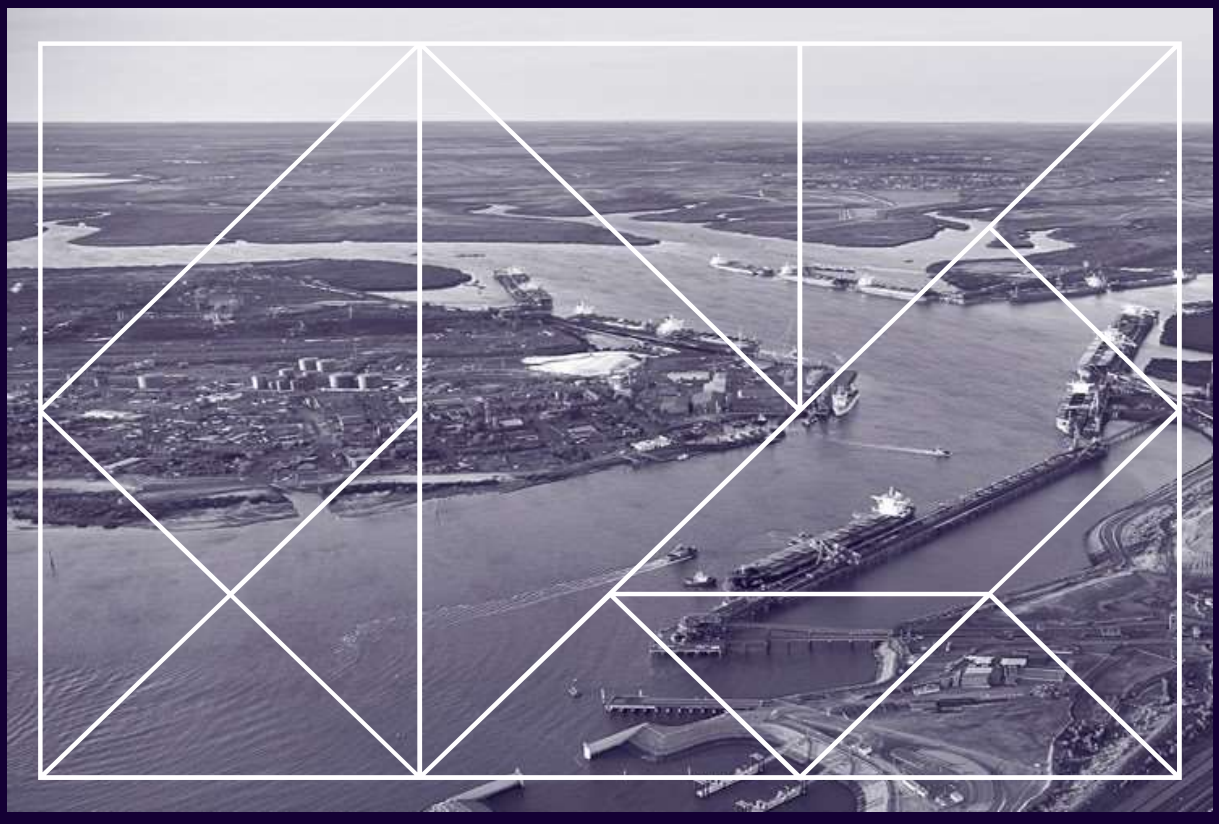
ACIL ALLEN

June 2021

Report to Infrastructure WA

Regionalising the State Infrastructure Strategy

Regional Strengths and Opportunities Assessment



Interpreting this report

- The regional strengths and opportunities assessment presented in this report has been based on a set of **71 indicators across seven economic and social development categories that help to assess the capacity of a region to host any one of the six opportunities** that have been defined by Infrastructure WA in the State Infrastructure Strategy Vision.

- The suite of indicators provided the basis to profile each of Western Australia's nine development regions and the Perth Metropolitan area in a consistent and objective way, but was also a critical part of the Multicriteria Assessment (MCA) framework to assess the relative strengths of each region and the capacity of a region to host any one of the six opportunities. The MCA framework applied individual weights to each indicator within each category, reflecting the importance of each indicator in assessing a region's strength. When each indicator weighting is assessed against the category weightings that are applied to each opportunity, there are **some 426 individual weighting that form the MCA framework**.

