually experience one.
- Western Australia's rangelands compromise 87% of the State and provide some of the State's iconic landscape attractions and experiences.
- In 2011-12, the WA cruise shipping sector generated $185.7 million in expenditure, which represents a significant growth of 150% compared to the previous year.
- Perth is ranked in the top 10 most liveable cities in the world according to the Economist Intelligence Unit's liveability survey, 2013.
- Investment of $428 million in the State's new WA Museum in Perth represents one of the most significant investments in cultural infrastructure in the world today.
- Purnululu National Park, Shark Bay and the Ningaloo Coast are natural wonders that have been given World Heritage listing. Fremantle Prison also has World Heritage status as part of the Australian Convict Sites listing.
- Major tourist sites with National Heritage listing include the West Kimberley, Dampier Archipelago (including Burrup Peninsula), Porongurup National Park and Stirling Range National Park.

State challenges

The conservation of significant and iconic landscapes and eco-tourism assets will be essential to sustaining and enhancing tourism. Planning for climate change adaptation is important to the sustainability of many key tourism sites.

An increase in tourism infrastructure to exploit the State's unique opportunities is important for the future diversification of the economy, especially regionally.

However, this will require targeted investment and strategies particularly in regional areas which have traditionally relied on the mining and agricultural industry sectors. For example, incentives are needed to support hotel development and infrastructure for caravan parks and camping grounds.

A key challenge facing tourism development in Western Australia is the shortage of hotel rooms in Perth, which impacts the State's capacity to attract visitors and conferences, and to disperse tourists to regional areas. Addressing this shortage will involve the application of incentives designed to facilitate investment in hotel development in Perth and regional Western Australia.

Recognition of the value of the tourism sector is paramount to protecting high value sites from other competing land uses.

More informed research and assessment of tourist use of cultural landscapes, experiences and places will assist decision-making.

To be able to fully realise the tourism potential of Western Australia's rangelands it is essential to be able to attract tourism industry investors capable of developing new attractions, such as signature lodge accommodation.

Once these developments are in place other secondary tourism and servicing functions can establish and add to the prosperity of the broader rangelands. However, the viability of capital investment is dependent on the nature and conditions of land tenure, which can affect ownership and tenure security.

Most of the State's natural features are located in remote, sparsely populated areas. There is a need to provide the infrastructure that improves levels of visitor amenity and accessibility, while protecting the environment. Servicing tourism destinations with appropriate transport linkages would reduce the length of time and cost involved in visiting these remote experiences.

The development of additional regional walking, cycling and drive trails will expand the range of world class experiences in the State.

The upgrading of roads to facilitate easier access to many tourist destinations is needed to gain substantial increases in tourist numbers and significant boosts to the regional economy of many areas.

For instance, sealing the Great Central Road, or Outback Way, would enable more tourists to use this significant tourism adventure route, allowing them to drive across outback Australia from Queensland to Western Australia.

Enhanced recognition and investment into cultural tourism (the arts, sports, cultural history and heritage) is required. Large public open space areas have the ability to be designed and managed for cultural activities, events and festivals.

Telecommunications can also be used to link regional areas with major cultural events, such as music concerts and festivals. The provision of diverse cultural experiences is essential for a successful tourism economy.

It is important that Aboriginal experiences are woven into the development and promotion of the State to ensure it becomes an integral part of what makes Western Australia special. This includes opportunities to integrate Aboriginal culture and product into events. This approach will ensure the ongoing success and sustainability of Aboriginal tourism businesses and enhancement of the Western Australian tourism industry.

Approach

Table 5 - A strategic approach to planning for tourism

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Infrastructure	The State's tourist attractions are highly accessible	Utilisation of tourism accommodation and facilities across the State	• Increased accessibility to a range of diverse tourism experiences throughout the State • Regionally based workforce training and accommodation is planned to meet demand • Public open spaces are designed and used for cultural activities, events and festivals • Substantial increase in short stay and tourism accommodation in the metropolitan area and in strategic regional areas • Increased cultural infrastructure includes new WA Museum and Aboriginal Cultural Centre • Infrastructure is provided to meet the needs of the caravanning and camping sector • Digital infrastructure enhances tourism services
Tourism planning	Tourism is managed as a key contributor to the State's economy	Value of tourism to the State economy	• The number of tourism precincts increases to further contribute to the growth of the State's economy • Highly valued tourism sites are secured • High quality arts events and festivals are planned for and delivered throughout the State • The State's creative industries are engaged to help build upon and promote tourism efforts • Tourism planning is delivered in a holistic and collaborative manner • Geotourism is promoted, capitalising on the State's unique geoheritage values • Rottnest Island's geoheritage values are recognised by it achieving the status of a UNESCO geopark
Nature conservation	Ecotourism and outdoor recreation enhances the quality of the State's experiences	Level of conservation through tourism Level of ecotourism and outdoor recreation in the State	• Ecotourism continues to conserve the natural environment in line with sustainable conservation principles • Ecotourism promotes visitor experiences that interact with nature • Tourism is enhanced through a balanced relationship between ecotourism and nature conservation • Eco-accommodation sites are identified and developed throughout WA • Rangelands tenure options facilitate opportunities for ecotourism and conservation • A risk management approach to climate change is applied • The value of tourism is considered in the ongoing conservation of the State's natural resource assets
Investment	The State's economy is improved by attracting investment into tourism	The amount of economic investment into the tourism industry	• Global and domestic markets for tourism and culture are promoted and secured • WA's unique identity, history and sense of place continues to be promoted • Crown land tenure arrangements facilitate/enable investment opportunities • Investment enables enable a wider range of affordable and accessible tourism and cultural experiences
Cultural planning	Western Australia celebrates and embraces its culture and heritage	Extent of cultural experiences across the State	• The State has multiple world class cultural and heritage destinations and experiences • Aboriginal culture and heritage continues to be celebrated and showcased • Cultural participation is available to all communities regardless of location or demographics • An ongoing collaborative approach to the development of the State's Aboriginal tourism industry

Figure 24 - Planning for agriculture and food

1.4 Agriculture and food

Objective

To enable the State's food supply chains to meet the projected demands of its domestic and global food and fisheries market

The importance of food sources is growing throughout the world, as demand begins to outstrip supply and opportunities emerge to supply domestic and foreign markets. The drive to guarantee food sources has already prompted the governments of some countries to buy land in others for growing food that could be diverted from global markets during shortages.

In Western Australia, food production capacity is important, not just for the local market, but also for a range of export markets, with the State exporting 80% of its agricultural production.

To provide fresh food throughout the State and to remain globally competitive in food production, the State's agricultural production systems need to diversify, maintain high standards and become more sustainable.

Western Australia will adopt the best agricultural practices and supply-chain efficiencies, which themselves need to be supported by infrastructure.

New agricultural precincts in Western Australia will utilise available water, arable land, and proximity to Asian markets to assist with food production and local distribution networks.

Overview

Western Australia has a diverse food supply system, with several climatic zones allowing for an extended seasonal supply. At the same time the food system is vulnerable to:

- seasonal variability and climate change forcing shifts in production areas
- the availability of prime agricultural land
- labour shortages and costs
- the cost and supply of agricultural inputs, such as lime for soil acidity, and oil-based inputs
- product integrity and biosecurity protocols
- disruptions to supply logistics
- the accessibility and availability of water and power.

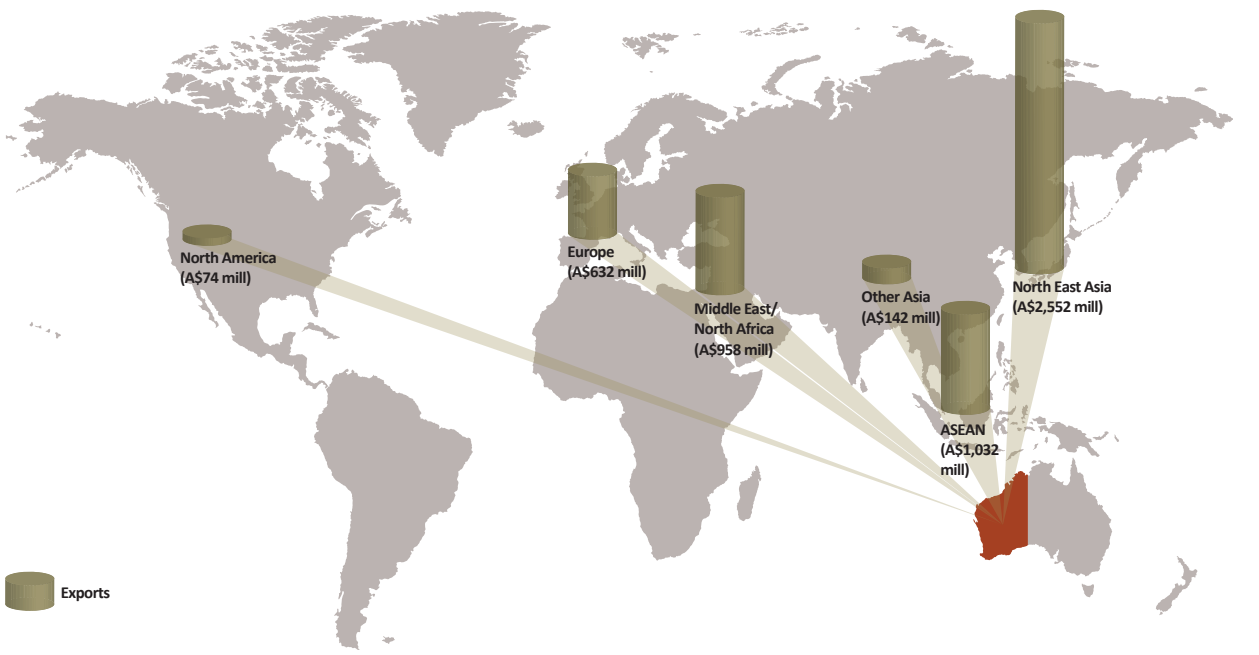
The State has a small food processing sector. Western Australia transport logistics are reliant on a small number of entry and exit points. The Nullarbor freight lines are used for interstate imports and exports while international imports and exports are principally by sea through Fremantle port and by air through Perth airport. Agricultural products are also exported through the ports of Albany, Bunbury, Esperance, Geraldton and Kwinana.

The demand for food will grow with the population, making the protection of existing and potential food production areas and their power and water supply essential, especially for those supplying more perishable food products.

Worldwide food demand and food prices are also increasing, driven by global population growth. Western Australia continues to gain an increasingly positive reputation for safe, high quality food in overseas markets.

Western Australia has climatic zones and landscapes that provide for a range of agricultural, pastoral and horticultural food processing industries. Western Australia also has a freight advantage, as it is very close to Asian markets (Figure 25).

Figure 25 - Western Australia's key agricultural export markets



Source: Western Australia's Agrifood, Fibre, Fisheries and Forestry Industries 2013.

The elements most important for monitoring are:

- the availability of food when and where it is needed
- the affordability of nutritious food
- the area of land used for agriculture and food production.

Western Australia is an important producer and exporter of high-quality grains, wool, meat, live animals and fish; it also imports a substantial quantity of food: 80% of its processed foods and 100% of its sugar, yeast, preservatives and packaging.

Western Australia is heavily reliant on a very small number of entry points and its relative isolation means it has the largest distribution centres in the nation, taking three days to restock from interstate and two days to restock intrastate.

Western Australia's distribution centres carry 18 hours' worth of fresh and dairy goods, and four days' worth of frozen and dry goods (twice as long as distribution centres in the eastern states).

Food supply in Western Australia is therefore vulnerable not only to the amount of local production, but also to disruption in the supply chains for a wide variety of foodstuffs.

Currently, on average 12% of household budget is spent on food. For some groups it is much higher; food accounts for approximately 21% of expenditure for households whose primary source of income is the aged or disability pension.

The State's economy has long been supported by businesses that produce, process, distribute and market food products such as grain, wool, meat, wine and seafood. Western Australia exports 80% of the State's agricultural production and has a reputation for safe, high quality goods in overseas markets (Figure 25).

Regional economies rely heavily on agriculture, fishing and forestry with significant flow-on benefits to food manufacturing and processing, industry, tourism and hospitality. There is an increasing expansion of the agricultural sector in the Kimberley, Pilbara and Gascoyne.

Commercial fishing, including pearling and aquaculture, contributes around $1 billion to the State's economy each year, providing direct employment for 5,000 Western Australians with many more jobs in associated service industries. Based primarily on small family businesses, 85% of the State's commercial fishing activity is conducted in remote coastal communities.

Monitoring shows that Western Australia's marine environment remains in excellent condition, with the vast majority of the State's commercial fisheries classed as sustainable. Commercial fisheries are managed by such means as limiting licences issued, total fishing time or the quantity of fish that can be landed, seasonal closures, specific measures to protect juvenile or breeding fish and permanently closing some fishing areas to protect important habitats.

The State's commercial fishing industry is mainly based on low-volume, high-value products, such as the western rock lobster, and its fisheries' exports have given Western Australia an international reputation as a premium quality seafood producer. Most of the seafood is exported, principally to China (including Hong Kong), Japan, USA, Taiwan and Singapore.

Future local access to fresh food, derived from a well-managed environment, is important to sustaining healthy and liveable communities. A competitive and diversified food sector is a vital component of future economic development.

Continued investment in research and development will ensure ongoing innovation and help Western Australia remain globally competitive in targeted food production and supply.

Key facts

- Western Australia is an important producer and supplier of high quality grains, wool, meat, live animals and fish for international markets.
- To meet the food demands of a growing world population, global agricultural production will need to double by 2050.
- Two-thirds of Western Australia's food manufacturing facilities are clustered around the Perth, Peel and South Western Regions.
- 75% of Australia's live sheep exports come from Western Australia.
- The combined value of sheep meat and live sheep exports increased from $367 million in 2004-05 to $485 million in 2011-12.
- The poultry industry has 8.5 million birds supplying mainly the domestic market with both eggs and meat.
- Fish farming is anticipated to dominate the world seafood market as demand for fish increases by 37 million tonnes between 2009 and 2030.
- The State's grain production is the fifth largest export industry after iron ore, gold, crude petroleum and natural gas. Grain exports have increased from $2.7 billion in 2004-05 to $3.2 billion in 2011-12.
- Horticultural production in Western Australia represents about 20% of the national total, with an estimated value of $788 million in 2010-11.
- Forest industries contributed $1.06 billion to Western Australia's economy in 2011-12, with approximately 3,400 people directly employed in timber related industries. The total value of forest product exports from Western Australia was $224 million in 2011-12.

- Fisheries exports from Western Australia in 2012-13 were valued at $388 million, with $282 million (73%) of this from Western Rock Lobster and pearls valued at $83 million (21%).
- It is estimated that over 740,000 Western Australian's participate in recreational fishing each year involving up to 7,000 (direct and indirect) full-time jobs, generating an economic value of $570 million.
- In 2000 the West Coast Rock Lobster Managed Fishery became the world's first fishery to achieve independent sustainability certification from the Marine Stewardship Council (MSC). In 2012 it became the world's first fishery to maintain its MSC certification over three successive five-year periods.
- Western Australia's major commercial fisheries - rock lobster, abalone, prawn and scallop - are low-volume, high-value fisheries, accounting for about 90% of the market (by value). The remaining 10% comes from a large number of small commercial fisheries, many based in inshore and estuarine areas.
- The Patagonian toothfish, swordfish and tuna fisheries are managed by the Australian Government.

State challenges

In the face of climate variability and increased global competition, the State's food sector faces a challenging future. Of particular concern will be:

- water, energy and telecommunications infrastructure
- freight logistics and transport systems
- storage and processing facilities
- attracting and retaining skilled labour in the agricultural regions
- fragmentation of rural land holdings
- the provision of fresh and nutritious food across the State.

There needs to be integration in planning for the requirements for both the land and the water needed to secure long-term food production.

Australian agricultural production and exports will be adversely affected by highly variable seasonal conditions and climate change. Appropriate adaptation and mitigation strategies will enable businesses to better and more rapidly respond to seasonal variability and climatic trends through policy, regulatory and economic changes.

Reduced rainfall in the South West will limit the future expansion of irrigation in this region and necessitate investment in new and alternative water supplies, as well as increased water use efficiency.

Opportunities for expanding irrigation are also being investigated in northern Western Australia, including the Kimberley, the Pilbara hinterland using excess water from mine dewatering, and the Gascoyne region.

Agricultural-based water management activities can reduce the environmental impact of surplus mine water discharge and make best use of water resources.

Programs are in place to address secondary salinity in the Wheatbelt, which affects low-lying land, wetlands and water courses surrounding agricultural pursuits in that region. Oil mallee is being cultivated in large areas to address this problem and provide biomass for renewable energy projects.

To counteract soil acidity, which poses a major risk for sustained agricultural production, there is a need for strategic planning to secure basic raw materials, particularly lime and gypsum resources.

Producers are experiencing changing community expectations about safe, eco-efficient and ethical food production systems. Addressing these concerns may impact on the cost of production.

More people are fishing and accessibility to fishing areas is improving. The challenge for the future is to maintain the good status of the State's fisheries and aquatic ecosystems in the face of rapid population and industrial growth, the proliferation of efficient and affordable fish-finding technology, and changing global environmental conditions that are affecting Western Australia's aquatic ecosystems.

Prime agricultural land as well as the land required for intensive agriculture, food processing and manufacturing, infrastructure corridors (rail, road and related services) and food distribution facilities are under constant threat from urban expansion and the fragmentation of rural land into smaller lifestyle holdings.

The continued loss of agricultural land close to cities and towns requires that measures are put in place to secure land for future agricultural and food industry production. This includes the need for the strategic identification of future land areas and precincts, the definition of buffers, the provision of land for infrastructure corridors and innovation to improve the general status of food security.

Continued fragmentation of rural land holdings presents a challenge to market competitiveness. Tighter controls and incentives need to be explored to ensure that the arability and productive capacity of agricultural land is protected and preserved.

Approach

Table 6 - A strategic approach to planning for agriculture and food

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Security	Sufficient, reliable and nutritious food for active living	The food supply is maintained	• Increased export and inward investment in the agrifood and fisheries sectors • Commercial agrifood production in peri-urban areas, with sufficient reliable, nutritious food for the local market • Adaptation measures undertaken in response to climate change, salinity, biosecurity and natural hazards • Well-planned emergency response to a disruption of the food supply chain
Prime agricultural land	Existing and future land suitable for food production is identified and protected from encroachment and further fragmentation	Economic value of agrifood production	• Economic value is assigned to the quality and quantity of agricultural land • Strategic food production areas are well-serviced by key infrastructure to enable their sustained activity • Fragmentation of agricultural land is limited in targeted areas of the State • Sufficient water and power is available to sustain agricultural enterprise • Ecosystem functions are retained, including natural habitats
Global competitiveness	Diverse food products and sustainable production systems	Economic value of agricultural commodities, including food exports	• Added value and efficiency improvements in food production and processing throughout the State • Integration of agriculture, carbon farming and biofuel production • The export and marketing opportunities for agricultural commodities are expanded globally
Infrastructure	The demands and needs of both agrifood trade and commerce industry sectors are well-serviced by infrastructure	Increase in serviced land for agrifood precincts and distribution centres	• Regional and State transport hubs and intermodal terminals established • Adequate infrastructure for transport, telecommunication, gas, water and electricity • Strategic sites and buffers established for downstream food processing and distribution
Fisheries	Food production is enhanced while aquatic biodiversity is maintained	Economic value of fisheries food production	• Fisheries production is maintained on a sustainable basis • Aquaculture and mariculture increased for State and global markets • Recreational fishing is promoted in areas that have minimal impact on fisheries

Tractor ploughing wheatfield, Northam, Western Australia.

Figure 26 - Planning for remote settlements

1.5 Remote settlements

Objective

To maintain economic and community development through improved connectivity, services and cultural support

Remote settlements are critical to the State's economic and social wellbeing and are central to the Western Australian experience.

Native title and other land tenures enable the housing, essential and social services necessary to sustain remote settlements.

Overview

A 'remote settlement' can include informal towns, remote road houses, Aboriginal communities, workers' camps, tourist camps and remote aerodromes. For the purpose of this document, remote settlements are those that are distant geographically from major towns. They tend to occur in regions that are north, south-east and east of the Wheatbelt.

Remote settlements are a unique expression of the resilience and commitment of Aboriginal, Asian and European culture to Western Australia.

Many remote settlements are essential to developing the State's resources. They are linked by a variety of land, sea and air transport networks. The establishment of remote worker's camps are fundamental to the State's economic wellbeing, as they are critical to the ongoing productivity of resource extraction enterprises.

The historical formation of remote settlements varies. Most Aboriginal settlements are either former mission settlements or homelands. In contrast, workers' camps, remote road houses and small or informal towns have generally been established in response to economic demand and to provide periodic way stations for overland transport.

There are up to 150 Aboriginal settlements in Western Australia, with over 100 smaller outstations. These settlements have generally developed without regulated essential, municipal or social services and outside a planning framework. Supporting such settlements provides a cultural and social dividend to the State.

Town layout plans outline the provision of housing, essential services and social infrastructure for settlements particularly those accessible by reliable transport routes. The servicing of these settlements often relies on native title determinations and coordination between State and Australian Government agencies.

The stand-alone road house is a characteristic feature of remote regions across Australia. They are a unique part of the Western Australian experience and are essential to the State's transport network.

Opportunities exist particularly through advances in telecommunications to develop existing and proposed remote road houses and Aboriginal settlements into a wider network of service hubs that focus social service provision and support the local economy.

There are a number of small and informal towns in remote regions that are recognised as towns, but have characteristics that tend more towards being remote settlements. These include tourist camps, pastoral centres, declining mining towns and small isolated towns. Such small and informal towns are unique places which retain heritage values and have grown in response to economic and social need.

Places such as Gascoyne Junction and Murchison are characteristic of the Western Australian experience, and have developed in the absence of formal structures such as appropriate land tenure, housing and regulated essential services. Supporting the survival of some of these places provides a cultural and social dividend to the State.

Remote settlements populated exclusively by a non-resident workforce that exists to temporarily service the agriculture and resource sectors are generally referred to as workers' camps and are common in the Pilbara and Goldfields. These workers' camps are generally proximate to resource sites, temporary and have limited social services.

Key facts

- There are up to 150 Aboriginal settlements in the remote regions of Western Australia.
- There are more than 20 remote road houses in the remote regions of Western Australia.
- There are up to eight small and informal towns in the remote regions of Western Australia.
- The number of workers' camps in Western Australia is not readily determined.
- Most remote settlements are on Crown land.
- Many remote settlements are on land that is subject to native title claim or determination.
- There have been 44 determinations that native title exists in Western Australia with 35 of those determinations by consent of the parties.
- Essential services provision to remote settlements is usually discrete and unregulated.
- The typical annual investment (Australian and State Government) into housing and essential services for Aboriginal settlements is $225 million.
- The typical annual investment (Australian and State Government) into aerodromes on remote settlements is $100 million.
- According to the 2008 ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS), 13% (43,826) of Australia's estimated Aboriginal population aged 15 years and over lived in Western Australia, with nearly half (43%) living in remote areas of the State.

State challenges

Like most of Western Australia, remote settlements are reliant on a framework of supporting structures, including appropriate land tenure, native title resolution and adequate housing, reliable access, essential services, and social and municipal service provision.

However, remote settlements do not always have all the basic structural elements of a regional town or centre.

The challenge is to ensure that the economic and social role that remote settlements play is not lost due to lack of adequate support.

Issues relating to both the lack of and the cost of food supplies are of considerable concern to remote communities. Since most of the supplies are transported by road, the state of the roads is critical for a regular supply. Severe weather events can close roads for weeks.

The long freight lines involved can result in a severe deficiency in the fresh food supply and its poor condition when presented for sale, as well as a prohibitive cost for all food items. This impacts negatively on the nutritional levels of people in remote communities and creates viability problems for the food stores themselves.

Supporting remote settlements presents a range of challenges to all levels of government. For example, Commonwealth agencies with specific responsibilities for Aboriginal Australians, particularly for social welfare and outstations, are critical to the future of these settlements.

Local governments are increasingly involved in providing a range of services and infrastructure to remote settlements.

For this to continue sustainably funding and governance arrangements for municipal services may need to be reviewed.

The network of community resource centres throughout the State will provide a useful avenue for the delivery of remote services and information.

In addition, many regional towns have permanent workers' camps that are integrated into the social and economic life of the town. Such camps provide a catalyst for investment into a range of social services.

However, most workers' camps are based on the premise of a fly-in-fly-out (FIFO) workforce, which is a workforce that lives elsewhere but resides at the camp for the duration of a working term.

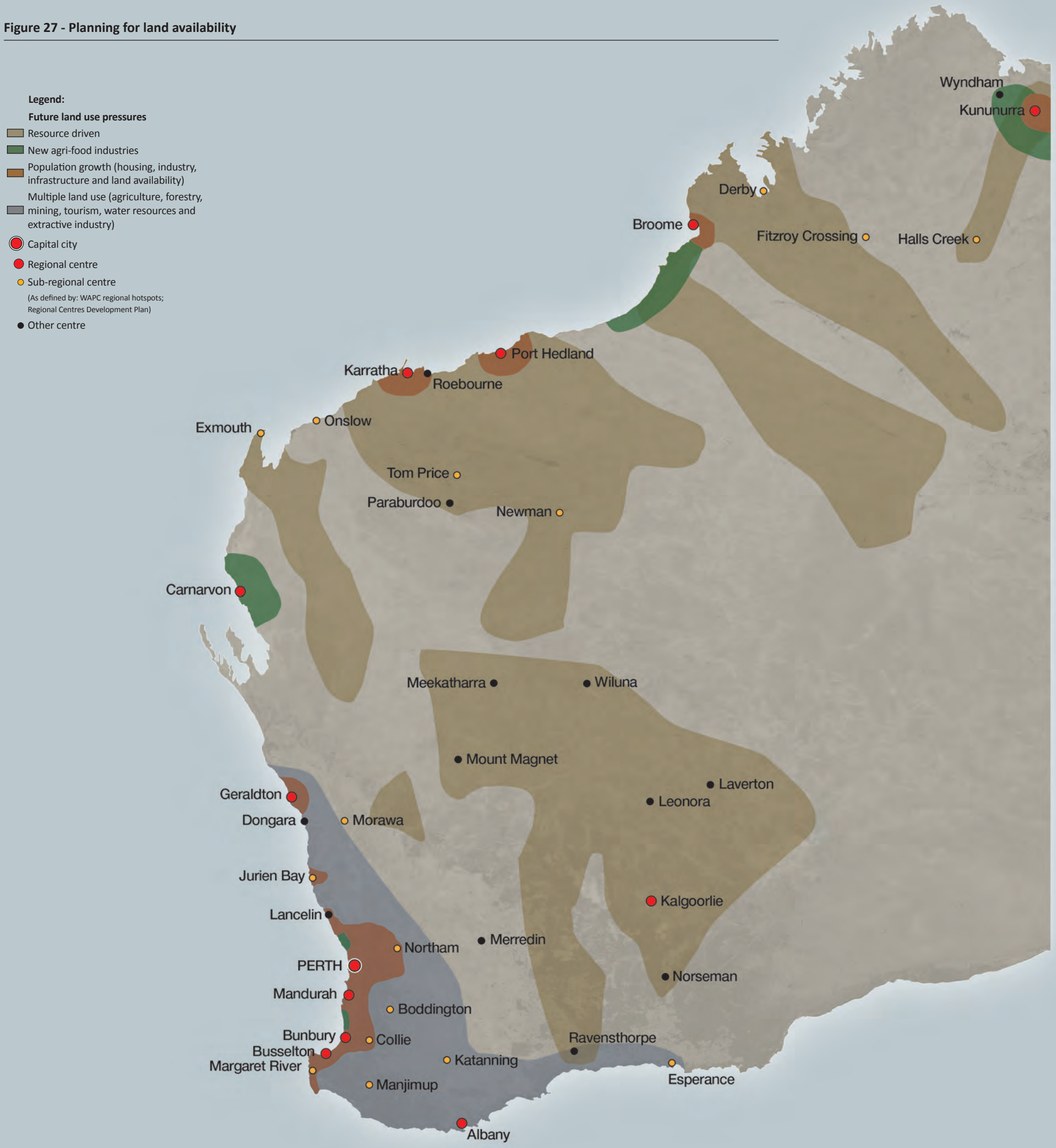
Balancing the needs of a region and its people with the operational imperatives of the resources sector and the situation of Aboriginal communities presents a range of challenges and opportunities.

Approach

Table 7 - A strategic approach to planning for remote settlements

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Land tenure	Appropriate land tenure for all remote settlements	Number of remote settlements with resolved land tenure arrangements in place	• All remote settlements across the state are on appropriate land tenure • Crown land tenure arrangements enable essential services to be provided in a timely and coordinated way
Native title	Native title resolution for all remote settlements	Number of native title claims determined and Indigenous Land Use Agreements resolved for remote settlements	• Native title rights and interests are settled for all remote communities • Native title arrangements foster economic and/or cultural outcomes
Housing and essential services	Remote settlements have access to acceptable housing and essential services	Number of remote settlements with drinking water quality management plans	• Acceptable housing and essential services are in place for all remote settlements across the State • Increasing local participation in the delivery of local government services
Social services and accessibility	Remote settlements have access to adequate social services and be accessible	Number of remote settlements with acceptable social services, especially education and health Number of remote settlements with accessibility to emergency and essential services	• Acceptable social services and accessibility, especially for emergency services, are commonplace
Structure planning	Unified government service provision to all remote communities	Number of Indigenous community layout plans endorsed	• An increasing number of remote settlements are integrated into local planning schemes • Arrangements for the coordinated delivery of government services are in place and regularly evaluated
Fly-in / Fly-out (FIFO) Workforce	Remote settlements have the capacity to accommodate and support FIFO workforces where relevant	Level of physical and social infrastructure in remote settlements that cater to FIFO requirements	• All remote settlements that cater to FIFO have an acceptable level of support • The number and type of services provided for FIFO workforces in a remote settlement is comparable to similarly sized settlements elsewhere in the State • All permanent workers' camps have the required physical and social infrastructure

Figure 27 - Planning for land availability



1.6 Land availability

Objective

To ensure the sustainable supply, use and development of land

A variety of land tenures supported by infrastructure services will ensure that affordable land is ready for development and available to the market.

The Urban Development Program, which includes the *'Urban Growth Monitor'* and *'Regional Hotspots'*, will continue to track land demand and supply trends as well as infrastructure service needs in Western Australia's major urban and regional centres.

The resources industry successfully coexists with other land uses and creates positive outcomes in the areas of conservation, cultural heritage and regional economic development.

Measures will be in place to secure land for future agricultural and food industry production, with a strong presumption in favour of the sustainability of prime agriculture land.

To achieve this objective Western Australia's land tenure arrangements are predominantly administered through or influenced by:

- *Land Administration Act 1997*
- *Planning and Development Act 2005*
- *Native Title Act 1993*
- *Mining Act 1978*
- Commonwealth laws.

Overview

As the State's population continues to grow, so does the demand for land for residential, industrial, educational, social, recreational and environmental purposes.

A long-term integrated approach to land availability, use and development is fundamental to economic growth, including the zoning of sites and corridors to support the development of infrastructure.

The supply of new land for development throughout the State is influenced by various constraints including periodic natural hazards (such as tropical cyclones, flooding, bushfires and storm surges), native titles, the prevailing tax regime, the zoning process, environmental approvals, mining tenements, pastoral leases and heritage values.

A range of land-use pressures apply across the State. Resource industry needs primarily influence the demand for land in the Pilbara while the South West experiences a mix of land-use needs (agriculture, conservation, tourism, sport and recreation, industry and urban development).

The demand for project-ready strategic industrial land in appropriate locations throughout the State has been increasing over the last decade.

Like any growing economy, the State needs basic raw materials to development land and build infrastructure to help sustain future growth.

Detailed planning programs in place for residential and industrial land supply such as the Urban Development Program the Economic and Employment Lands Strategy (Perth and Peel) promote improved staging of development and prioritisation of infrastructure investment to support economic and population growth.

The diversification of pastoral leases will enable greater synergies between agricultural and tourism development potential. The extent of capital investment is dependent on the "bankability" of land tenure.

The ability to attract signature developments will only be realised if land tenure, access and assembly is attractive to third party investment.

Efficient and coordinated land assembly involving the resolution of land tenure and project approval pathways, particularly through Crown land transactions, is an essential part of preparing land for development.

State Government agencies need to use strategic asset management to properly plan for future social infrastructure. To support community needs, sites for State Government funded social infrastructure should be identified as part of the planning system.

In accordance with the Government's strategic objectives, land will be identified and set aside having regard to the rate of development and community expectations.

The Government's Strategic Asset Management Framework provides the context for allocating resources to community infrastructure including public schools, hospitals, corrective facilities, graveyards, waste disposal, cultural events, sports and recreation grounds and open spaces.

Addressing the needs of the caravanning and camping sector to create more opportunities in developing regional tourism will improve the availability of appropriately zoned land and infrastructure.

Key facts

- Western Australia covers a land area of 2,527,620 km^2 (above high water mark).
- 8% of Western Australia is freehold land and the remaining 92% is Crown land.
- The Aboriginal Lands Trust manages 27 million ha (11% of Western Australia land).
- There are 519 pastoral leases managed by the Pastoral Lands Board, covering 90 million ha (36% of Western Australia).

State challenges

The provision of land for a range of uses, all with access to essential services, is a challenge due to Western Australia's size, demographics and its range of landscapes and climate zones.

Access to land for resource exploration and development is to be balanced with the agricultural, residential, industrial and conservation needs of the State.

In this regard, Crown land transactions need to continue to enable Crown land to support the integrated development and conservation of the State.

The limited capacity of current infrastructure and services provision can hinder the development of existing land parcels, thus increasing pressures on future land supply.

The economic potential of land will be significantly decreased if the appropriate measures are not identified and put in place to improve its current utilisation.

The future use and development of Western Australia's rangelands also needs to be considered as part of the State's future land supply in light of pastoral lease renewals and native title.

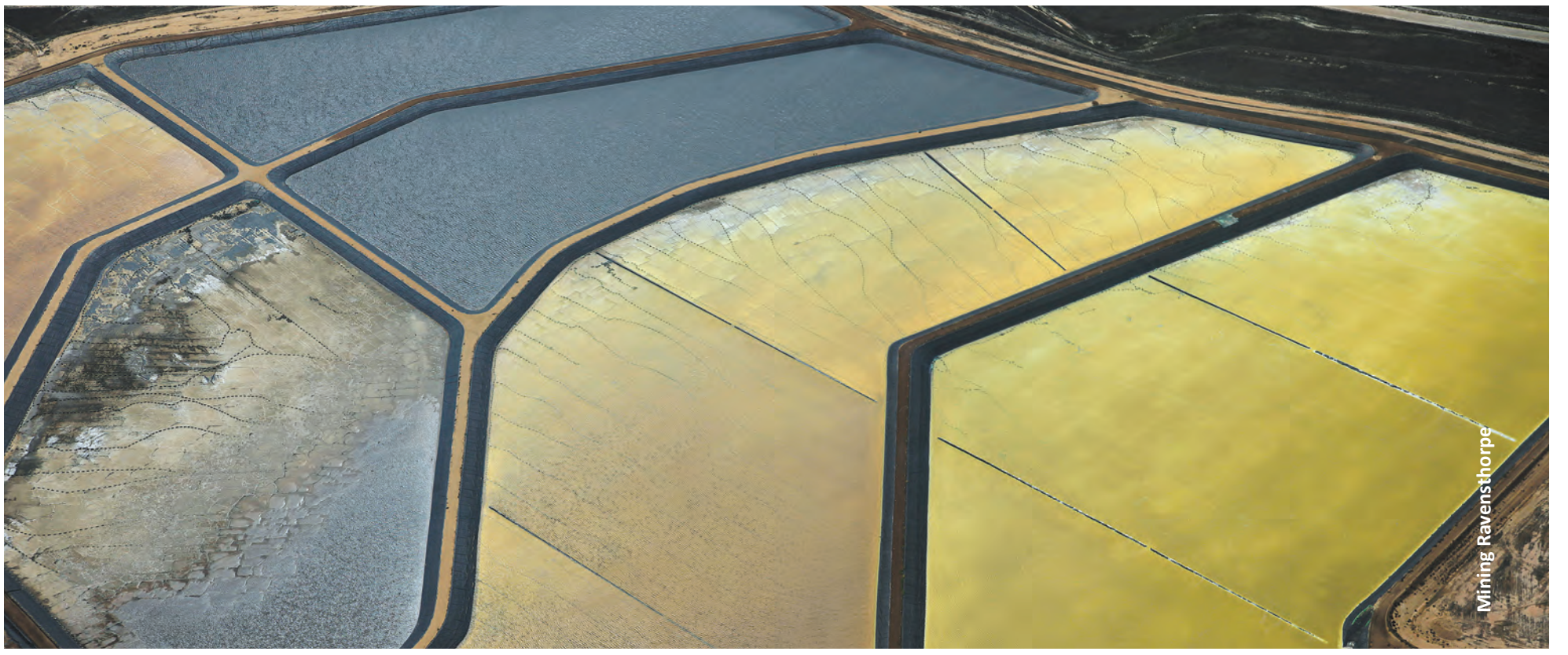
Private and public investment to service land for further development is influenced by the availability of local labour, transport and mobilisation costs, as well as seasonal weather conditions.

A special provision also needs to be considered for the availability, use and development of land for youth and aged living.

A key challenge is to move ahead of known land supply and demand trends and to plan and invest strategically for the State's growth.

In this regard structure planning and local planning schemes will ensure that strategic land assets, such as agricultural land, industrial lands, conservation areas and mineral and petroleum resources maintain their optimal potential.

The application of scenario-modelling tools will greatly assist integrated and timely land-use planning and development decisions.



Mining Ravensthorpe

Approach

Table 8 - A strategic approach to the sustainable supply of land for future development

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Population growth and distribution	The urban footprint has been established to contain and service population growth and distribution	The extent (hectares) of the urban footprint	• Population growth that is contained within pre-defined zones and structure plans with distribution determined through a robust strategic planning process • Infill and higher density housing are optimised where appropriate
Research	Timely, consolidated information is available on land use and development trends	The level of information on the amount, proportion and distribution of land developed throughout the State	• Land is used efficiently and appropriately to optimal levels • Land is identified and serviced to cater for demand levels • Environmental surveying and monitoring is regularly conducted • Land use and development trends and patterns are projected through a range of scenario modelling tools
Supply	The availability of land is proportionate to demand and fit for purpose	Amount of land zoned or reserved for specific purposes of strategic importance to the State	• Crown land transactions continue to facilitate the administration, assembly, acquisition and disposal of Crown land for the strategic needs of the State • Land continues to be made available for housing, recreation, transport, water sources and other public purposes • Policy measures and incentives that encourage the efficient use of land and the application of development technology • Land is zoned or reserved for nature conservation and heritage purposes • Land is zoned and secured for strategic industry and food production
Regional hotspots	Regional centres and towns have access to essential infrastructure and services	Percentage of development-ready (serviced) land that has been made available in regional locations	• Well-serviced regional towns that have a built-in capacity to cater for forecast growth and future expansion • Effective land supply monitoring and modelling tools guide infrastructure and servicing agencies
Affordability and accessibility	A variety of affordable land options have been established	Amount of affordable and accessible land that has been made available	• Affordable and well-located land that is accessible and well-serviced, especially to align with affordable housing demands • Government leads by example in the delivery of affordable land
Infrastructure	There is a seamless interface between strategic planning and service delivery	Percentage of development-ready (serviced) land that has been made available for industry and key infrastructure	• Development-ready land for key infrastructure is available to the market • Project-ready industrial land, including buffers and associated infrastructure, is secured • Structure planning in and around ports and intermodal facilities results in fast speed supply chains and improved productivity
Fragmentation	The fragmentation of land, particularly productive agricultural land and resource deposits, is limited	Percentage of rural land in consolidated holdings	• The fragmentation of agricultural and nature conservation land has been stabilised • Land is used in an efficient and balanced manner • The fragmentation of agricultural and nature conservation land is limited • The fragmentation of mineral, petroleum and basic raw material resources is limited until after their extraction
Tenure	Multiple tenure arrangements are in place	Types of land tenure available Number of pastoral leases that facilitate ecotourism and emerging agricultural commodities	• A suite of flexible land tenure arrangements facilitate State growth • Land tenure is determined in a timely and integrated way • A growing number of pastoral leases facilitate ecotourism and emerging agricultural commodities • Timely and integrated Crown land transactions continue to provide flexible land administration arrangements that facilitate State growth

2. Physical infrastructure

Objective

To coordinate physical infrastructure with development for community betterment

Physical infrastructure has a direct influence on the planning and coordination of movement, biodiversity, water and wastewater, energy, waste and telecommunications.

Physical infrastructure with appropriate capacity is essential for the development of the State and the achievement of sustained growth.

Improving physical infrastructure will provide benefits to public health, liveability, economic development and connectivity across the State. It will drive efficiency, synergies, raise productivity and enhance global competitiveness.

Regional centres will be developed within the context of a statewide physical infrastructure network with direct global and domestic connections.

Overview

This document addresses physical infrastructure in terms of its capacity to enhance economic opportunities and to consider issues such as productivity and movement within a statewide integrated network.

It provides a State strategic context to plan, coordinate and finance physical infrastructure in innovative and creative ways.

The major elements of physical infrastructure required to sustain the State's growth include roads, railways, water pipelines, desalination plants and dams, electricity generation plants and transmission lines, gas facilities and pipelines, telecommunications, sewerage, airports and sea ports.

For the purposes of this Strategy, physical infrastructure contributes to:

- the efficient movement of people, goods and services;
- the quality of life by creating amenities, providing consumption goods (transport and communication services);
- workplace productivity, participation and accessibility;
- active living;
- access to a diversity of cultural experiences and natural resources;
- a stable macroeconomic climate conducive to efficient resource allocation; and
- the provision of reliable and quality services that users need.

The cost of providing new infrastructure in many parts of Western Australia is higher than elsewhere in Australia. This can impact on the supply of housing, water, energy, waste management and community services necessary to support the planned high growth of the State's metropolitan and regional areas.

Efficient transport improves productivity and reduces bottlenecks in terms of economic growth. Western Australia's size and distance from global and domestic markets necessitates reliable and effective transport and infrastructure networks.

Key facts

- There has been a shift in policy toward competitive markets in the provision and operation of infrastructure.
- Government and the private sector will continue to strive for innovative and environmentally sustainable ways of delivering services and infrastructure at a lower cost.
- Infrastructure that assists economic growth while decoupling the State from high emissions will be best placed to meet the challenges and realise the opportunities of the 21st century.
- The Infrastructure Coordinating Committee is the primary source of advice to the WAPC and Government on planning for the coordinated provision of strategic infrastructure.
- 11% of entrepreneurs in 14 OECD countries (2003) noted that 'inadequate infrastructure' was a major impediment to entrepreneurial activity in those countries.
- Public investment in research and development, transport, communication and infrastructure was likewise highlighted as enhancing private sector innovation and productivity, if of high quality and generating high economic and social returns.
- The report *Generating Growth: Infrastructure* (Infometrics, 2003) identifies the most common constraints to export driven economic development as:
  - availability/cost/timeliness of transport
  - accessibility and cost of skills/labour
  - demand of output or sales
  - compliance costs/regulations
  - exchange rate volatility
  - energy (cost and supply).

State challenges

Western Australia's large geographical area, its low population density and commodity export focus provide a challenging environment in which to plan for and deliver physical infrastructure.

The timely provision of new infrastructure and the maintenance of existing assets in a cost-effective manner are critical to the State's sustained growth.

The State's continued population and economic growth will place pressure on resources and will further the need for the prioritisation of infrastructure and delivery of services.

It will be a challenge to quantify the total new investment required over the next 40 years in the areas of power generation and transmission, potable and industrial water supply, waste management, public transport, major highways, railways, regional roads, airports and ports to support the State's sustained growth.

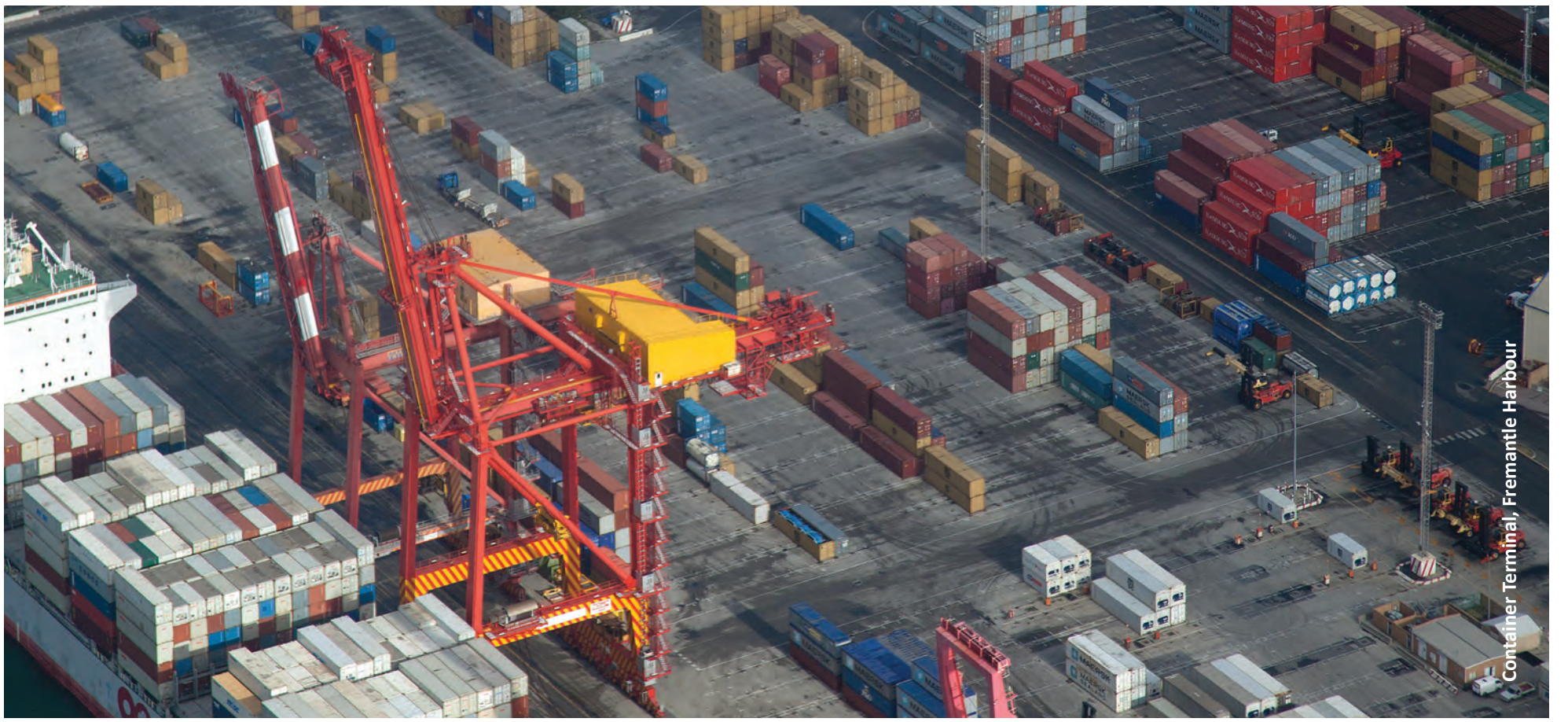
Funding infrastructure planning, coordination, implementation and operations remains one of the greatest challenges facing the State.

An infrastructure prioritisation framework to prioritise physical infrastructure investments throughout the State will be an important tool to meet the increased demand for infrastructure within a fiscally constrained operating environment.

There is a need for policy to unite, support and review the parameters for physical infrastructure planning coordination and investment.

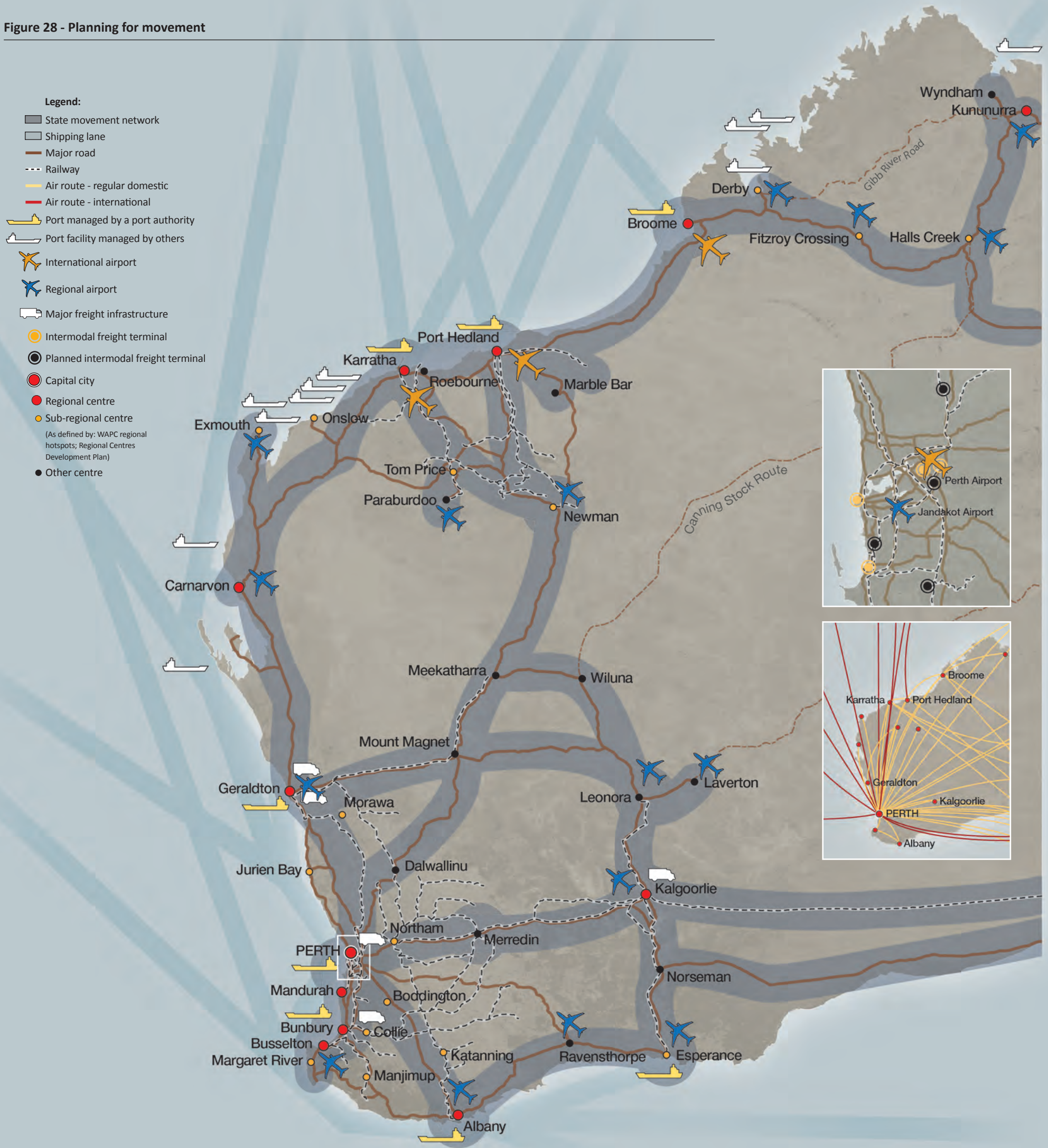
There is also the need to develop agreed mechanisms and funding sources to aid strategic land acquisition for future physical infrastructure.

The identification, securing and management of key infrastructure sites and multi-user corridors are of particular importance.



Container Terminal, Fremantle Harbour

Figure 28 - Planning for movement



2.1 Movement of people, resources and information

Objective

To manage the movement of people, goods and services through an integrated network connected locally, regionally, nationally and globally

A statewide movement network (Figure 28) will connect Western Australians to activities within Australia and around the world.

This Strategy promotes integrated movement networks and corridors across the State that connect communities while improving efficiency, reducing travel times and encouraging a modal shift towards lower-impact transport options.

The development of intermodal hubs and ports for freight will enhance cost-effective and efficient freight movement.

Overview

Optimum growth is dependent upon the availability of high-quality movement networks in order to enable the efficient and cost-effective movement of people, goods and services over long distances.

Efficient movement can enhance the State's productivity, while congestion impacts on economic competitiveness and quality of life. Movement infrastructure needs to be responsive to the needs of all members of the community, including people with disability and seniors.

The Western Australian Regional Freight Transport Network Plan, the draft State Aviation Strategy, the Western Australian Bicycle Network Plan 2014-31 and the draft Public Transport for Perth in 2031 are examples of recent initiatives to improve the movement of people, goods and services across the State.

Western Australia's ports play a vital role in the State's economy and have been coping with increasing volumes of resource exports over the past decade.

The PortLink project is exploring a possible linking of the ports of Esperance and Port Hedland via an inland route through Kalgoorlie, Wiluna and Newman to facilitate freight efficiencies. This may include an inter-modal transport terminal in Kalgoorlie-Boulder.

The redevelopment of Perth Airport and the Gateway WA Perth Airport and Freight Access Project to support the upgrade of terminals, traffic connections and facilities for the main entry and exit point to the State will have a significant influence on how people are dispersed and moved throughout the State.

Improvements to the road network will also bring important economic benefits to the State's regions.

Over the next 21 years, much of the investment in public transport infrastructure and system improvements is needed within 15km of the Perth central area. A significant change in the way public transport operates will be needed if it is to play its crucial role in reducing congestion.

The Outback Way has the potential to become an important interstate and intrastate link by 2050, connecting Western Australia to Queensland and at the same time providing access to essential food, education and health services for rural and remote communities along the way.

People and businesses require alternatives to reduce their reliance and dependence on motor vehicles.

Transit-oriented development, especially in and around activity centres, encourages more people to walk, cycle and use public transport. This is necessary for a modal shift to occur towards 'active transport', which increases daily physical activity levels, reduces greenhouse gas emissions through a reduction in cars on the road, improves social well-being and a helps create a greater sense of community.

'Active transport' is the seamless transition and coordination between transport modes that is applied through such programs as Liveable Neighbourhoods, Travel Smart, Living Smart, Active Living for All, LiveLighter and Healthy Active by Design.

Integrating land use planning, land development and regional investment with transport:

- reduces travel times;
- provides safer and easier access to jobs, schools and services;
- optimises land and infrastructure use;
- encourages active transport; and
- reduces greenhouse gas emissions and reliance on finite and imported fossil fuels.

Key facts

- There are more than 179,000km of public roads in Western Australia (17,500km are main roads, the rest local roads).
- Over 12.6 million passengers travelled through Perth Airport in 2011-12, an increase of 8.7% on the previous year. International passenger growth stood at 5.7% per year, while domestic passenger growth stood at 11%.
- Perth Airport handled 55,000 tonnes of international freight in 2010.
- Freight transport is often associated with large trucks and semi-trailers, yet in reality close to 70% of freight is distributed throughout metropolitan Perth by light commercial vehicles.
- 80% of land freight from the eastern states comes by rail.
- The common user rail network in Western Australia is approximately 5100km of standard, narrow and dual gauge lines. The majority of mineral exports however are moved to ports on privately owned railways in the Pilbara.
- Western Australia's major waterfront infrastructure commencing in 2014 will be managed by five separate port authorities: Kimberley, Pilbara, Mid West, Southern, and Fremantle.
- Western Australia is the premier State for seaborne trade, handling more than 56% of the nation's export trade volume (in tonnes). The port authorities provided 80% by volume and 92% by value of the State's international seaborne trade in 2009-10.
- Fremantle Port accounts for around 70% of Western Australia 's import by volume, and 90% of exports by volume depart from Pilbara ports.
- The Port of Fremantle (including the Outer Harbour in Cockburn Sound) in 2012-13 accounted for 78% by value of Western Australia's seaborne imports and 11% by value of Western Australia's seaborne exports, with a total port trade value of more than $30 billion. Trade with East, South East and Southern Asia accounted for 61% of this trade.
- Total trade volume through Port Authority ports has more than doubled from 200 million tonnes in 2002 to 428 million tonnes in 2011.

State challenges

The key to future growth involves removing the bottlenecks and gaps that are impeding growth and identifying opportunities for new capital investment.

The large size of the State coupled with the uneven distribution of its population and economic activity areas poses significant movement challenges.

A key challenge will be to optimise connections and movement modes between Perth, regional centres, global markets and their supply chains.

Of particular importance is the coordinated planning for, construction and operational cost of improved connections to support and facilitate the State's expected economic and population growth.

Accordingly, the provision of effective movement systems at an acceptable cost is a major challenge for both the public and private sectors.

Ensuring the protection of integrated movement networks and infrastructure corridors, between major generators of heavy traffic (ports, intermodal terminals, heavy haulage road and rail routes and strategic industry and mining sites) is critical.

Alternative approaches such as road pricing reform for State roads may provide incentives to better manage movement across the State in terms of travel demand and behaviour.

It is also important to recognise environmental and amenity issues in the planning for intensified and/or expanding supply chains.

Further increases to the volume of shipping are projected and, if realised, will generate greater demand for ports to be expanded in both the cruise and freight ship markets and may lead to the construction of new ports.

Another challenge will be the progressive development of an interstate and intrastate freight rail network which connects:

- key resource regions to ports through intermodal terminals
- east and west coast
- regional centres to the Perth metropolitan area (a PortLink aspiration).

The deregulation of regional air routes and the encouragement of low cost carriers may result in greater competition and reduce the cost of air fares for travellers. This will increase the ability of regional centres to attract business activity and investment.

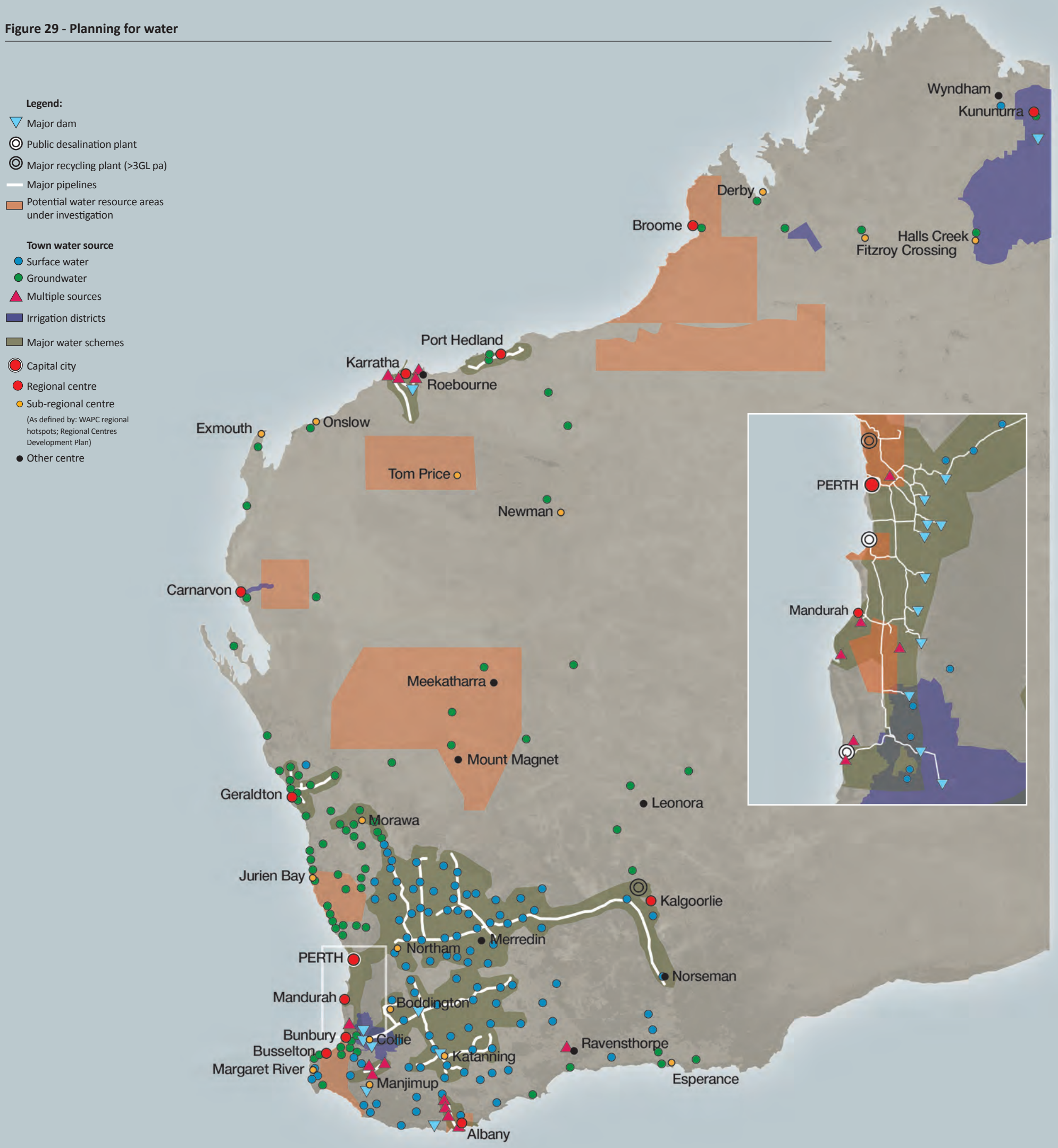
Similarly improvements to the accessibility and capacity of regional airports, particularly at Broome and in the Pilbara, are critical to the efficiency of the resources industry and to State and national economic growth. It is imperative infrastructure at these airports is developed in a timely manner to meet growing demand.

Approach

Table 9 - A strategic approach to planning the movement of people, goods and services

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Movement networks	The efficient movement of people, goods and services through a system of integrated movement networks	Volume of people, goods and services as well as efficiency in movement networks	• The majority of people, goods and services are contained within integrated movement networks • Infrastructure corridors connect economic activity areas together • Movement networks are responsive to the needs of all members of the community, including those with disability and seniors • A reduction of urban traffic congestion due to a more efficient and integrated movement network system • Prices for the use of State's movement infrastructure include social and environmental costs • The efficiency of movement networks is continually improved
Connecting communities	Communities are able to access jobs and services easily, safely and efficiently	The level of connectivity and accessibility of communities through movement networks	• Communities continue to be connected with jobs and services through the movement network • Reduced travel costs through an efficient movement network • Telecommunications are used to overcome travel distances and times • Movement networks have the capacity to absorb increased travel demand • ICT and ITS continue to improve movement logistics and customer services
Congestion	The overall cost of freight movements including externality costs decrease	Cost of congestion in ports and urban areas	• Road charges reflect the social and environmental costs associated with road travel • Behavioural changes arising from road pricing reform have occurred • The capacity and efficiency of the existing road and rail network will be increased • A rapid transit system, with the capacity to move large volumes of people during peak hours • A contribution to the capital cost of road, sea port, airport and rail projects by the private sector • Public transport network benefits and costs are considered in evaluating the impacts of congestion
Modal shift	Modal shift towards lower impact transport options	The degree to which public transport, walking and cycling are used as alternative transport options	• Balanced and lower impact transport usage, with a continued shift to rail, public transport and cycling modes • A seamless transition between modes is apparent through active transport • An overall reduction of emissions from movement networks
Freight logistics	Freight moves seamlessly on a freight network of infrastructure corridors, freight nodes, intermodal hubs and ports	Delays and downtime in the movement of freight on and between all transport modes	• A coordinated and efficient freight logistics system incorporating and integrating road, rail, air and sea transport • Smart technology and intermodal transportation improve the efficiency of the freight distribution network

Figure 29 - Planning for water



2.2 Water

Objective

To support Western Australia's growth and development by managing the availability and quality of water sustainably.

Overview

Water is a fundamental enabler of economic growth and state prosperity. Securing water sources of the appropriate quality is critical to Western Australia's quality of life. Water is also essential to the ecological and cultural landscapes of the State.

Achieving a balance between the needs of the community, the economy and the environment is of prime importance. There is increasing competition for water resources between sectors, including agriculture, mining, and residential development, and also for ecological processes to ensure functioning and resilient ecosystems.

Management practices employed to achieve this balance must be structured so as to ensure that public drinking water supplies are uncontaminated and public health is protected.

Climate projections for Western Australia from 2030 through to 2070 indicate an increase in temperature across the State accompanied by a decline in winter rainfall in the South West and greater variability in the far North.

The urban water cycle should consider all urban water flows as a potential resource and recognise the interconnectedness of water supply, groundwater, stormwater, wastewater, flooding, water quality, wetlands, watercourses, estuaries and coastal waters.

Land-use planning needs to consider water at the earliest stages of the planning and development processes. Effective planning requires sound information and knowledge about water availability, water quality, wastewater treatment, community, industry and environmental water requirements and the management of drainage and floodplain issues, which are all essential to the State's water security. Corresponding decisions need to be based on the best available science together with other key social, economic and environmental factors.

The Better Urban Water Management Framework provides a process for optimising our urban water resources through the application of integrated water cycle management. This ensures that appropriate consideration is given to the total water cycle at each stage of the planning system. The integration of land planning with water supply, sewerage, stormwater and water reuse planning delivers resilient and liveable developments in which water is used to meet the needs of the community. Integrated water cycle management will achieve more efficient and effective use of water and better outcomes for the environment and urban form.

It is also essential to ensure that planning processes provide for sufficient suitable water sources to maintain high-quality public open spaces including school ovals accessible for community use.

Groundwater and surface water modelling can help in the management of vital water resources and water-dependent ecosystems such as rivers, forests and wetlands and assist in drainage planning for new commercial, industrial and urban areas.

Water users access a range of water sources. Urban and regional settlements and industry use groundwater, surface water, desalinated water and recycled wastewater. Groundwater is still the dominant source of water, with desalinated water and recycled water becoming increasingly important water sources to meet the growing demand for more water in some areas.

Dams have been a major part of Western Australia's water supplies for more than a century, but are becoming less reliable in the State's South West due to a gradually drying climate.

Irrigation co-operatives mainly access surface water. Other agricultural water users predominantly access groundwater and farm dams.

Mining users generally self-supply from groundwater resources, recycled water and desalination. Mine dewatering and other surplus waters are becoming increasingly important to agricultural activities.

Where demand for water is greater than the sustainable extraction from surface and groundwater sources, alternative solutions to enhance the State's water security will become more important.

This includes increased wastewater recycling for industrial processing and public open space irrigation, the recycling of treated wastewater for groundwater aquifer recharge and the continued use of desalination, as well as using other options like stormwater reuse.

Encouraging water efficiency will continue to maximise the productivity of water resources. This can range from promoting the use of water-efficient appliances and equipment, integrating water-sensitive urban design, detecting and repairing leaks and changing users' behaviour. Various 'Waterwise' initiatives support improved water-use efficiency.

The use of recycled wastewater has increased by 70% over the past 10 years. Work is underway to further increase the use of recycled water for industry, irrigation and groundwater replenishment which support the sustainable management of this valuable resource

Rainwater capture and grey water systems are becoming widely used by households, business and industry. This appropriate use, re-use and recycling of water are essential elements of the State's water balance.

Key facts

- In 2013 , more than 5,000 billion litres (5,000GL) of water was managed and regulated, sourcing water from over 760 groundwater resources, nearly 290 surface water resources and 136 public drinking water source areas across the State. This management was achieved through the administration of over 12,000 licences.
- In 2013, of the water licensed from groundwater and surface water resources, approximately 34% was for mining, 32% for agriculture (including 14% for irrigation scheme supplies), 20% for water service providers to provide urban water supplies, 11% for industry and commercial uses (not supplied from a scheme) and 3% for parks and recreation.
- There are over 100 wastewater treatment facilities providing reticulated wastewater services to most communities in the State. Connected to these facilities are 80 recycling schemes. While most are in regional communities, Perth accounts for half of all Western Australian water recycling by volume, including a major industrial water reclamation plant for users in Kwinana.
- Demand for water is estimated to double by 2041, driven by population growth and economic development pressure.
- By 2060, Perth, along with the Wheatbelt and Goldfields towns which are supplied through the Integrated Water Supply Scheme, will require development of an additional major source to meet demand. Estimations of need for new sources have been reduced due to predictions of continued improvements in water efficiency.
- Particularly in the South West of the State, climate-dependent surface water and groundwater sources are becoming less reliable as a result of reduced average rainfall, runoff and recharge and increased temperatures.
- Substantial investment continues to be made in groundwater investigations to identify new water resources to meet demand and ensure existing supplies are reliable and secure.
- Completion of the Beenyup Groundwater Replenishment Trial, conducted by the Water Corporation in conjunction with regulatory agencies, revealed that groundwater replenishment can boost drinking water supplies and become a climate-independent water source in Western Australia.
- Pending approvals, the initial stage of Australia's first full-scale groundwater replenishment scheme will have the capacity to recharge 7GL of recycled water annually, and is planned to begin recharging by mid-2016. The scheme will ultimately deliver up to 28GL per year.

State challenges

Two key factors impacting water planning are the consequences of climate change and the anticipated population and economic growth of Western Australia.

In the South West, all global climate models point to less winter rainfall into the future, with reductions in inflows to surface water storages and recharge of groundwater systems. Conversely, in the north there is the potential for longer gaps between cyclonic and high rainfall events, meaning some existing sources could run dry between rainfall events.

There are clear signs that securing water will become more challenging for some water users in terms of supply and cost. Given the increasing challenges associated with supply and distribution, it is essential to ensure that any reliable, good-quality, low-cost water sources which do exist are protected for now and in the future, and that all water planning and management decisions are underpinned by the best available information and science.

While both absolute supply and quality are basic measures, efficiency of use must also be addressed and improved. Water use is forecast to increase by approximately 2.4% per year to 2040, particularly from mining, industrial and agricultural development.

Mine dewatering is a significant issue, where mining operations are moving closer to or below the water table. The rehabilitation, use and development of mine sites after their decommissioning must also address water quality and contamination issues.

Where large excavations remain post-mining, rehabilitation of the water system may be required to avoid contamination of other water sources, and to support further land use such as agriculture, agroforestry, recreation or industry.

Salinity, whether it results from rising groundwater tables inland, irrigation or intrusion from the ocean, has a significant impact on water availability and quality, and may impact on agricultural land capability with downstream effects on creek lines and rivers, thereby placing additional pressure on freshwater resources.

Water quality needs to be considered in the context of any impacts from population growth and development. While drinking water sources are protected by current land planning processes, the impact of building on wetlands and water sources that are critical for the long-term management of other water quality parameters must be taken into account and managed.

Many areas proposed for future development in the Perth, Peel and the South West regions have significant water resource management issues. There is ongoing work to integrate total water cycle management and water sensitive urban design principles in the built urban environment with the planning system to achieve the coordinated planning, development and management of water, land and related resources (including energy use).

Water sources and assets need to be identified and secured to guarantee public drinking water supplies, the protection of community health and local food security, whilst providing for the requirements for ecological services.

Wastewater treatment plants are increasingly becoming recognised as secure sources of alternative water. Facilitating beneficial and synergistic land uses in and around the buffers of treatment plants will improve the efficient use of land and reduce the risk of land use conflicts.

Developers and industry should be encouraged to address water sourcing and consider a range of alternative water sources for non-drinking water uses early in project planning. The integration of reticulated 'grey' water systems into new developments, where possible, would increase the efficiency of water use.

The development of urban and regional centres and mining, industrial and agricultural precincts are often in areas where the availability of surface and groundwater supplies are constrained or in decline due to the changing climate. It is essential to ensure water efficiency is promoted and alternative water supplies are integrated in such places to minimise reliance on potable water supply for non-drinking uses.

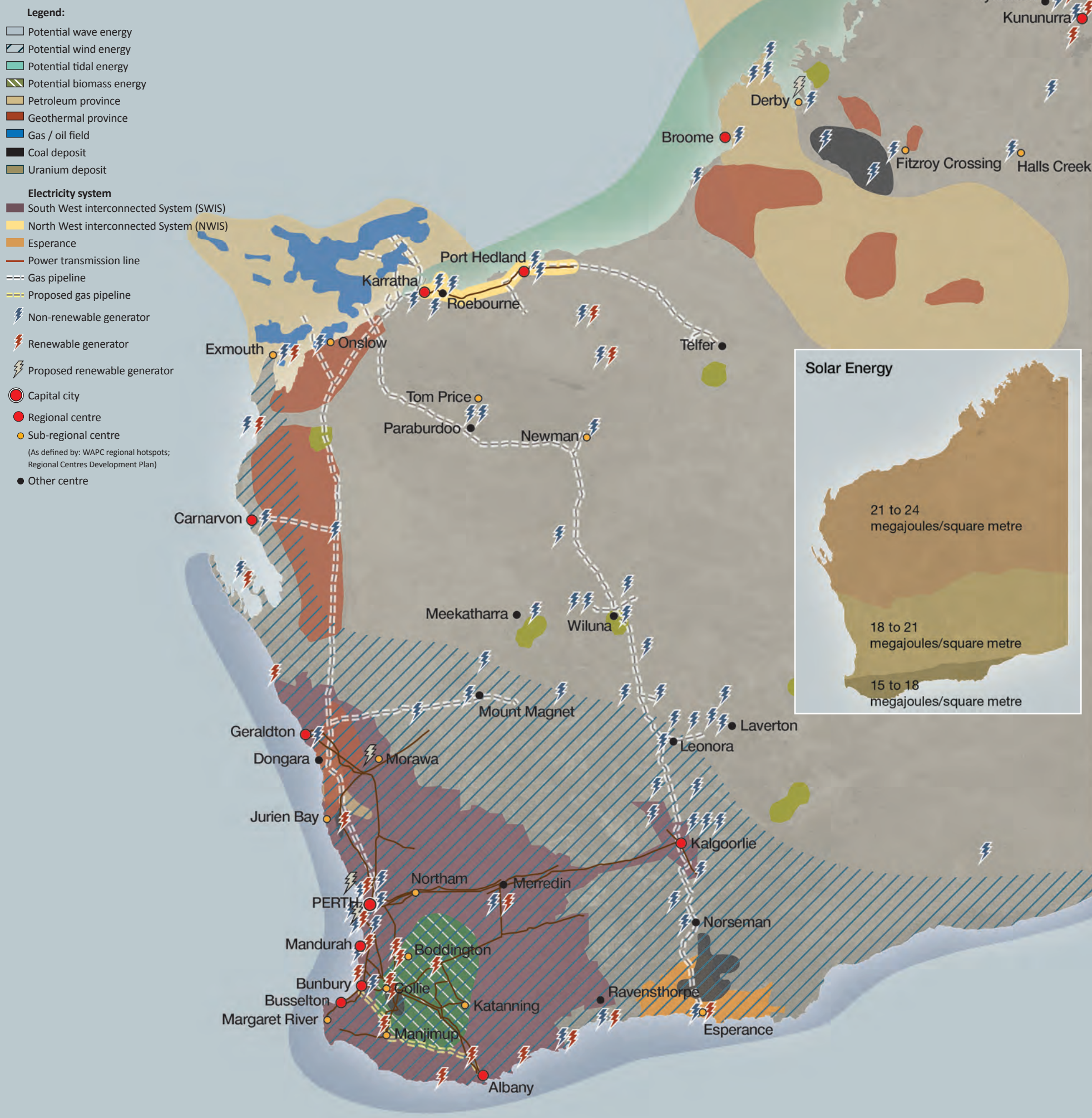
The integration of systems and diverse water sources, supplementing traditional water resources with alternative supplies, as well as further improving water use efficiency in agriculture and industry, will provide ongoing challenges for the planning and development of Western Australia.

Approach

Table 10 - A strategic approach to water planning

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Water security	Availability of the appropriate quality water for its intended use, to support economic and population growth	A long-range water resource and supply plan for the State is established, underpinned by medium-term investment plans	• Water supply security and resilience • Integration of water planning with community, land use, biodiversity and economic planning • Clearly defined security of water entitlement for all water users • Public drinking water sources protected • Affordable water supplies for residential, business and industry use • Management practices employed to achieve water security are structured to ensure that public health is protected.
Efficiency and conservation	Value of water is reflected in planning, management and use	Demand management targets for intended water use are met	• Appropriate use of fit-for-purpose water. • Reduction of per capita household consumption through water efficiency and conservation measures • All new urban development is water sensitive as a development standard • Industry, agricultural and mining sectors are implementing best management practice, including for mine dewatering
Wastewater	Wastewater is viewed as a valuable resource	Percentage of wastewater re-used and recycled	• State's water security is enhanced through stormwater harvesting and wastewater recycling • Recycled water is used for recreational parks and gardens statewide • Wastewater treatment services coordinated to support economic and population growth • Strategic resource precincts are secured around wastewater treatment plants to facilitate efficient and beneficial use of land, water and other resources
Sustainability	Long-range planning for resource development and use and protection of water-dependent ecosystems	Water resources for all purposes are used within set sustainable limits	• Availability of the appropriate quality water to support economic and population growth for the entire State • No water resources are over-allocated • Water-dependent ecosystems are healthy • Catchment protection and restoration programs are implemented • Optimal competition in water service and infrastructure provision • Floodplain risk mapping is utilised

Figure 30 - Planning for energy



2.3 Energy

Objective

To enable secure, reliable, competitive and clean energy that meets the State's growing demand

Enhanced infrastructure planning and coordination will lead the State into an era of increased energy security. More energy will be sourced from a diverse mix of affordable, low carbon sources. The State's buildings, businesses and industries will be more energy-efficient.

Overview

Energy is important to economic growth. Traditionally the State's energy supply has been dominated by fossil fuels.

Increasing population and economic growth is resulting in a greater demand on energy, as well as the need to upgrade and provide new infrastructure. Energy consumption for Western Australia has grown at an average of 5% per annum since 2006-07, whilst electricity consumption has increased at around 7% per annum.

Demand for energy is expected to continue to grow due to ongoing industrial development, especially in the mining and mineral processing sectors.

Although household and small business energy demand, largely for electricity, is expected to continue its upward trend of the past 15 years, there has been slowdown in the growth of electricity consumption recently.

Effective and flexible planning, policy and regulatory frameworks provide an enabling environment for investment and the uptake of new technologies.

Existing and emerging industries are encouraged to locate in appropriate regional areas to encourage economic diversification.

With global and domestic pressures likely to cause further increases in the cost of fossil fuels, it is in Western Australia's long-term interest to develop a diverse energy supply mix, including the use of renewable fuel sources.

Renewable energy initiatives help to mitigate the risks from climate change, lessen fossil fuel use and reduce greenhouse gas emissions.

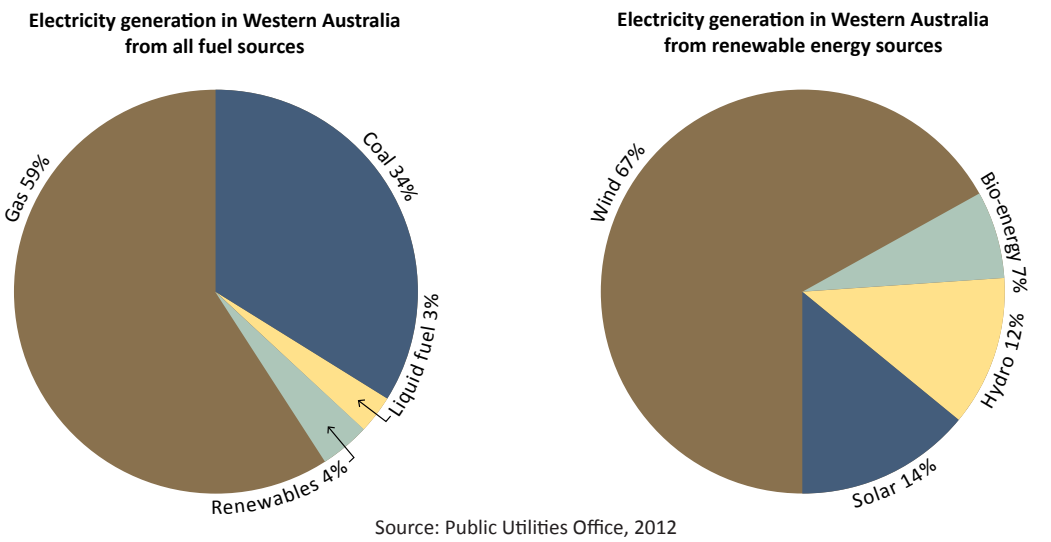
The availability, reliability and price of energy supply are key factors in foreign and domestic investment decision-making.

The State Government has clarified the arrangements for application of the Domestic Gas Reservation Policy. One aim of this policy is to secure a reliable source of gas supplies for the Western Australian market.

New power generation and infrastructure technologies are rapidly evolving, enabling greater control over energy generation, transmission and use.

Enhancements to electricity network infrastructure are also of assistance in managing the impacts of increased use of renewable energy technologies (Figure 31).

Figure 31 - Electricity generation in Western Australia (all sources/renewable)



Source: Public Utilities Office, 2012

Key facts

- Western Australia is the largest producer of gas in Australia, accounting for two-thirds of national production.
- 59% of electricity generated in this State is derived from gas, 34% from burning coal, 4% from renewable technologies and 3% from oil.
- Most renewable energy is derived from wind (67%), followed by solar (14%), hydro (12%) and bio-energy (7%).
- While population growth will increase overall demand for electricity, there has been a 1.5% slowdown in the growth of electricity consumption (not peak consumption) in 2011-12 when compared with the historical average.
- The State Growth Outlook (CME, 2013) forecasts an electricity growth rate over the period to 2023 to be 5.6% per annum.
- Western Australia accounts for approximately 12% of the nation's electricity use and 3% of the nation's renewable energy generation.
- The Australian Government has committed to emission reduction targets for 2020 and 2050.
- The Commonwealth Large Scale Renewable Energy Target remains the primary driver of renewable energy growth in Western Australia over the short to medium term.
- Fossil fuels are likely to remain dominant in the medium term as renewable energy sources increase.
- Energy demand will continue to increase globally and locally, as a result of continuing industrialisation, population and consumption.
- A pilot for the world's first completely wave-powered desalination plant has been approved for Garden Island.

State challenges

Forward planning to enable access to land and infrastructure for energy generation, transmission and distribution will continue to assist in creating a competitive market environment and attracting new energy providers, as well as enhancing regional energy sources.

Improving the efficiency of energy use and the penetration of embedded or localised energy generation will require increased investment and upgrades to distribution networks.

This will assist small business investment in clean and renewable energy technologies, while reducing fossil fuel dependence and reducing the State's greenhouse gas emissions.

Further development of offshore and onshore gas reserves can also provide a transition away from fossil fuels that have higher emissions, such as coal.

A significant proportion of infrastructure in the South West Interconnected System is ageing. Progressively replacing this infrastructure with newer technologies, while allowing for improved customer service, economic efficiency and reduced environmental impacts is a key challenge.

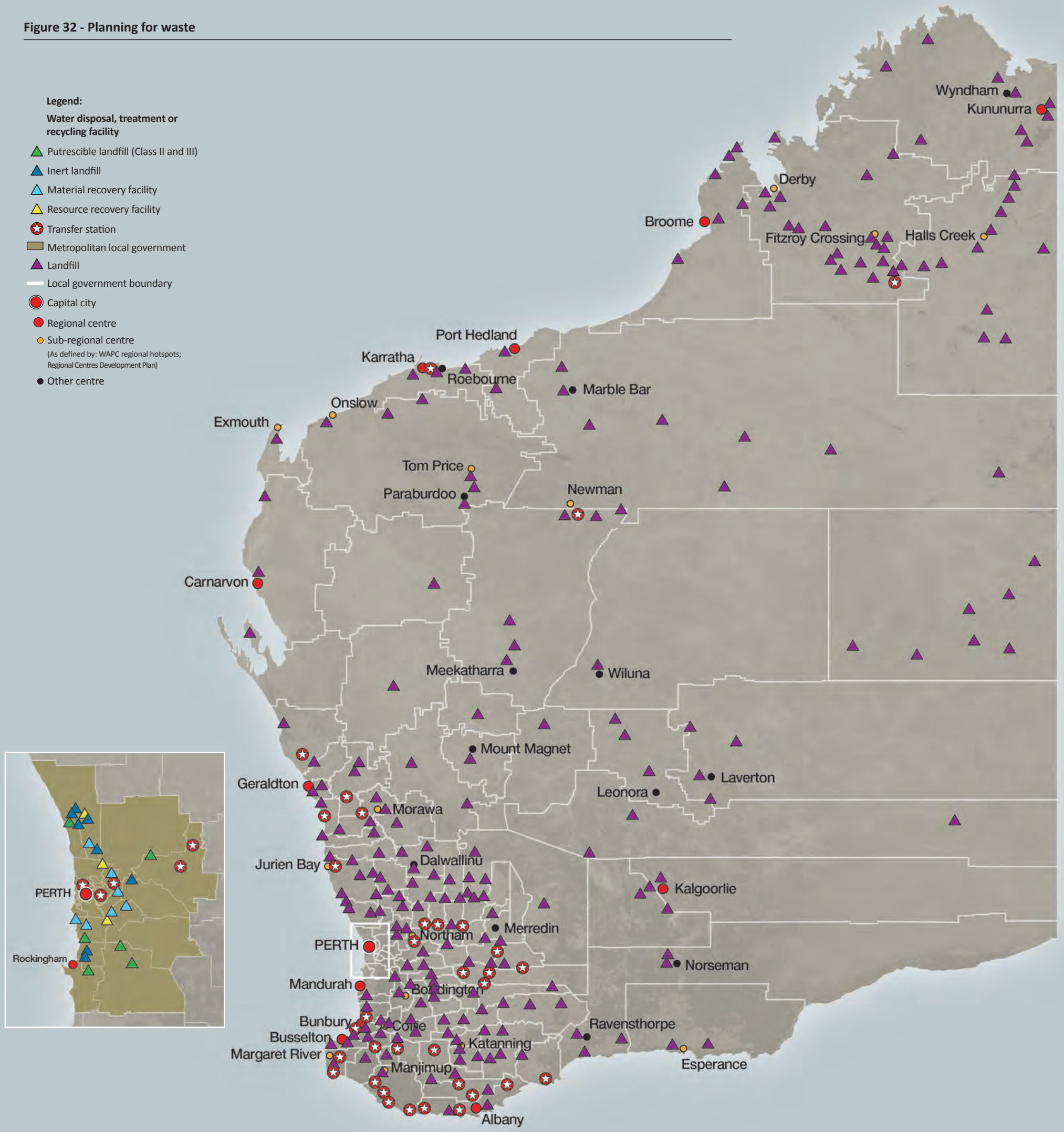
Increasing the energy efficiency of the built form and focusing on development that supports public transport access are also important aspects of creating a resilient energy future.

Approach

Table 11 - A strategic approach to energy planning

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Integrated planning	Energy continues to be an essential matter of consideration within the planning system	Number of integrated land use and energy plans	• Adaptive, innovative long-term energy planning and coordination • The energy supply is safe, of a consistently high quality and is delivered with minimal disruption • The provision and ongoing operation of energy continues to be considered in planning policy, structure planning, development assessments and enforcement activities within the planning system
Investment and pricing	Stable regulatory environment to deliver competition	Energy pricing for industry and households	• A competitive, transparent and coordinated energy approvals process is in place • Access to affordable energy that meets the needs of Western Australians
Infrastructure coordination	Diverse energy supply delivered with minimal disruption	The extent of energy sources, corridors and sites is secured	• Energy sources, corridors and transmission sites are secured • Reliable distribution with capacity to grow, such as the Bunbury to Albany gas pipeline • Energy provision remains reliable, with few interruptions to service
Cleaner and renewable energy	Energy production and consumption that minimises carbon emissions and is more affordable	The intensity of greenhouse emissions from energy production The renewable energy contribution to total delivered electricity supplies	• The use of offshore and onshore gas fields continues to reduce carbon emissions • Energy efficiency improvements continue to be realised through the use of low emission technologies • Reduction of per capita household consumption through energy efficiency and conservation measures • The improved availability and uptake of alternative fuels, combined with a shift towards the use of more efficient vehicle technologies and energy efficient modes of transport • Energy production and use demonstrates good environmental stewardship and minimises greenhouse emissions • Various forms of renewable energy (wind; solar; wave; tidal; geothermal; biofuels) continue to be developed and integrated into the grid • Ongoing research and development continues to support increases in renewable energy sources
Security	Secure energy supply sources and infrastructure to meet the future needs of the community and economy	Energy supply sources, transmission infrastructure and generation secured	• Adaptable and resilient energy infrastructure that accommodates alternative energy sources • Source diversification and network supply security • The energy supply is sufficient to meet demand over the longer term
Built form	Built form that continues to be energy efficient	Demand management targets and ratings for intended energy use are met	• Reduction of per capita household consumption through energy efficiency measures • Development conditions and building standards require all new urban development to be energy efficient • Private sectors employ climate-responsive and energy-efficient construction standards, technologies and materials • Energy-efficient subdivision designs and layouts that respond to site orientation and access to renewable energy sources and/or existing interconnected systems • ICT continues to be used in the construction and operation of buildings

Figure 32 - Planning for waste



2.4 Waste

Objective

To ensure Western Australia's waste streams are managed as a resource

To reverse the trend of steadily growing rates of waste generation in Western Australia, action will be taken to reduce waste to landfill, and increase resource recovery and waste avoidance.

Improving the State's "waste" performance is central to bequeathing a clean, healthy environment to future generations.

Waste will be reduced and recycling increased through improved strategic planning, regulatory measures, economic incentives, and community education and engagement.

A network of strategically located waste management facilities and infrastructure will assist in increasing recycling and stimulate further innovation in reprocessing.

Overview

Solid waste is often divided into three categories or streams based on its source. These source streams are:

- municipal solid waste: solid waste generated from domestic (household) premises and local government activities;
- commercial and industrial waste: solid waste generated by the business sector, State and Australian Government entities, schools and tertiary institutions; and
- construction and demolition waste: solid waste from residential, civil and commercial construction and demolition activities.

The types of waste found in each stream may be similar; however, the waste may be processed and disposed of differently according to its source.

There are also other kinds of waste that do not fall within the definitions of these three waste streams, including liquid waste, sewage, clinical waste, hazardous waste, radioactive waste and other specific types of waste, all of which may require specialised treatment and disposal.

In 2009, the Australian Government finalised the *'National Waste Policy - Less Waste, More Resources'*, which sets Australia's waste management and resource recovery direction to 2020. This policy aims to improve the efficiency with which resources are used, reduce the impact on the environment of waste disposal, and improve the management of hazardous wastes.

The Western Australian Waste Strategy: *'Creating the Right Environment'* includes strategies and targets aimed at increasing the proportion of waste diverted from landfills through recycling.

Objective 1 of the Waste Strategy is directly related to the need to identify sites for waste treatment facilities with sufficient buffers in order to ensure sites are available and avoid land-use conflicts.

To achieve this objective, waste management facilities must be sited, designed and operated to meet environmental criteria and prevent pollution. Land identified for waste management should be developed and used in such a way that the activities of users do not impose an unacceptable risk to other persons, property or the environment.

The development of waste and recycling infrastructure will better connect and integrate resource recovery sites with existing and new waste processing infrastructure.

There is now a presumption against siting putrescible landfills on the coastal plain or other environmentally sensitive areas. This will require any future landfills to be located outside the Perth metropolitan area, which will increase the need for waste processing facilities within the city.

A risk assessment of new development proposals will be dealt with by the WAPC (on the advice of the Environmental Protection Authority and the Department of Environmental Regulation) as a matter for consideration in land-use planning and development decisions.

Key facts

- Recycling is increasing in Western Australia, with 39% of solid waste generated in the State recycled in 2011-12.
- In 2011-12 1.05 tonnes of waste was recycled per capita, and 1.61 tonnes per capita was disposed of to landfill.
- Virtually all human activities result in some form of waste, whether it is liquid or solid, harmless or toxic.
- The Western Australian Waste Strategy aims to increase the proportion of waste diverted from landfill, through strategic planning, regulatory measures, economic incentives and community education and engagement.
- The Keep Australia Beautiful National Litter Index 2012-13 notes that Western Australia had (per 1,000 m^2) 10.46 litres and 62 items of litter, which is high in comparison to the rates of other Australian states.

- Current efforts are focused on increasing the extent of recycling, with the target being to reduce the amount of waste going to landfill. Progress is being made in the recycling of green waste into mulch and compost, as well as the recycling of construction and demolition waste for reuse in the construction industry.

State challenges

The quantity of waste generated in Western Australia is steadily growing, a trend that is likely to continue unless action is taken to reduce generation rates.

Economic and population growth are drivers behind the increasing quantity of waste to be processed over the next 40 years. There is a diversity of waste treatment facilities and capabilities across the State.

However, increasing waste processing and recycling capacity across the State requires appropriate and suitable land to be secured as long-term waste sites and/or precincts.

The type of waste generated, and the way it is managed, will change in line with changes in technology. To reduce per capita waste to landfill and littering rates in the short term, the introduction of incentives may need to be considered.

For example, the increasing volume of waste materials from electronic equipment requires new ways of managing, recycling and treating waste that contains metals, plastic, batteries and glass.

The siting, design, operation, and ongoing funding and management of waste management facilities are often complex. Planning for the transference of materials from their sources to their recovery facilities involves securing strategic sites and infrastructure corridors.

Planning for strategic waste sites involves the assessment of buffers, transport access, relationships to existing waste facilities and producers, and the degree of risk of air, soil, groundwater and surface water pollution.

Buffer areas surrounding some existing waste disposal facilities are also becoming inadequate as volumes of waste increase and sensitive land uses encroach on previously isolated facilities.

The ongoing operation and funding of waste management facilities is often complex. In planning for waste facilities there is a need to anticipate the amount and nature waste and how that waste can be best managed both in the near future and in the long term.

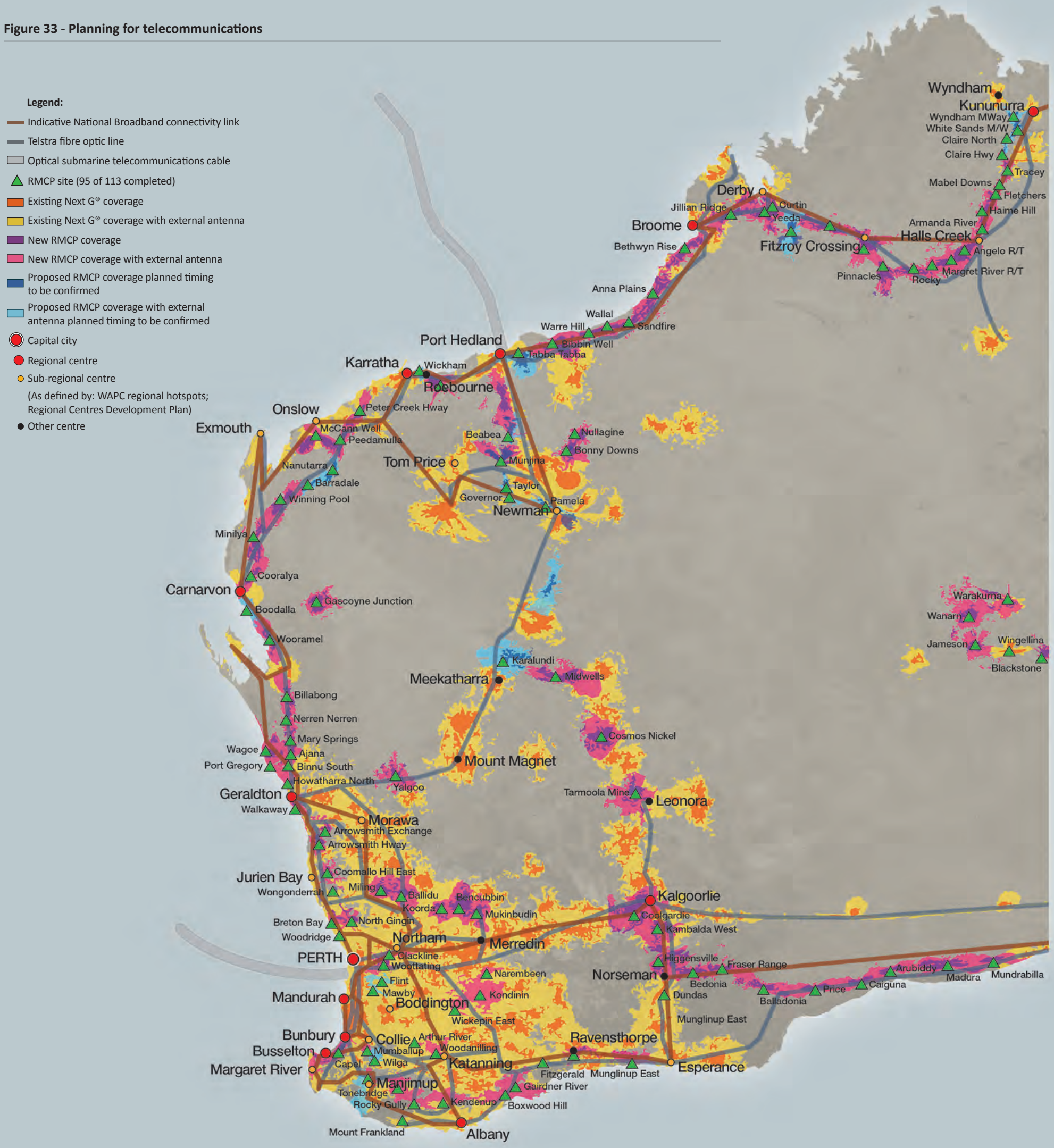
Approach

Table 12 - A strategic approach to planning for waste

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Waste reduction	Western Australia is a low-waste society	Rate of waste generation per capita	• Behaviour change in community and organisations, and improvements in technology and product design, continues to result in a reduction in waste generation • Measures to reduce litter rates are commonplace • Public education on waste management and recycling is in place for both schools and industry
Strategic sites	A network of strategically located waste management, disposal and recovery facilities	Number of strategically located sites secured for waste management	• Strategic sites, buffers and corridors for waste management facilities continue to be identified and secured • Waste facilities have the capacity to service long term waste processing and recycling needs of a growing population and economy • Environmentally sensitive sites and precincts as well as sites with a higher long-term use are excluded from being used for waste disposal purposes
Increases in recycling	Waste streams become a resource through innovative recycling and reprocessing infrastructure and technologies	Rate of re-use and recycling in the community	• Waste management continues to be considered in the context of product lifecycle • An increasing proportion of waste is reused and/or recycled through collection services and waste treatment technologies
Integrate waste management	Resource recovery is facilitated by co-locating waste management facilities and employing the principles of industrial ecology	Extent of integration of waste producers and reprocessors/ recyclers supporting resource recovery within designated strategic industrial areas	• Industries increasingly adopt an integrated waste management approach to their activities • Industrial precincts zoned, structured and operated to facilitate industrial ecology and ensure the integration between waste producers and reprocessors/recyclers

Turkey Nest dam, north-east of Southern Cross, Western Australia.

Figure 33 - Planning for telecommunications



2.5 Telecommunications

Objective

To ensure those responsible for telecommunications take into account Western Australia's planning and development priorities and requirements

Improved telecommunications will be important for the State to be connected, both across its vast distances and outward to its trading partners.

Planning for telecommunications will be carried out in accordance with the State government's development objectives, priorities and planning policies.

The development of State infrastructure, resources, services and regional centres that employ new telecommunication technologies enables business growth and efficiency.

Through telecommunications, the State's people, resources and information will be linked in ways that reduce the barriers of location and time in a highly efficient manner.

Overview

High-speed telecommunications are essential for business and modern living. Western Australia faces the challenge of finding new ways to participate in global production systems and markets from its geographically remote location.

This situation influences digital economy policy and investment across the State and, by association, the improvement of telecommunications infrastructure.

The digital telecommunication network and infrastructure should provide statewide access to reliable high speed communication that supports and enables the delivery of efficient and effective world class education services.

The Government's Royalty for Regions program is funding the Regional Mobile Communications Project (RMCP) initiative to improve mobile telephone highway and town-to-town coverage in regional, rural and remote communities of the State. This project will drive productivity, improve safety on Western Australian roads, enhance the delivery of emergency services in regional areas, and better connect communities.

Telecommunications legislation is administered by the Australian Government through the Department of Communications.

The development of Western Australia will continue to be influenced by policies applied to telecommunications across the State in terms of:

- fairness and equity
- access, affordability and capability
- environmental impact
- education, training and knowledge.

Telecommunications services in Western Australia are provided through a mixture of fixed, wireless and satellite-based networks operated by a number of licensed commercial carriers.

Technology improvements mean that telecommunications infrastructure is in a constant state of upgrade, expansion and replenishment.

Technological development with regard to devices and software also requires consideration so that the infrastructure is appropriate and meets community needs.

Commonwealth and commercial carriers need to take into account State development priorities so that future telecommunication investment maximises geographical coverage and offers the broadest range of services to the places where they are needed most. The connectivity of subregional centres is vital for their economic development.

Planning for and protecting strategic infrastructure sites and corridors requires a coordinated approach for improved digital infrastructure (including mobile, fixed, wireless, satellite, television and radio transmission networks), as well as high speed broadband such as the National Broadband Network, from all levels of government and telecommunications providers.

There are State development approval requirements for high impact facilities such as telecommunication towers. This includes consideration in strategic planning, regional plans/strategies, structure plans and local planning schemes.

Key facts

- About 98% of people have mobile telecoms coverage; 400,000 people in Australia rely on landlines or satellite phones for connection.
- 9% of Australian internet traffic is attributable to Western Australia. Approximately 1% of that total is regional, with the rest occurring in the Perth metropolitan area.
- Historically, Western Australia has split its international traffic evenly between direct international connections out of the State and international connections via the east coast.

State challenges

Western Australia's remote location, large distances and sparse population present challenges for improved telecommunications and, as such, this situation requires a collaborative approach.

The Australian Government has statutory powers to manage the direction and implementation of future telecommunications.

However, the State will seek to influence the Australian Government on the demand for infrastructure in terms of Western Australia's population and economic growth directions.

The connectivity of the State will rely on the way in which telecommunications are integrated with other utilities and infrastructure development.

Accordingly, the planning of infrastructure corridors and strategic sites for telecommunications will need to be aligned with the provision of other infrastructure.

The structure planning of rural and urban settlements will need to locate and design telecommunication infrastructure and services, taking into account the needs of an ageing population, people that may have limited education or computer skills and those in remote communities.

Investment by third party stakeholders, such as local government, industry and communication providers, will need to consider evidence of a deficiency, investment viability and cost benefit, in making their decisions on the development of telecommunications.

There is a need for ongoing research and development in telecommunications, including the application of such research to next generation services and devices.

Advances in this field may also enable an increase in teleworking, reducing the need for commuting in urban centres while facilitating links from Western Australia to the global digital network.

Approach

Table 13 - A strategic approach to telecommunications infrastructure

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Accessibility	Telecommunications services are accessible across the State	Amount of access to telecommunications services across Western Australia	• Regional WA has reliable access to high-speed telecommunications • Deployment of a high-speed and reliable broadband and telecommunications network for the whole community • Telecommunications improves everyday life and assists business growth
Infrastructure network	Internationally competitive fixed and mobile communications networks	Per cent coverage of the state and best practice operational capability	• Extensive access to high-speed and reliable digital infrastructure, including for education service delivery • A network of strategically located telecommunications infrastructure corridors and sites are secured • All key infrastructure developments incorporate capacity for telecommunication services • Enhanced research and development
Structure planning	Strategic sites and corridors are secured	Extent of protection for key telecommunication infrastructure sites and corridors	• Appropriate community consultation undertaken for high impact facilities • Telecommunications are a matter of consideration in planning frameworks, planning schemes and development decisions • The environmental impact of telecommunications are assessed during the preparation of structure plans

3. Social infrastructure

Objective

To enable liveable, inclusive and diverse communities

Social infrastructure improves liveability, encourages social inclusion, diversifies the economy by building social capital and is an essential ingredient for creating sustainable communities.

Social infrastructure is the interdependent mix of facilities, places, spaces, programs, projects, services and networks that maintain and improve the standard of living and quality of life in a community.

The key to liveable, inclusive and diverse communities is the collaboration between people and organisations involved in the strategic planning of social infrastructure and those participating in the delivery of social services.

A liveable place is safe, attractive, affordable and environmentally sustainable, with a socially cohesive and inclusive community, good access to public open space, employment, education, shops, healthy food, arts and culture, accessible and frequent public transport, and walking and cycling infrastructure.

Overview

Positive social outcomes are often beyond the capacity of one organisation because social issues are complex.

A collaborative governance framework is needed to coordinate all tiers of government, industry and community in creating community-specific and outcome-focused social infrastructure.

Western Australia faces a range of social issues such as increased obesity, diabetes and social exclusion through socio-economic or geographical gaps.

Although causes are multiple, prevention through the collaborative planning and coordinated delivery of social infrastructure is the best way to manage these issues.

Social infrastructure has both ‘hard’ and ’soft’ elements. ’Hard’ elements include health facilities and centres, education facilities, nursing homes, recreation grounds, police stations, prisons, fire and emergency service buildings, art and cultural facilities and other government buildings.

Ensuring good quality design outcomes within these elements is important for maximising their potential benefits to the community and value for money outcomes.

’Soft’ elements may include programs, resources and services, as well as public art and cultural events, that complement these ‘hard’ elements and contribute to the formation of a community. ‘Hard’ elements do not work successfully unless the ‘soft’ elements accompany them.

Key outcomes of social infrastructure planning (Figure 34) include health and wellbeing, spaces and places, knowledge, affordable living and coordination.

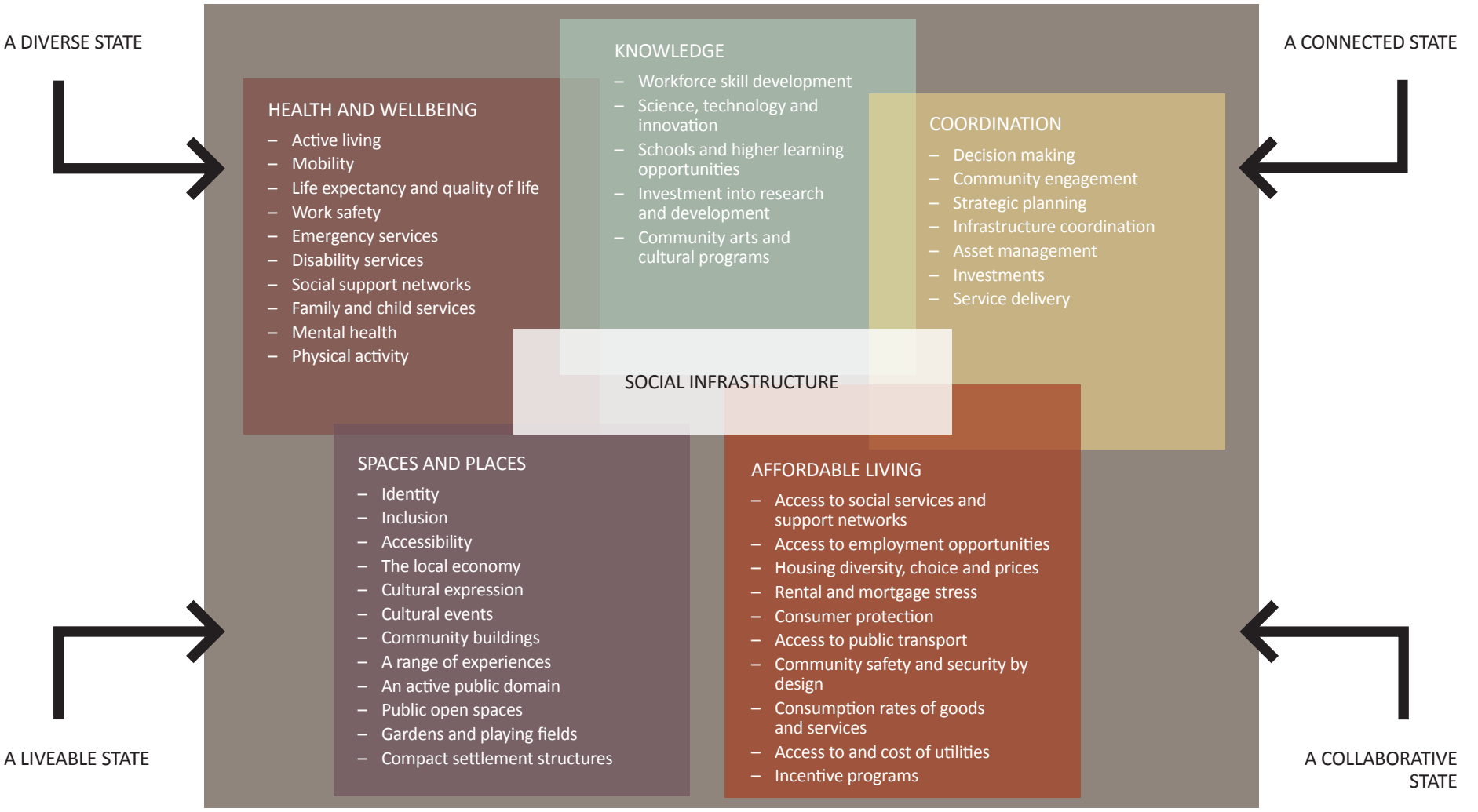
Public and private investment in social infrastructure is essential. In some regions, major resource development and the need for a greatly expanded skilled workforce is creating stress on and shortages of social infrastructure. In order to attract and retain families and individuals, a range of quality services and facilities are vital.

Social infrastructure can help build the social capital and fabric of a community by enabling active living, learning opportunities, social interactions and supporting programs that help people innovate, express themselves and adapt to major life events. It is social capital that makes a community liveable, inclusive, competitive and diverse.

Key facts

- The value of State Government building infrastructure provided throughout the State from 2010 to 2013 was approximately $4 billion.
- If an additional 40% of the Australian population engaged in regular, moderate and effective exercise, an estimated net benefit of $6.5 million per day would result from the reduced costs associated with heart disease, back pain, increased workplace productivity and reduced absenteeism.
- People who use public open spaces are three times more likely to achieve recommended levels of physical activity than those who do not use the spaces.
- Every dollar invested by the State Government in the community sporting and recreation facilities fund generates $3.60 in direct economic activity and $7.20 in total economic activity.
- For children and adolescents, living within 800m of parks or sports centres increases the likelihood that they will use these facilities and walk or cycle to/from them.
- The value of volunteers to community sport is valued at just under $4 billion per year.
- Research shows that people who live in neighbourhoods designed to make walking attractive walk an hour a week more than those who live in less walkable places.
- Walking an extra hour a week represents 40% of the average person’s physical activity target and it halves their risk of being overweight.

Figure 34 - Planning for social infrastructure



- The newer suburbs of Perth can be considered 'active open space poor' suburbs. This means residents will have to travel long distances to play organised sport.
- The Perth-based RESIDE study found that adults living in high-walkable neighbourhoods were more than twice as likely to walk 60 minutes/week for transport. This study provides support for the notion that a more walkable neighbourhood is also a place where residents feel safer, endorsing a shift away from low-density suburban development towards more walkable communities with access to shops, parks and public transit.
- 94% of people in Western Australia believe it is important for school children to access arts and cultural activities as part of their education.
- Western Australia's household expenditure on cultural goods and services was $2,011 million in 2009-10, averaging $44.65 a week.
- Over one-third (37%) of children in Western Australia, or 104,600 children, were involved in cultural activities outside of school hours, including playing musical instruments, singing, dancing and drama in the 12 months to April 2009.

State challenges

Western Australia is competing with other states in attracting and retaining young and skilled professionals from around Australia and the world.

A major consideration for social infrastructure planning is the substantial variation of population and economic growth projections between and within regional areas of the State.

Different sections of the community have different social infrastructure needs, such as for young people, people who are aging and people with disability. A high standard of social infrastructure is often expected regardless of cost.

Usually regional populations will not grow without the necessary social infrastructure to support that growth, such as schools, health services, community facilities and programs.

In addition, there is often a gap between the revenue created from social infrastructure and the cost of providing and maintaining that infrastructure.

Ensuring that good quality design is delivered within the 'hard' elements of social infrastructure, through the use of robust materials and the provision of efficient servicing strategies, will help to reduce this gap, by minimising the ongoing maintenance and operational costs of buildings and public spaces.

The provision of adequate social infrastructure and related services is also needed to support workforce accommodations that focus on the health and well-being of FIFO workers. The closer the distance between where FIFO workers live and work, the easier it becomes to promote the liveability of regional towns and centres.

New methods will be needed for social infrastructure investment that can enhance the timeliness and equity in providing a social service.

The financing of social infrastructure, in particular the 'soft' elements, will require innovative and creative approaches and partnerships.

Regional frameworks, community plans and local structure plans and planning schemes are important tools and instruments that influence the structure of urban and regional settlements. They thereby can provide the foundations for how, when and where social infrastructure is delivered.

Salt lakes surrounded by wheat fields, 50km north east of Esperance

3.1 Spaces and places

Objective

Creating spaces and places that foster culture, liveability, enterprise and identity

Spaces and places can have a profound effect on the quality of people's lives.

Spaces and places are the physical environment where people live, work and socialise that includes neighbourhoods, public buildings, streets, schools, hospitals, plazas, movement corridors (including roads, footpaths and bicycle ways), workplaces and parks.

The State's urban areas, regional centres and smaller settlements are all structured to create spaces and places that:

- support ecological services;
- foster cultural expression, lifelong learning, social interactions, vibrancy and interaction with nature; and
- emanate a sense of place and belonging.

The provision of well-designed buildings, movement corridors, public open spaces and civic places improves the safety, health, cohesion and economy of the State's communities.

Overview

Spaces and places are public areas which reflect a community's need, purpose and identity.

Planning for spaces and places (Figure 35) focuses on the local economy, identity, social inclusion, connectivity, accessibility, liveability and the diversity of a community.

Collaboration with the community and the application of appropriate design guidelines is essential in place-making.

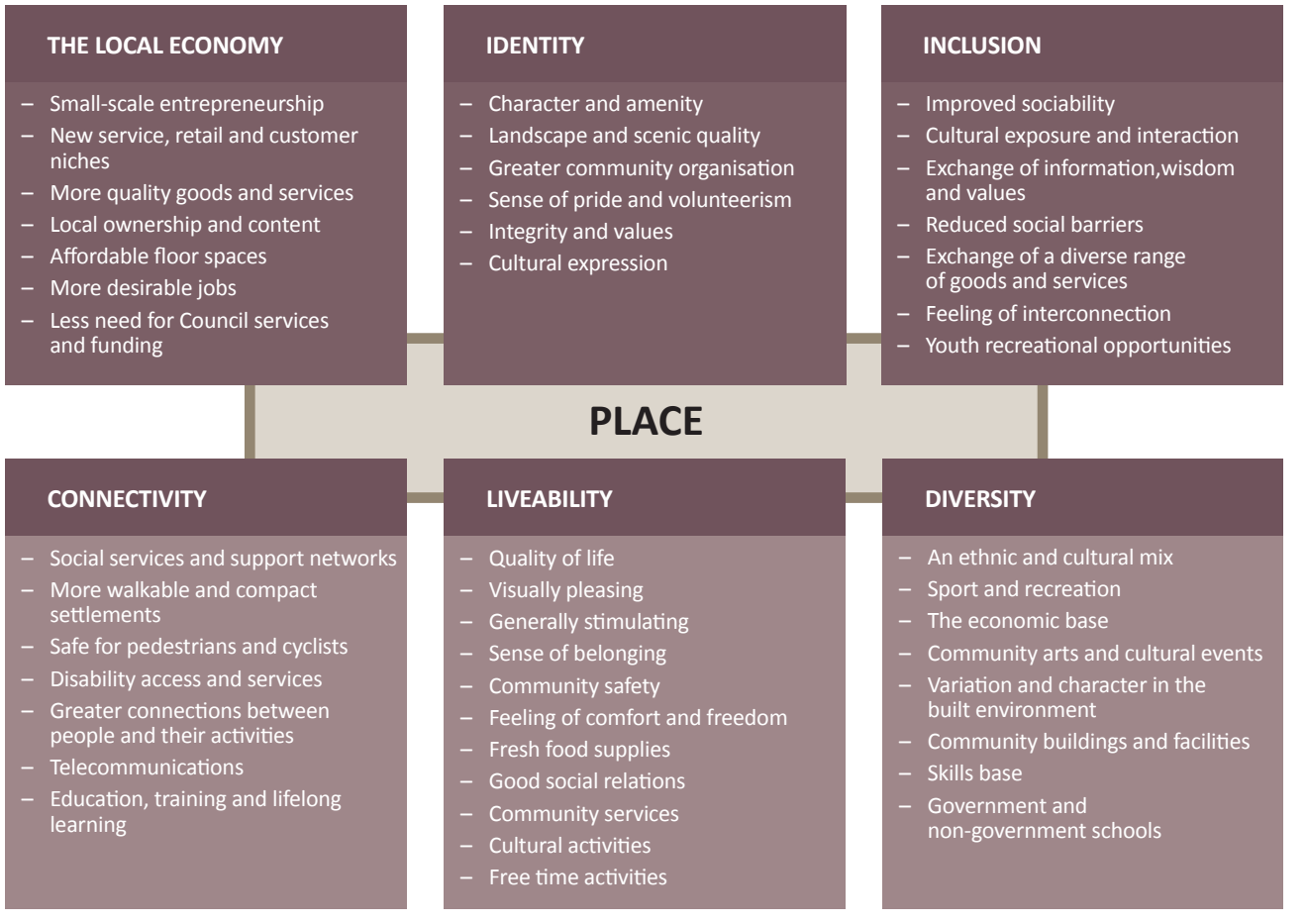
There is increasing understanding of the benefits of good design within spaces and places, including increased productivity levels, better physical and mental health outcomes, improved educational performance and better whole-of-life cost outcomes.

It is therefore important to ensure that our built environment is designed well, in order to maximise these benefits.

Strategies for ensuring good design are outlined in the Government's policy, *'Better Places and Spaces: a Policy for the Built Environment in Western Australia'.*

The Government's '*Liveable Neighbourhoods'* policy promotes compact settlement structures that are safe, accessible and responsive to the environment, with the capacity to meet the long-term needs of a community.

Figure 35 – Planning for spaces and places



Compact settlement structures optimise the spatial efficiency of land. They display spatial efficiency in the way social spaces, meeting places, community facilities and movement corridors are designed and interconnected. Transit-oriented development models offer particular benefit with regard to increased overall liveability, accessibility and sustainability outcomes.

Well-designed spaces and places are water and energy efficient, as well as waste efficient in the re-use or recycling of building materials.

The interface between the public and private domain enables interactions between people and the built environment in way that stimulates social activity.

The multiple use and regeneration of the public and private interface into functional, vibrant and attractive places encourages new enterprises to service social activity.

There is a need for coordinated investment into 'soft' infrastructure to help build a sense of place. Community meeting places in the form of community gardens, public open spaces, physical recreation facilities, civic squares and designated outdoor recreational areas foster a sense of belonging and identity.

Good design also involves facilitating the natural cooling influence of vegetation and especially tree canopy coverage to ameliorate the effects of a hot climate, with an increase in the number of days over 35°C being experienced, and combating the urban heat island effect.

Schools can be at the core of community facilities and services because they can accommodate community activities where and when size and accessibility permit.

Accordingly, community access to schools and associated passive and active facilities provides enormous social and recreational benefits ensuring a positive return on the considerable investment in public assets.

The provision of public art, heritage, cultural events, support networks, lighting and street furniture, improves a community's level of comfort and interaction.

An outcome-based approach to spaces and places can reduce crime, use energy efficiently and minimise the longer-term costs that are associated with physical inactivity.

Such places are often resource efficient, encouraging walking and cycling, and providing accessible connections with the natural environment.

This is particularly important in regional areas, where small populations often mean the provision of traditional or 'hard' infrastructure (such as a community hall, a recreation centre or a place of worship) is limited.

Key facts

- Perth has one of the highest rates of car use in the world. Based on the 2011 Census, 77% of people in Perth travel to work by car and 93% drive alone.
- Every day Perth residents make more than 400,000 car trips of less than a kilometre, ranking them among the highest users of cars in the world.
- There is an increasing trend in the use of cycle paths throughout metropolitan Perth, with an increase of 13% at fixed counters from early 2011-12.
- In the week prior to the 2011 Census, the main employment for 42,447 Western Australians aged 15 years and over was in culture, up 5.32% from 2006.
- Eight out of 10 people in Western Australia (81%) attended or participated in arts and cultural activities at least once in the past year.

State challenges

Good urban design is site-responsive and incorporates the unique qualities of its surrounding context.

In other words, no two places are the same and therefore there is no single blueprint for quality urban design; it arises from an understanding of context and place.

Often this is best delivered by outcome-based policy rather than by traditional town planning models that focus on land use through regulation.

An outcome-based approach to planning for spaces and places (Figure 35) requires those designing and assessing structure plans and development proposals to have an understanding of urban design.

Matters for consideration include the structure of a settlement, its impact on the surrounding environment, its relationship to other centres and the capacity of services and facilities to service its present and future population and economy.

The challenge to design and develop spaces and places within existing urban structures and remote settlements requires robust policy settings and flexible design guidelines as well as carefully considered procurement processes for public infrastructure and buildings.

Establishing a process of design review, involving the qualitative assessment of proposals against established design principles, ensures design standards remain relevant and effective.

Recognising and rewarding outstanding and innovative designs generates interest and continually promotes high-quality built environment outcomes.

Ensuring people who are ageing can remain in their long-term communities through the provision of aged care retirement housing options and land tenure arrangements will ease the stress on the State's service delivery programs.

The State's abundance of natural beauty and resources provides significant opportunities to excel in the creation of vibrant, safe and activated spaces and places.

Approach

Table 14 - A strategic approach to planning for spaces and places

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
The local economy	Spaces and places continue to attract investment and generate service and retail niches	Number of local patents and new business activity	• Small to medium-scale entrepreneurship continues to supply the marketplace with more quality goods and services • Opportunities to attract investment for local ownership, content and employment are commonplace • There is less need for State and local government services and funding • Local economic development strategies are in place • Activity centres offer affordable spaces for small business enterprises (including creative and arts-based industries)
Identity	Creation of a sense of place, belonging and pride	The character and amenity of places and spaces	• There is community organisation that generates a sense of pride and volunteerism • A high degree of character and amenity reflects the cultural values and landscape quality of a community • Unique and locally responsive places enhance social, cultural and economic opportunities • Spaces and places are defined by their unique local landscape qualities and cultural characteristics • Ongoing recognition of Aboriginal culture
Accessibility and connectivity	Interconnections between people and their activities	Degree of interconnections within and between spaces and places	• There is strong connectivity in urban areas between people and their activities through transit orientated developments • There is a strong connectivity in regional areas between town sites and surrounding areas of economic, natural or cultural interest • Urban design standards continue to be consistently applied to community spaces and places • Streets and streetscapes are designed for people, beyond car use • Public transport infrastructure and services continue to be enhanced • Natural areas are accessible and continue to be used to promote outdoor activities • There is universal access to education and training infrastructure • Public education assets continue to be available for community use
Liveability	Spaces and places are attractive, active and comfortable	Liveability of spaces and places	• Compact settlement structures incorporate climate sensitive urban design in all civic spaces • Substantial and coordinated investment into soft infrastructure • Vibrant and attractive public spaces and places continue to encourage active living and social interactions • Designing out crime continues to be a matter for consideration in development assessment • There are plentiful green spaces and areas of native vegetation for passive recreation
Social inclusion	Spaces and places encourage social interaction and social activities	Design excellence of community places and spaces	• The exchange of information, wisdom, knowledge and values continue to be encouraged within a community • Community interactions are enhanced through a variety of meeting spaces and places • A range of recreational activities for different age and social groups continue to be accommodated by a variety of spaces and places
Diversity	Diversity is displayed in all settlement structures	The range of land uses and development types within a settlement structure	• The demographic make-up of a community displays a mix of cultures, age cohorts, skills and qualifications • There is a range of opportunities for local entrepreneurship, recreational activities and cultural expression • There is variation in the built form and a range of suitable spaces and places available for cultural activity • There continues to be a variety of government and non-government schools and education facilities • The State continues to celebrate its cultural diversity through activities, festivals and events

Rottnest Island

3.2 Affordable living

Objective

Affordable living through housing diversity and compact settlements

The State's communities will continue to provide diverse housing opportunities suited to different income levels, lifestyle choices and household types.

Compact settlement structures will be mixed use and transit-orientated, providing access to employment, services and amenities.

Development will be designed in a way to use natural resources efficiently and sustainably. Design excellence will be particularly crucial for such developments.

More intensive models of urban development will be supported by a built environment that delivers high levels of amenity.

Overview

Affordable living is an important contributor to social wellbeing and economic growth.

The affordability of living takes into consideration not only the cost of housing but also the financial cost of living (price of food and transport costs associated with travelling to work, education, shopping and community facilities), and basic household running costs of utilities (such as water and energy).

Housing quality is measured by the OECD as the number of rooms per person. Western Australia ranks highly on this score, although there is some variation across the State.

Western Australia's projected population growth means housing stock must increase by around 700,000 dwellings by 2050. Around 500,000 – 550,000 of this increase is likely to be in the greater Perth and Peel metropolitan area, but a substantial amount, 150,000 – 200,000 dwellings, will be in regional areas.

These trends in urbanisation and regional expansion mean that planning for affordable living must account for changes in the population and the particular circumstances of regional settlements.

Housing and social service provision must also therefore be responsive to changing needs in the community, particularly for people with disability, seniors, new migrants and Aboriginal residents.

Of particular importance is:

- the mix, type, density and location of available and planned housing;
- the efficiency of the built form, such as the consumption rates of utilities, especially energy and water;
- neighbourhood design, such as lot layout, orientation, density and transit-orientated development options; and
- proximity to employment opportunities, essential facilities and services, cultural and social activities.

Affordable living is a component of sustainable and resilient communities. Towards this end, governments, charities and community groups provide ongoing support including services and financial programs to help those who are most disadvantaged.

The Government's Regional Centres Development Plan, which includes the Pilbara Cities program, will develop Port Hedland and Karratha into cities where more people choose to settle on a permanent basis, because these are becoming places to raise families with access to high standards of education, health and diverse employment and career opportunities.

A factor in the success of this program will be to reduce the cost of living so that it is more comparative to other regional centres in the State.

Key facts

- The ABS Census 2011 reveals that, whereas nearly 60% of households in Western Australia are now one or two people, 70% of housing stock was developed as a family home (Basic Community Profile, Tables B30 and B31).
- In 1976, housing loan repayments consumed a quarter of average full-time income. Recent figures show that housing loan repayments consume about one-third of the median household income.
- In 2011 the Regional Prices Index for Western Australia indicated that the cost of housing in the Kimberley is 33.1% and in the Pilbara 99.8% higher than in Perth.

State challenges

Western Australia's demographics and household structures are changing rapidly, yet the diversity of the available housing stock remains relatively static.

The high demand for housing, coupled with building and infrastructure costs, particularly in the regions, means affordability is an ongoing challenge that impacts on the ability of some communities to attract and retain a stable population and a skilled workforce base.

Affordable land is usually associated with the outer fringe of a community or regional centre. However, the cost of travelling to daily activities, such as work, school, shops and social interactions, often negates this notion of affordability.

In some regional areas, local affordability, housing issues and construction costs are creating labour market difficulties and discouraging people from moving to areas where there is demand for labour.

The planning and development of compact settlement structures, government buildings and housing precincts can be designed to include the capacity for transient workforce accommodation across the service, mining and agricultural sectors.

Urban consolidation that provides a higher density and mix of housing styles and types around active public spaces and transport corridors can generate economies of scale for affordable living.

Encouraging increased density and a range of mixed land uses around public transport nodes and activity centres can stimulate interactions and interdependencies within the local economy.

Ensuring housing designs minimise resource consumption will help to reduce cost of living pressures, such as for housing construction and utility consumption costs.

The multifaceted nature of affordable living, crossing all tiers of government, requires innovative incentives and collaborative alliances between the public and private sector.

For example, as the State's population continues to grow and age, incentives that enable residents to downsize their housing so that they can 'age in place', and remain in their communities will need to be explored.

Similarly, development incentives and procurement processes can deliver further housing diversity through partnerships and joint ventures.

A strong focus on infrastructure planning and coordination in the State's structure planning processes will continue to help coordinate and integrate the way in which utility services, such as water, energy and telecommunications, are secured, generated, transmitted and supplied to settlements.

Approach

Table 15 - A strategic approach to the planning for affordable living

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Housing diversity	Diverse housing opportunities exist for different income levels, lifestyle choices and household types	Diversity of housing in new and existing communities Demand for community housing	• All development provides a variety of housing styles, types and sizes to accommodate changes in demographics and market demand • Voluntary development incentives for the provision of affordable housing are commonplace • Community housing is of high quality and integrated into neighbourhoods • Innovative housing tenures such as housing cooperatives and community titling form part of the State's housing market
Compact settlement structures	Compact and diverse settlement structures	Majority of Local Structure Plan and Subdivision proposals compliant with Liveable Neighbourhoods requirements	• Land for multi-purpose infrastructure corridors secured • Mixed-use and transit-orientated developments continue to contribute significantly to the State's housing stock • Accessible recreational facilities and public open spaces continue to contribute to a community's urban fabric and sense of place • Communities are well-connected by walking, cycling and public transport • Reduced travel time and costs to access social services, employment, education and amenities • Affordable housing continues to be well-serviced
Resource efficient design	Development sustainably manages the consumption of natural resources	Structure plan approvals that consider the consumption of natural resources	• Conservation and adaptive re-use of existing buildings minimise service running costs • Demonstration projects showcasing resource efficient design that minimise housing construction and running costs • Building and construction materials and workmanship that minimise natural resource consumption
Cost of living	Cost of living index across the State	Cost of living index	• The consumer price index and rent index are at manageable levels for the majority of households • Social assistance programs continue to be made available to help those most in need • Housing assistance programs in the provision of affordable housing continue to be made available • Utilities continue to improve services with assistance to pay facility provided where needed • The supply of affordable housing continues to grow

3.3 Health and wellbeing

Objective

To encourage active lifestyles, community interaction and betterment

The health and wellbeing of Western Australians is essential for the vitality of its communities and for a strong and resilient economy.

The built environment is known to have a significant influence on physical activity and mental health. Compact settlement structures will encourage healthy active lifestyles, community interaction and betterment.

Opportunities for active and passive recreation, connections to the natural environment and cultural expression are integrated into existing and new settlement structures.

Overview

Active lifestyles involve activities such as travel, learning, walking, cycling, personal relationships, science, sports, arts and culture.

Health and wellbeing (Figure 36) result from active living, the provision of material needs, good community services, a strong local economy, interaction with the natural environment and a safe built environment.

Wellbeing is known to reduce depression, anxiety and the prevalence of obesity, depending upon the proximity and range of amenities and services available.

Access to affordable and nutritious food choices and opportunities for physical exercise nearby is important to help maintain good health and prevent chronic disease.

Settlement structures directly influence the built environment from its siting, design and density through to its aesthetics, safety and landscape quality.

The natural environment provides clean water, clean air and places for outdoor recreation. Retaining natural bushland and coastal areas that are accessible is essential to human health and a sense of wellbeing.

People are often attracted to spaces and places with iconic landscapes, unique histories, exciting activities or which provide an overall calming influence. These spaces and places offer people inspiration, stress relief, aesthetic values and a sense of spirituality and belonging.

Community participation is encouraged through a range of community services, programs and support networks. Liveable and inclusive communities promote community interactions through active and passive recreation and cultural activities.

People rely on being provided with access to material needs, such as food, shelter, freshwater, fuel and emergency services. Programs such as TravelSmart, LivingSmart and LiveLighter help Western Australians to examine their own behavioural patterns to achieve healthy living.

The Heart Foundation's Healthy Active by Design project outlines key design principles for guiding the development of spaces and places to ensure that they promote health and active living.

This will become more important in the future as Western Australia's population ages, increasing the pressure on the social programs and physical infrastructure that are essential to providing these material needs.

The social and economic costs of not planning for health and wellbeing can be significant and can manifest in higher rates of obesity, poor physical and mental health, social isolation and increased crime.

These costs place added stress on the Government's finances and the police, health and other social services.

An ageing population exhibits increasing demand for healthy recreation and experiences, presenting opportunities for emergent lifestyle services and facilities.

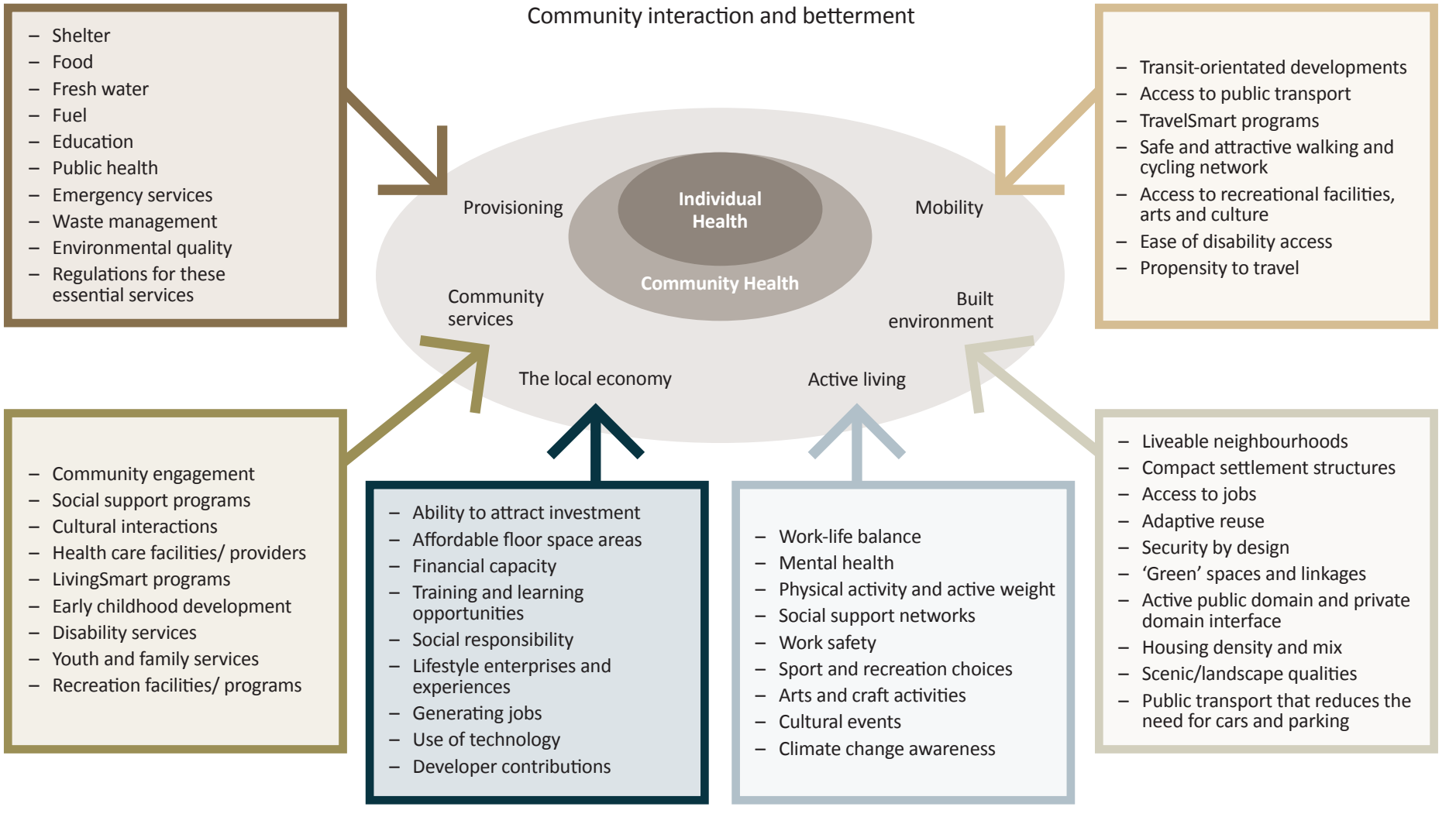
Key facts

- Australia is one of the most overweight nations in the world. In Western Australia, 66% of adults and 22% of children are classed as overweight or obese.
- In 2008, obesity (excluding overweight) was estimated to cost Australia $58.2 billion and in Western Australia $5.85 billion.
- It is estimated that over 16,000 Australians die prematurely each year as a result of physical inactivity, with nearly 2,000 of those in Western Australia.
- Nature and access to natural environments can reduce the impact of life-stress on children and help them deal with adversity. The greater their exposure to nature, the greater the benefits.

- In a 2005 European study of almost 7,000 adults in eight cities in eight countries, residents of areas with the highest levels of greenery were three times as likely to be physically active and 40% less likely to be overweight or obese than those living in the least green settings.

- In Perth, adults who have access to large, attractive public open space are 50% more likely to undertake high levels of walking. However, for mental health, the quality of the public open space was more important than its quantity. Consideration of maintenance requirements also plays an important role , as the presence of graffiti and disorder in public open space has been shown to decrease the likelihood of walking.

Figure 36 - Planning for health and wellbeing



State challenges

Population and economic growth will place pressure on community services, facilities, programs and the capacity to provide people with the material needs necessary for modern living, good health and wellbeing.

A collaborative framework for the delivery and maintenance of social infrastructure that integrates the work of all governments, communities and the private sector will help determine provisioning and strategic priorities that most directly influence health and wellbeing.

Community betterment will need to be encouraged through an ongoing investment in community programs, services and facilities. The multiple use of public spaces is especially important in regional areas, where the provision of both facilities and social programs is often difficult.

Development incentives to integrate the public and private domains within the built environment provide the spaces and places where people feel comfortable to interact and participate in community activity. The extent and degree of such incentives will be different for each community.

The challenge of enhancing the availability of public open space for outdoor recreation opportunities, including in areas where housing density is being increased, needs to be met so that healthy living is coupled with accessible healthy environments.

The incorporation of bushland and wetland areas, (including Bush Forever sites), into public open space allocations presents an added challenge.

Building collaborative arrangements across a diverse network of stakeholders will be an ongoing effort.

Approach

Table 16 - A strategic approach to planning for health and wellbeing

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Active living	Increase in active lifestyles across the state	Population weight averages and level of physical activity	• Western Australians balance work and life commitments • Western Australians display above average levels of mental health and physical activity on a national basis • There is direct and safe access to health facilities, cultural events, social support networks, sport and recreation activities and public open spaces • A significant proportion of Western Australians has a healthy weight
Provisioning	People have the dietary and material needs for modern living	Wellbeing index	• There is reliable access to fresh food, shelter, utilities, social services, freshwater, fuel and education across the State • Integrated and coordinated regulations for the provision of essential and emergency services
Mobility	People have a high propensity to travel	Travel time, distance and cost	• Compact settlement structures enable short journey to work times through transit orientated developments • Young and mature age cohorts have a greater propensity and opportunity to travel, experience and embrace healthier lifestyles • Programs continue to promote and encourage walking, cycling, the use of public transport and disability access
Community services	Developments promote the health of communities and their environment	Community and environmental health levels and development impacts	• A range of public, private and not-for-profit health care providers, facilities and services across the State • A range of services across the State for families, early childhood development, seniors, people with disablity and emergency services • Social support and programs continue to assist the people in most need • Ongoing investment into community, sport and recreation and culture and the arts facilities
The built environment	Built environments provide opportunities for social interaction and participation and promote health and active living	Rates of social interaction and participation	• The built environment is designed to encourage health and active living, through alignment with established design criteria • Community surveillance over the public realm • Public spaces and places encourage participation, social cohesion and a sense of place • Access to housing, services and facilities are designed for all user groups • Compact and interconnected settlement structures are adaptable to change and promote active living • Developments are not located in areas that would adversely affect the health of the public • Development minimises impact on the natural environment, in areas which are environmentally sensitive or provide ecosystem services

Ant clearings

Figure 37 - Planning for the environment

4. Environment

Objective

To conserve biodiversity, achieve resilient ecosystems, protect significant landscapes and manage the State's natural resources in a sustainable manner

Natural resources are usable materials in the environment, such as water, minerals, fertile land and plants. Biological resources, more specifically, are living organisms and ecosystems such as fish stocks, forests and wildlife.

Long-term management of the environment involves the enhanced conservation of the State's natural and biological resources, achieving a Comprehensive, Adequate and Representative (CAR) reserve system, integrated water cycle management and the creation of ecological linkages to protect biodiversity.

This document supports current development assessment practices that seek to preserve ecosystem functions and enable the environment to become more resilient.

Overview

Western Australia's spectacular landscapes cover one-third of Australia's land mass and comprise 10 climate zones from the wet tropical North, through inland deserts to a temperate South West, incorporating a global biodiversity hotspot and diverse marine and coastal environments.

Western Australians enjoy a high quality of life. At times this can be at the expense of the State's biodiversity and environmental assets due to our high rates of consumption.

Western Australia's large ecological footprint and high level of waste generation create a need to improve the efficiency of use of the State's natural resources.

This Strategy seeks to promote increased energy efficiency, reduced consumption and improved waste management practices, while preventing and mitigating environmental impacts through environmental management solutions.

It is important that the natural environment is appreciated both for its contributions to ecosystem services and for its intrinsic value. The conservation of nature and areas of wilderness, as well as its use for outdoor recreation and ecotourism, is of great value.

Ecosystems create a healthy environment that is capable of providing:

- cultural services (spiritual, recreational, knowledge);
- habitats for species diversity, populations and communities;
- land capability (nutrient cycling, oxygen production, soil formation, retention and fertility);
- regulating ecosystem services (pollination, seed dispersal, climate regulation and water purification);
- natural resources for primary production (timber, livestock feed, minerals); and
- fresh food and water supplies (fruit, vegetables, meat, dairy produce).

The State's natural environment is shaped by a global climate system, which is changing. The southern hemisphere's atmospheric circulations and ocean currents directly influence the climate in Western Australia.

Future climate change is likely to cause major impacts and costs on the natural environment and human systems, land development and uses, settlements and infrastructure.

The impacts are likely to include increasing temperatures, reduced rainfall in much of the State, increased frequency and length of droughts, increased bushfire risk, sea level rise, biodiversity loss and an increased frequency of tropical cyclones and extreme storm events, including storm surges, flooding and erosion.

Several natural resource management (NRM) programs are in place to address the pressures arising from development. These include integrating NRM into land-use planning, providing for environmental offsets where necessary, assessing land clearing proposals, restoring coastal environments, managing pastoral leases for feral animals and weeds, implementing biosecurity measures and adding to the conservation estate.

Land-use planning and development decisions must continue to be responsive to environmental change and emerging public health hazards, to enable ecosystems to be more resilient, and support a transition into a cleaner energy future.

Sustained growth is dependent upon a healthy natural environment, and some key growth areas of the State are located within sensitive environments. Carefully planned development can conserve the natural environment, while minimising impacts on sensitive areas.

The State's continued population and economic growth can be supported by its abundant natural resources only when development and consumption are planned and managed in a prudent way.

The development and adoption of emerging technologies will help to reduce environmental impacts.

Key facts

- Biodiversity in Western Australia is rich and unique, containing eight of the 15 national biodiversity hotspots.
- The South West is one of 35 global biodiversity hotspots, and the only one in Australia, where large numbers of species are threatened by changes to the environment.
- Western Australia has 48 wild rivers in largely undisturbed natural systems with the majority existing in the Pilbara and Kimberley.
- The total area of land vested in the Conservation Commission was 19,201,510 ha in 2013, or 7.5% of the land area of the State. Another 2.5 million ha, or 20% of Western Australia's coastal waters, is currently contained within *Conservation and Land Management Act 1984* marine parks and reserves, with additional areas proposed, such as the North Kimberley Marine Park.
- Biodiversity and freshwater systems will remain under threat well into the future given escalating trends in species extinction, human population, climate change, water use and development pressures.
- The ecological footprint of Western Australians is one of the highest in the world (measure of consumption per capita).
- Western Australia's natural resources are being threatened by climate change, population growth and urbanisation, overconsumption, forest dieback, exotic species (including weeds and feral animals), salinity, altered fire regimes, excessive land clearing and degradation.
- The impact of natural hazards such as tropical cyclones, flooding and bushfires has been increasing and is projected to continue to do so.

State challenges

Economic and population growth can lead to excessive pressure on the State's environmental and natural resources, if not appropriately managed.

Significant legacies from extensive clearing of native vegetation, the introduction of invasive species and intense development pressures in some areas of the State means that we will have to be increasingly mindful of cumulative impacts to terrestrial and marine environments.

Minimising Western Australia's ecological footprint will assist in reducing consumption, the loss of biodiversity, air pollution, impacts upon water resources and the generation of waste.

All decisions about sustained growth and prosperity must strike the appropriate balance between environmental issues, economic conditions and community wellbeing.

Avoiding and minimising further loss of biodiversity is complex because it involves taking action to manage:

- all forms of pollution;
- the impacts of climate change and natural hazards (flooding and bushfire);
- land clearing that results in habitat loss;
- environmental degradation, salinity and erosion;
- predation and displacement by introduced species;
- weed infestation; and
- plant and animal diseases.

Gaining accurate State-enabled data on an ongoing basis will provide the evidence required to better understand climate change impacts on the environment, biodiversity, coastal processes, settlements and infrastructure.

Continued investment in education and research and development programs will help the State better anticipate and adapt to emerging environmental trends and patterns.

Vulnerability mapping for the coastline will identify the areas of highest risk, so that adaptation strategies can continue to be implemented to anticipate sea level rise and extreme weather events.

Recovery plans for threatened and endangered species and ecosystems will also play an important role in the conservation of the State's biodiversity.

As pastoral leases throughout the State are renewed in 2015, the opportunity will arise to strengthen and diversify the manner in which these large areas will be managed.

A key challenge is the environmental management of the Swan Canning River System, based on scientific research and direction as to how best to balance and manage competing land uses within the context of the Swan Coastal Plain.

No market price has yet been determined or applied for increasing the use of natural resources and the consequent environmental, social and economic costs.

Planning and development decisions are required to account for the economic, social and environmental value of natural resources and assets in the public interest.

Consideration of the cumulative impacts upon the environment and natural resources, particularly vulnerable areas of the State, will require ongoing collaboration at all scales of planning and across all tiers of government.

Approach

Table 17 - A strategic approach to environmental planning

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Biodiversity	Biodiversity continues to be secured through terrestrial and marine ecosystem conservation, ecological linkages and landscape protection	Success of implementing biodiversity obligations under prevailing international treaties, national agreements and state requirements	• Ecological linkages continue to be maintained and enhanced • The terrestrial and marine conservation reserve system meets the prevailing CAR requirements • Wildlife corridors are established to improve the connectivity of the conservation reserve system • The biodiversity values within the formal conservation and off-reserve system and associated threats (especially weeds, pests and feral animals) are effectively managed • Recovery plans for threatened and endangered species and ecosystems are commonplace • The function of vital ecosystem services continue to be recovered • Ongoing development of an enhanced terrestrial biodiversity knowledge system
Climate change	The transition to a clean energy future has been facilitated and the State is responsive and resilient to climate change	Climate change mitigation and adaptation measures	• Special controls continue to be in place for vulnerable species and areas most affected by climate change • Climate change adaptation and mitigation strategies continue to be developed and implemented to minimise impacts on the State's key assets • Vulnerable areas continue to be secured and managed to foster ecosystem resilience • Risk management strategies continue to be developed and adopted for natural hazards in the context of climate change patterns and trends
Atmosphere	Atmospheric pollutants are controlled to not adversely impact on the community and environment, and to meet recognised criteria	Level of atmospheric pollutants, sources and control	• Air quality management plans continue to be in place to avoid cumulative effects in airsheds where there are intensive emissions • Suitable buffer zones continue to separate incompatible land uses to ensure air, dust and odour emissions do not impact on human health, amenity and wellbeing • A risk based approach, that includes safeguards and contingencies, continues to be used where there is uncertainty regarding the nature and level of impact
Strategic assessment	The integration and coordination of environmental, social and economic elements	Effectiveness and efficiency of environmental and planning approvals and outcomes	• Strategic planning continues to take into account cumulative impacts • Coordinated and timely local, State and Commonwealth approval processes are commonplace • The intrinsic value of nature, including that of wilderness, continue to be factored into strategic planning • Bilateral agreements are completed with the Australian Government
Natural resource conservation	Natural resources are conserved, utilised and managed for present and future generations	Effectiveness and efficiency of natural resource conservation and management	• Natural resources such as water, agricultural land, energy and mineral resources and basic raw material deposits are conserved for best future use and development • Programs continue to be implemented to meet State and national water quality standards • Activities are diversified and natural resources are managed sustainably on pastoral rangelands • Land clearing, especially of native vegetation, is limited in its extent • The ancillary use of conservation areas for outdoor recreation and ecotourism, is considered as a renewable resource
Resource consumption	Western Australians continually decrease their ecological footprint through reduced consumption and eco-efficient technologies	Resource demand and consumption	• WA is a leader in clean and renewable energy and resource efficiency • Efficient programs that track, measure and reduce consumption continue to be implemented • Government programs that reuse and recycle resources continue to be implemented in a life cycle approach • The true costs of natural resource consumption are determined and strategies implemented to reduce that consumption

Figure 38 - Planning for security

5. Security

Objective

To secure strategic economic, ecological and social assets

The sustained growth and prosperity of the State and its regions, and the physical safety of its citizens, relies on its resilience, its capacity to withstand or limit damage and recover quickly from disturbance.

The State's ability to plan for and recover from disasters without creating major social and economic fallout benefits from its investment in resilient infrastructure and sensible preparedness, which far outweigh the costs of coping with the consequences afterwards.

To achieve resilence, the use and development of land within the State's borders is considered in the context of a variety of threats, particularly climate change, natural hazards, biosecurity (including pests and disease pandemics), volatility of commodity prices and resource depletion or dependency.

Defence and industries servicing border protection have a regional presence, providing protection for the people and strategic assets of Western Australia.

Future defence land use and development requirements including housing and essential services are identified and secured.

Similarly, biosecurity measures are given appropriate consideration to ensure that agrifood production, human health and the environment are not unduly threatened.

Climate change presents unique challenges due both to the size and diversity of Western Australia and also its potential to increase the impacts of a number of natural hazards.

Overview

Security is vital for the sustainable use and development of land throughout the State. Security efforts in Western Australia have the aim of managing risks while building capacity to adapt to changing global and domestic circumstances.

Planning for security seeks to ensure that all people and essential economic and ecological assets are protected from threats. Risk management is needed to prepare safeguards and contingencies against a variety of present and emerging threats.

The planning for security in the north of the State will augment a case for an increased presence of the Australian Defence Force (ADF) and defence industry growth.

This will be a catalyst for the planning of physical and social infrastructure associated with defence and allied industries and thereby provide them with the capacity to better manage disparate border security threats and increasing threats to biosecurity.

Biosecurity hazards can arise from several sources, such as human disease pandemics, visiting ships, imported foodstuffs, feral pigs, cane toads, fruit flies, starlings, exotic turtles and freshwater algae.

A variety of measures, including quarantine, border patrols, customs inspections, import certification, research and contingency planning are necessary to address this variety of risks.

Planning for security also requires consideration of natural hazards which present different threats across the State, including tropical cyclones, flooding, severe storms, heat waves, bushfires and earthquakes.

Severe storms have a localised distribution while tsunamis and earthquakes are infrequent. Climate change has been found to affect both the frequency and severity of natural hazards.

Disease pandemics such as those commonly referred to as bird flu and malaria also require the preparation of safeguards and contingencies. The *Western Australian Emergency Management Act 2005* provides direction on the operational response to natural hazards and disease pandemics.

While the majority of Western Australians live in the South West of the State, the economic assets, infrastructure and towns in regional Western Australia are also essential to the national economy. These critical assets, some of which are offshore, include operational resource infrastructure and other assets that are yet to be developed.

Western Australia's geographic location is strategic in global and regional defence terms, with an expectation that the entire State is adequately secure.

Australia must maintain and enhance its capacity to collaborate with its economic allies and partners. This includes areas such as logistics support, sea and air lift capabilities and intelligence provided by Australian bases, consulates, ports and companies.

Training areas and ranges (onshore and offshore), operating and staging bases, logistics facilities, and personnel accommodation are all necessary to ensure security capabilities.

Key facts

- The ADF comprises over 90,000 personnel including permanent, reserve forces and civilian employees, of which approximately 6,000 are based in Western Australia.
- Western Australia is important in defence planning due to its strategic location and economic assets.
- The sea/air gap in the North West region is at the strategic centre of the 'primary operational environment', and defence strategy.
- Defence facilities rely upon robust transport, telecommunications and energy infrastructure, while ADF families require civil and social infrastructure.
- The Australian Government has planned major capability acquisitions to 2030 which will create greater demand on current facilities.
- Fleet Base West, located on Garden Island, is a major defence base for the Indian Ocean.
- The ports of Broome and Dampier support both the ADF and Australian Customs and Border Protection Service border protection operations while other regional centres have a biosecurity capacity.
- Royal Australian Air Force Base Pearce and its surrounding training facilities are the central location of airborne assets and capabilities in Western Australia and enable Australia to maintain long range strike and surveillance capacity.
- On average five tropical cyclones per year threaten the northwest coast of Australia, with two crossing the coast; this is the highest rate in the Southern Hemisphere. A greater intensity for these storms is likely in the future.
- In Western Australia the frequency of droughts, heatwaves, flooding, bushfires and severe storms is on the increase.
- In Australia, 19 of the 20 largest events causing property losses in the 40 years leading up to 2008 have been weather-related.

State challenges

The State's current orientation towards mineral and petroleum resource development presents a set of risks which need to be considered to prevent the State from being over-exposed as conditions change or events arise.

As the State further develops and diversifies its regions, the need to provide industrial and social infrastructure that supports the ADF and the Australian Customs and Border Protection Service becomes more important.

Training and service industries also support ADF capabilities in Western Australia. Training areas, bases and weapons ranges will be put under increasing strain by the acquisition of new generation weapons and requirements to co-exist with other surrounding land uses in the future.

Building these industries will help to diversify the economic base and reinforce the use and viability of infrastructure, such as transport, port facilities and information and communications technologies.

Establishing greater capacity for the ADF, international forces and the Australian Customs and Border Protection Service in Exmouth and North West towns by providing physical and social infrastructure will also help to improve security of State's economic assets particularly oil, gas and mining assets.

The challenge will be to attract defence and associated industries to Western Australia. Land availability for housing and industrial support industries along with improved social infrastructure is of particular importance.

Biosecurity threats such as pests and disease pandemics pose a significant risk to the natural environment, human health (through the spread of disease), agricultural enterprise and the export of food.

Climate change increases the vulnerability to both biosecurity and natural hazard threats across the State in different ways.

Managing the risk of threats through the development of safeguards and contingencies requires additional knowledge and analysis to ensure the State is adequately prepared to activate a range of responses and actions if needed.

For example an analysis of both trade and resources stocks will provide the necessary information and lead time for the State to respond in the event that resource stocks diminish and trade relations change.

Approach

Table 18 - A strategic approach to planning for security

ELEMENT	2050 OUTCOMES	MEASUREMENT	ASPIRATIONS
Defence land	Future ADF land requirements are secured to protect the people and strategic assets of WA	The presence of the ADF in strategic economic locations	• A comprehensive network of ADF facilities providing defence security across the state • All conflicting land-uses and encroachment on ADF facilities are resolved
Defence infrastructure	Defence industries continue to be established in regional WA	Defence infrastructure as a proportion of total infrastructure	• Regional industrial activity that supports ADF operations • The shared use of strategic infrastructure across the state • A comprehensive network of ADF facilities and operations provide defence security across the State
Auxiliary industries	Defence industry operations and locations in strategic locations	The level of housing and social infrastructure for ADF staff and their families in remote locations	• Local businesses support ADF operations and local services • Regional industrial infrastructure and activities that supports ADF operations • Housing in remote settlements accommodate the essential needs of ADF staff and their families
Border and biosecurity	Key vulnerable border and internal regions continue to be protected from biosecurity threats	Level of protection for border regions	• Customs and Border Protection facilities and operations continue to be fully resourced to address future threats • Safeguards and contingencies have been developed to manage and respond to potential biosecurity and disease pandemics threats
Natural hazards	Key areas and assets of the State continue to be protected from the effects of natural hazards	The level of safeguards and contingencies in place to manage the effects of natural hazards	• Knowledge continues to be developed on the potential impacts, mitigation measures and adaptation options regarding key natural hazards • Safeguards and contingencies are activated to protect key State assets and private property from the effects of natural hazards
Climate change	Key areas and assets of the State continue to be managed in response to climate change	The level of safeguards and contingencies in place to respond to the impacts of climate change	• Knowledge continues to be developed on areas of the State most susceptible to climate change • Safeguards and contingencies are activated to protect key State assets and private property from the effects of climate change
Natural resource depletion and global trade	The State's economy continues to diversify	The level of safeguards and contingencies in place to manage natural resources stocks and variability in global trade	• Key natural resource stocks continue to be analysed for their ongoing availability and accessibility, including for local use • Downstream processing and value adding continues to be a key part of the State's economy • The consumption and trade of natural resources continues to generate sustained State growth and prosperity • Local economies and businesses are prepared for peak-oil events and other global shocks to the market

Implementation

Collaborative action can achieve State strategic goals and objectives more effectively than any single organisation acting alone.

All indicators suggest Western Australia is in a period of sustained population and economic growth, but there are many challenges ahead.

The way ahead will not be easy and will be influenced by a range of factors including an ageing and growing population, urbanisation and regional development, climate change, technology and the global economy.

These drivers of change need to be fully understood because they are complex, interrelated and often reach beyond the scope of traditional land-use planning approaches.

Realising the ambitions of this document will require organisations and people participating in the planning system to work together, in a mature and integrated way that ensures sharing of information, ideas and most importantly pooling of resources.

A collaborative whole-of-government approach to land-use planning and land development issues is the most effective way to reach a timely, integrated response for the people of Western Australia.

Providing a State vision based on a set of planning principles, strategic goals and directions enables decision-making that can progress supporting policies, priorities, services and programs.

The State Planning Strategy 2050 can generally be applied by relevant public authorities and local governments, using the capability, capacity and legislative levers available to them.

Specifically, this Strategy provides a State strategic context from which public authorities and local governments participating in or influenced by the planning system can express and frame their respective legislative mandates.

The Western Australian Planning Commission (WAPC) will use this document to guide, shape and inform a hierarchy of State, regional and local planning tools and instruments within the Western Australian planning system (Figure 3).

It will review, refocus and rebuild collaborative arrangements with stakeholders to ensure the ongoing application and evaluation of this Strategy. The collaborative arrangements derived from each state strategic direction are outlined in Table 19.

The WAPC undertakes to enable and/or develop the following initiatives:

(a) a State settlement framework

(b) review of Western Australia's State Planning Policy Framework and planning policy development process

(c) a reform program to continually improve and streamline the *Planning and Development Act 2005*.

Table 19 - Collaborative arrangements

CATEGORY OF ACTION	ACTIVITIES
Research and development	Leading evaluative methods to track development trends and model scenarios
Strategic planning	Integrated analysis of a State strategic issue likely to influence sustained growth and prosperity
Policy development	Timely and evidence-based policy that implements the State's strategic objectives and directions
Regional planning	Regional directives aligned to the State's planning principles and strategic goals with a strong focus on infrastructure
Local development control	Local planning, development assessment and project approvals/service delivery aligned to the State's strategic goals and directions in the public interest
Customer interface	Interactive communication and information management platforms

Lake Dumbleyung near Wagin

Evaluation

Tracking the progress

Building the strategic capability and capacity of the State to become better at anticipating and adapting to change is a key focus of this strategy.

The State Planning Strategy 2050 proposes that diversity, liveability, connectedness and collaboration must be central to the vision of sustained growth and prosperity.

Strategic goals that define the Strategy's quest for sustained growth lead toward global competitiveness, strong and resilient regions, high capacity and adaptive infrastructure, conservation and management of natural assets within sustainable communities.

The State Planning Strategy 2050 provides a statewide strategic planning context that acts as a focal point for:

- the integration of strategic planning and development across the State;
- decision-making that addresses long and short term economic, environmental and social considerations;
- continual improvement of planning processes, tools and development outcomes;
- tracking landuse planning and development outcomes;
- prospective reporting on the state of planning in Western Australia; and
- collaborative partnerships between Government and the private sector.

The State Planning Strategy 2050 will be reviewed every five years by the Western Australian Planning Commission (WAPC).

A continuous improvement process for this Strategy adopts an evaluation framework similar to international standards ISO 14001 series and is aligned to the Government's Strategic Assets Management Framework (Figure 39).

A periodic evaluation report will provide the WAPC information on the extent to which land use planning and development priorities may need to be adjusted for greater on-ground effect within the context of the State Planning Strategy 2050.

For more information please email:
stateplanningstrategy@planning.wa.gov.au

Tidal waterfall, Kimberley coast

Figure 39 - State planning strategy evaluation cycle

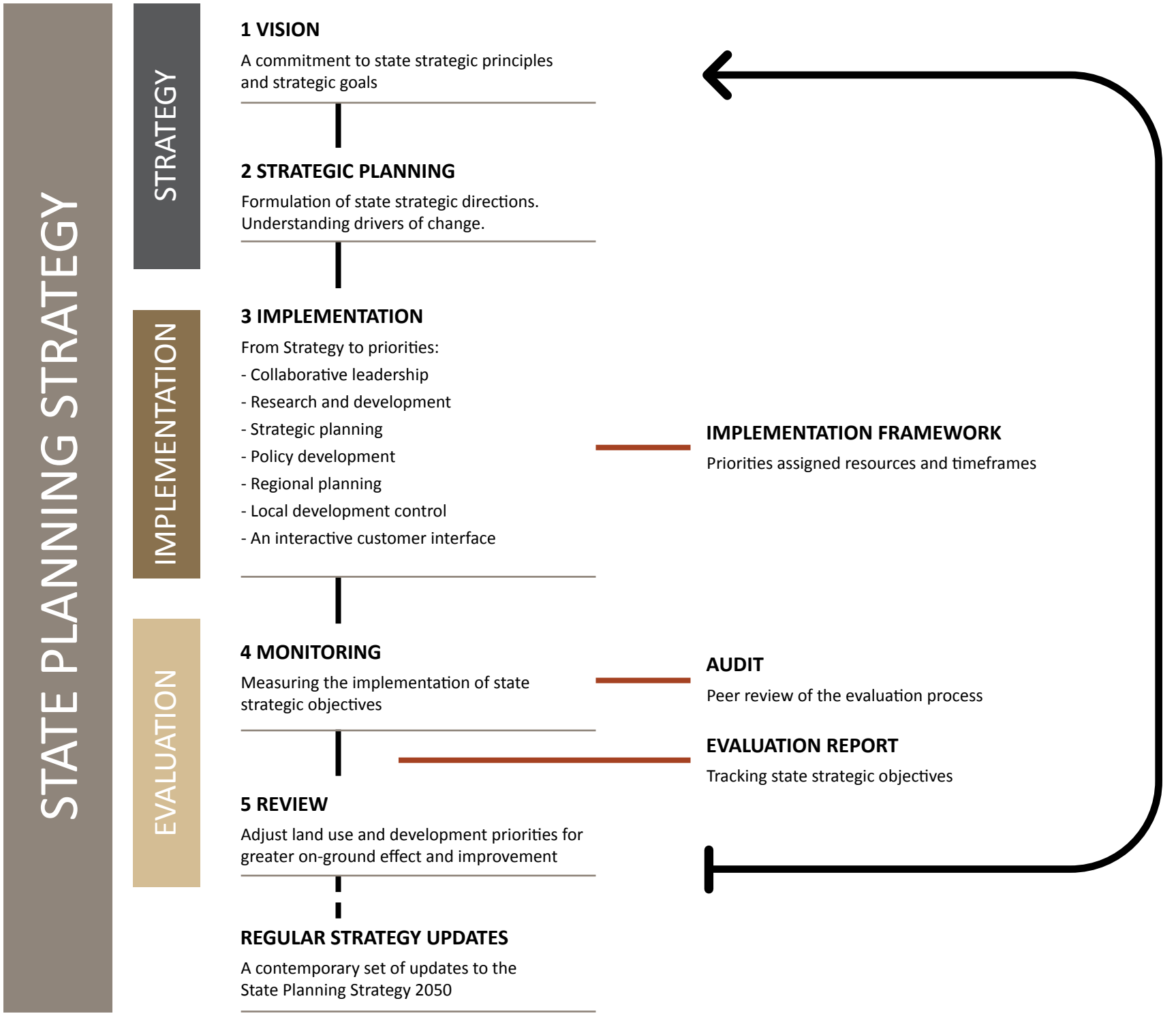


Figure 40 - At a glance – State Planning Strategy checklist

VISION	REFERENCES	PRINCIPLES	STATE STRATEGIC GOALS	STATE STRATEGIC DIRECTIONS
SUSTAINED GROWTH and PROSPERITY	☐ **Liveability:** the place of choice for the brightest and best	☐ **Community:** enable diverse; affordable; accessible; and safe communities	☐ **Global competiveness:** ☐ diversifying the economic base ☐ attraction and retention of capital ☐ global trade movements ☐ generating innovative ideas and enterprises	☐ **Economic development:** To facilitate coordinated and sustainable economic development ☐ **Resource economy:** To maintain and grow Western Australia as the destination of choice for responsible exploration and resource development ☐ **Education, training and knowledge transfer:** Western Australia becomes globally competitive as a creative, innovative, knowledge-based economy and workforce ☐ **Tourism:** To access and enhance a range of unique experiences ☐ **Agriculture and food:** To enable the State's food supply chain to meet the projected demands of its domestic and global food and fisheries markets ☐ **Remote settlements:** To maintain economic and community development through improved connectivity and cultural support ☐ **Land availability:** To ensure the sustainable supply, use and development of land
	☐ **Diversity:** offering a diversity of ecosystems; landscapes; enterprises; people and cultures	☐ **Economy:** facilitate trade; investment; innovation; employment; and community betterment	☐ **Strong and resilient regions:** ☐ embracing diverse opportunities ☐ creating liveable places ☐ building strong networks ☐ enabling collaborative advantages across and within regions	☐ **Physical infrastructure:** To coordinate physical infrastructure with development for community betterment ☐ **Movement:** To manage the movement of people, goods and services through an integrated network connected locally, regionally, nationally and globally ☐ **Water:** To support population growth and development by sustainably managing the availability and quality of water ☐ **Energy:** To enable secure, reliable, competitive and clean energy that meets the State's growing demand ☐ **Waste:** To ensure waste streams are managed as a resource ☐ **Telecommunications:** To enable access to affordable services and the digital economy on an equal basis
		☐ **Environment:** conserve natural assets through sustainable development	☐ **Infrastructure planning:** ☐ supporting economic diversity, ☐ resource-efficient services ☐ linking regional economic opportunities ☐ creating opportunities	
	☐ **Connectivity:** connected to the rest of world as any other place	☐ **Infrastructure:** ensure infrastructure supports development	☐ **Sustainable communities:** ☐ responsive to diverse needs ☐ attractive liveable environments ☐ connections between and within communities ☐ integrated and outcome-based planning	☐ **Social infrastructure:** To enable liveable, inclusive and diverse communities ☐ **Spaces and places:** Creating places and spaces that foster culture, liveability, enterprise and identity ☐ **Affordable living:** Affordable living through housing diversity and compact settlements ☐ **Health and wellbeing:** To encourage active lifestyles, community interaction and betterment
		☐ **Regional development:** building competitive and collaborative advantages		
	☐ **Collaborative:** enabling alignments that progress the State's sustained growth and prosperity	☐ **Governance:** building community confidence in development processes and practices	☐ **Conservation**: ☐ conserving biodiversity ☐ securing natural environments ☐ connecting ecosystems ☐ sustainable resource use	☐ **Environment:** To conserve biodiversity, achieve resilient ecosystems and sustainably manage the state's natural resources ☐ **Security:** To secure strategic economic, ecological and social assets

Tidal creeks north of Wyndham

Glossary

For the purposes of this document words are defined as follows:

AAA – a credit rating that signifies an extremely strong capacity to meet financial commitments.

Aboriginal settlement – discrete place that is not contiguous with a gazetted town, is inhabited or intended to be inhabited wholly or principally by persons of Aboriginal descent, as defined under the *Aboriginal Affairs Planning Authority Act 1972*, and which has no less than five domestic dwellings and/or is supported by essential services that are provided by one or more State agency.

Active transport – the seamless transition from one transport node to another. It includes travel by foot, bicycle and other non-motorised vehicles. Use of public transport is also included as it often involves some walking or cycling to pick-up and from drop-off points.

Affordable housing – housing that is available, meets the needs of people's circumstances and is within the means of low to moderate household incomes.

Air sheds – a volume of air confined to a distinct geographical region and within which pollutants are contained.

Basic raw materials – material that consists of sand (including silica sand), clay, hard rock, limestone (including metallurgical limestone) and gravel and other construction and road building materials.

Biodiversity – the variability within and among genes, species and ecosystems.

Bio-security – the prevention of infectious diseases, pests, invasive species, and biological weapons that threaten human health, ecosystems or agricultural production.

Biosphere reserves – sites recognised under UNESCO's Man and the Biosphere Programme, which seeks to reconcile the conservation of biological and cultural diversity and economic and social development.

CAR reserve system – refers to the National Reserve System being 'Comprehensive, Adequate and Representative' regarding protected areas: Comprehensive – including examples of region-scale ecosystems in each bioregion; Adequate – sufficient levels of each ecosystem to provide ecological viability and maintain the integrity of populations, species and communities; Representative – at a finer scale encompassing the variability of habitat within ecosystems. 15% of the pre-1750 distribution of each ecosystem should be protected under the CAR reserve system.

Carbon sequestration – the general term used for the capture and long-term storage of carbon dioxide. Capture can occur at the point of emission (e.g. from power plants) or through natural processes (such as photosynthesis), which remove carbon dioxide from the earth's atmosphere and which can be enhanced by appropriate management practices.

Clean energy – energy generation that has zero or minimal greenhouse gas emissions and is compatible with sound environmental stewardship.

Collaborative advantage – network of organisations and/or individuals that generate advantage by pooling their diverse resources, capabilities and capacity to manage or respond to a common issue or desired outcome.

Collaborative leadership – is the process of creating and instigating positive change and outcomes through the sharing of ideas, information and resources with others.

Comparative advantage – refers to the ability of a party to produce a particular good or service at a lower marginal and opportunity cost over another; the marginal cost is the change in the total cost that arises when the quantity produced changes by one unit - the cost of producing one more unit of a good; the opportunity cost is the loss of potential gain from other alternatives when one alternative is chosen.

Competitive advantage – the strategic advantage an entity (jurisdiction or business) has over its rival entities within a competitive market.

Community betterment – community development that enhances a community in its service or facilities.

Consumer price index – measures changes in the price level of a market basket of consumer goods and services purchased by households. It is a statistical estimate constructed using the prices of a sample of representative items whose prices are collected periodically.

Conurbation – a number of cities, towns and other urban areas that, through population growth and physical expansion, have merged to form one continuous urban and industrially developed area.

Creative capital – the intellectual process of conceiving new ideas regardless of the field of endeavour.

Creative industries – includes six segments: music and performing arts; film, television and radio; advertising and marketing; software and interactive media; writing, publishing and print media; architecture, design and visual arts.

Cultural landscape – places that illustrate how human societies and settlements have evolved within the natural landscape.

Defence industries – the industries, supply chains and associated infrastructure that supports a modern defence force.

Eco-efficiency – the production of goods or services using fewer natural resources, and reducing the environmental impacts through the life cycle of the development, product or service.

Ecological footprint – a measure of the land area required to produce the resources consumed, and absorb the wastes produced, by a population.

Ecosystem services – the processes by which the environment produces resources which provide benefits to humans (for example, clean air, water, fertile soil). They may be divided into four broad categories: provisioning, such as the production of food and water; regulating, such as the control of climate and disease; supporting, such as nutrient cycles and crop pollination; and cultural, such as spiritual and recreational benefits.

Energy technologies – the processes used to create energy, that are increasingly focussed on micropower where individual companies can create their own power plants for their own use.

Enterprise – industrious, systematic activity, especially when directed toward profit by business groups or corporations. Willingness and initiative to undertake new ventures.

Fly-in fly-out – FIFO employment arrangements whereby employees are flown to the work site for a number of days and then flown back to their home town for a number of days of rest in preference to being relocated on a more permanent basis.

Food security – when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Global competitiveness – the degree to which a country can produce goods and services which supply the demand of international markets.

Greater Perth metropolitan region – an area comprising all of the Perth region and some of the Peel region, comprising the City of Mandurah and the Pinjarra part of the Shire of Murray, and also the Shire of Serpentine-Jarrahdale which is in the Perth region under the *Planning and Development Act 2005* and in Peel under the *Regional Development Commissions Act 1993*. It has the same boundary as the ABS 'Greater Capital City Statistical Area'. This is different from the Metropolitan Perth and Peel Region under *Directions 2031 and Beyond*, which includes the rest of Murray and the Shire of Waroona in the Peel region, but excludes the Shire of Boddington.

Human capital – the skills, knowledge, and experience possessed by an individual or population, viewed in terms of their value or cost to an organisation or country.

Industrial ecology – industrial systems that behave like natural ecosystems where the integration of industrial processes allows the by-products generated by a process to be re-used by another industry.

Information communications technologies (ICT) – information technology that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), intelligent building management systems and audio-visual systems in modern information technology.

Infrastructure band – a potential link between economic growth centres within which transport and utility infrastructure corridors could be sited.

International gateways – regional centres that enable domestic and global trade through their ports, airports, highways, intermodal terminals, services industries, skilled workforce and/or iconic landscapes.

Knowledge-based economy – an economy based on creating, evaluating and trading knowledge. It describes a trend in advanced economies towards a greater dependence on knowledge, information and high skill levels.

Knowledge-based industries – those industries that are in the business of the production, distribution and use of knowledge and information.

Land assembly – a process to secure land and approvals to support development, which includes site identification, site acquisition and the gaining of all necessary approvals, which can include Planning (community, structure plan, rezoning, subdivision/amalgamation, DA), Environmental, Native Title, Cultural/Aboriginal heritage et al.

Land development – conversion of raw land into construction-ready housing, commercial or industrial building sites. The land development process involves improvements that have an indefinite lifespan, for example draining, dredging, excavating, filling, grading and paving.

Liquefied natural gas (LNG) – natural gas (mostly methane) that has been converted to liquid form for ease of storage and transportation by chilling it to -161ºC. Once liquefied the methane occupies about 1/600th of the space of its gaseous form and can be exported in purpose-built tankers.

Liveability – encompasses the many characteristics of a place that make it desirable as a place to live for people.

Natural resources – naturally occurring elements such as water, solar, wind and wave energy, wood, coal and other minerals and fertile land.

Primary operational environment – the area extending from the eastern Indian Ocean to the island states of Polynesia, and from the equator to the Southern Ocean. That area contains all Australian sovereign, offshore and economic territories, such as Cocos (Keeling) Islands, Christmas Island, Heard and McDonald Islands, Macquarie Island, Norfolk Island and also waters adjacent to the Australian Antarctic Territory (as defined by ADF 2009).

Physical infrastructure – consists of a broad array of systems and facilities that house and transport people and goods and provide services. The major elements of physical infrastructure required to sustain the State's growth include roads, railways, airports, sea ports, mass transit, housing, federal buildings and facilities, water pipelines, desalination plants, dams, sewerage, electricity generation plants and transmission lines, gas facilities and pipelines, waste facilities and telecommunications infrastructure.

Prime agricultural land – in Western Australia may be defined as that land which occurs where the agronomic factors (e.g. soils and management) and environmental factors (e.g. climate, water quality and availability) combine so that the value to society from agriculture is greater than the value from alternative uses of the land.

Purchasing power parity (PPP) – a rate of exchange between currencies that gives them equal purchasing powers in their own economies.

Quality of life – used to describe the general wellbeing of individuals and societies.

Quaternary industry sector – the knowledge-based sector of the economy that includes information and communication technology and services, scientific research and development, as well as education, consultancy and other knowledge-based services.

Ramsar sites – sites listed under the 'Convention on Wetlands of International Importance', otherwise known as the Ramsar Convention 1971, an international treaty focusing on the conservation of such wetlands, of which Australia is a signatory.

Remote regions – those areas in Western Australia north and east of its Wheatbelt region.

Remote road house – facility that provides essential goods and services such as fuel, food and accommodation to the general public, is on a reliable road network and is distant from the nearest regional centre.

Remote settlements – includes informal towns, remote road houses, Aboriginal communities, workers camps, tourist camps and remote aerodromes.

Renewable energy – any naturally occurring, theoretically inexhaustible source of energy, as biomass, solar, wind, tidal, wave, and hydroelectric power, that is not derived from fossil or nuclear fuel.

Rent index – a measure of the level of rents for dwellings in a geographic area over time. Rent measures used in consumer price indices are influenced by the existence of 'affordable', below-market rent properties and social housing.

Resilience – refers to society's ability to plan for and recover from disasters without creating major social and economic fallout. The benefits of investing in resilience far outweigh the costs of coping with the consequences after disasters strike.

Resource recovery – the recovery of material or energy resources by converting waste into a valuable resource, such as fuel, packaging material and fertilisers.

Sense of place – a component of 'cultural identity', sense of place is a personal response to environmental, social and economic surroundings, that an individual experiences in daily life. It can be the individual's or communities' perception and feeling of belonging for a home, local area, region, state or country.

Skilled worker – one who is in an occupation that must have specialised skills that require extended learning and preparation time (and where the specialised skills are learned in formal education, and such education/ training is needed as an entry level requirement for that occupation).

Smart energy grid – integrated electricity grids with communication networks that enables the feedback of real-time data and the enhanced uptake of new energy sources and technologies.

Smart infrastructure – combining information technology with infrastructure to provide information that improves an assets operation.

Social capital – the network of social connections that exist between people, and their shared values and norms of behaviour, which enables mutually advantageous social cooperation. This concept highlights the value of social relations and the role of cooperation and confidence to achieve collective or economic results.

Social inclusion – ensuring the marginalised and those living in poverty have greater participation in decision-making which affects their lives.

Social infrastructure – has both 'hard' and 'soft' elements. 'Hard' elements include health facilities and centres, education facilities, recreation grounds, police stations, fire and emergency service buildings, art and cultural facilities, affordable and appropriate housing and other community facilities. 'Soft' elements may include programs, resources and services (including educational, health, social, emergency and postal) that complement the 'hard' elements of social infrastructure and contribute to the formation of a community with a sense of 'place' that people identify with, addressing issues of equity, access, inclusion and quality of life.

Spatial planning – spatial planning refers to the methods used to plan the geographic distribution and scale of land development.

State final demand value – a broad measure of the level of spending by people and businesses on the consumption of goods, services and capital.

Strategic Industrial Areas – key industrial locations throughout Western Australia that take advantage of natural resources and competitive advantages, including availability of suitable land and access to population centres and physical and social infrastructure.

Structure plans – provide a framework for the coordinated provision and arrangement of future land use, subdivision and development including the provision of transport networks; public open space; utility and service networks; urban water management; development standards; and community infrastructure and other investment and staging programs. A structure plan is a particularly important planning instrument for land held in fragmented or multiple ownership. It often accompanies a region scheme amendment or local planning scheme amendment proposal in order to illustrate future development and subdivision intentions.

Sustainability – meeting the needs of current and future generations through the integration of environmental protection, social advancement and economic prosperity.

Sustainable communities – communities that are planned, built, or modified to promote sustainable living. Places where people want to live and work, now and in the future; that meet the diverse needs of existing and future residents, are sensitive to their environment, their economy and contribute to a high quality of life.

Sustainable development – development that meets the needs of the present population without compromising the ability of future generations to meet their own needs.

Systems thinking – the process of understanding how things influence one another within a whole. In organisations, systems consist of people, structures, and processes that work together to make an organization healthy or unhealthy. Systems thinking focuses on cyclical interconnections rather than a linear cause and effect.

Urban design – the process of giving form, shape and character to the arrangement of buildings, to district neighbourhoods, or a whole town or city.

Western Trade Coast – the region comprising the Kwinana Industrial Area, Rockingham Industry Zone, Latitude 32 Industry Zone and Australian Marine Complex, which currently produces over $15 billion annually and employs over 11,000 people.

Wild rivers - those rivers which are undisturbed by the impacts of modern technological society. They remain undammed, and exist in catchments where biological and hydrological processes continue without significant disturbance. They occur in a variety of landscapes, and may be permanent, seasonal or dry watercourses that flow or only flow occasionally.

Acronyms

ABS	Australian Bureau of Statistics
ADF	Australian Defence Force
ASKAP	Australian Square Kilometre Array Pathfinder
BERD	Business Expenditure on Research and Development
BRM	Basic Raw Materials
CAR	Comprehensive, Adequate and Representative
CBD	Central Business District
DoP	Department of Planning
FIFO	Fly-in, fly-out
GDP	Gross Domestic Product
GL	Gigalitres (1,000,000,000 litres)
GOVERD	Government Expenditure on Research and Development
GSP	Gross State Product
Ha	Hectares
HERD	Higher Education Expenditure on Research and Development
ICC	Infrastructure Coordinating Committee
ICT	Information Communications Technology
ITS	Intelligent Transport Systems
Km	Kilometres
LNG	Liquefied natural gas
Mj	Megajoules
M	Million
NBN	National Broadband Network
NRM	Natural resource management
OECD	Organisation for Economic Cooperation and Development
PPP	Purchasing power parity
RMCP	Regional mobile communications project
R&D	Research and Development
SKA	Square Kilometre Array
SPS	State Planning Strategy
TIAC	Technology and Industry Advisory Council
WA	Western Australia
WAPC	Western Australian Planning Commission

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