- The key limitation of this analysis was the data that was available at a regional level, including in relation to the measurement of agricultural land capacity, water availability, industrial and commercial zoned land, numbers of Aboriginal businesses, telecommunications, renewable energy generation capacity, major projects under consideration, and tourism visitation. **These data gaps limit the ability to assess specific industry opportunities at a regional level.**

- Notwithstanding the data limitations, ACIL Allen's assessment provides an **objective, transparent and robust assessment of a region's strengths as they apply to the opportunities identified in the State Infrastructure Strategy Vision**. The results are a **comparative assessment** of a region's strengths and opportunities, but this does not mean that a region is not capable of hosting any of the six opportunities. It simply points to how a region ranks relative to other regions.

- The results presented in this assessment should form part of a **broader assessment of a region's economic and social development potential, taking into consideration private sector interest in a region, WA Government priorities for a region, and the broader economic development agenda for the State as a whole.**

About ACIL Allen

ACIL Allen is the largest independent, Australian owned economic and public policy consultancy.
We specialise in the use of applied economics and econometrics with emphasis on the analysis, development and evaluation of policy, strategy and programs. Our reputation for quality research, credible analysis and innovative advice has been developed over a period of more than thirty years

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Executive summary

Report overview

Since its formation on 1 July 2019, Infrastructure WA has been tasked to develop Western Australia's first 20 year State Infrastructure Strategy. The intent of the State Infrastructure Strategy is to identify needs and priorities to support Western Australia's growing population and economy.

The development of the State Infrastructure Strategy has been guided by Infrastructure WA's State Infrastructure Strategy Vision, and the articulation of six broad opportunities for Western Australia:

1. **A global location of choice** to work, live and invest, with highly liveable, stable and inclusive communities, with access to top quality public services.
2. **Serving the emerging consumer class**, through high quality tourism, agrifood and education exports.
3. **Promoting and leveraging Aboriginal heritage and enterprise**, to underpin new enterprises and business opportunities, and foster a society which is more inclusive and sustainable.
4. **Supporting the transition to green energy technologies**, by deploying its world-class physical and intellectual capital to develop its green energy resources, allowing it to both transition its domestic energy use and become a global renewable energy exporter.
5. **Approaching the technology frontier**, by leveraging its existing leadership in advanced technology to create a robust technology start up and investment ecosystem.
6. **Value-adding for strategic commodities**, by leveraging cheap, reliable, renewable energy and supply chain security, to process strategic mineral and agricultural commodities within the State, becoming a producer and exporter of value-added downstream products.

In order to progress the development of the State Infrastructure Strategy, Infrastructure WA has identified a need to contextualise and ground its Vision to the current and future economic and social context of Western Australia through the State's existing regional development framework.

To assist in this regard, ACIL Allen was engaged to help "regionalise" Infrastructure WA's vision through the development of an economic and social baseline assessment of each of WA's 10 regions (the nine Regional Development Commission regions, plus the Perth Metropolitan Area), and identify the geographic spread of strengths and opportunities across the regions.

Western Australia's 10 regions all have unique competitive and comparative advantages, centred on their natural assets, access to human capital, and existing built infrastructure. These unique strengths mean not all regions are alike when it comes to their suitability for particular industries and economic development opportunities. ACIL Allen's approach to objectively assessing regional strengths in the context of the State Infrastructure Strategy Vision, and in particular the six economic development opportunities, was centred on a Multicriteria Assessment (MCA) tool. This tool allows ACIL Allen to assess each region against a number of economic and non-economic

indicators which together provide an objective and holistic view of its economic and social potential in relation to the opportunities identified in the State Infrastructure Strategy Vision.

An MCA is a logical framework which compares items across a series of data points, both qualitative and quantitative, on a consistent basis in order to score and/or rank them against each other. MCA is typically used to compare options against one another in a logical manner as part of the formation of a business case. Infrastructure WA itself is utilising an MCA framework to assist in the prioritisation of investment proposals to develop its inaugural State Infrastructure Priority List.

ACIL Allen's MCA was designed to not only assess the relative strengths of each of Western Australia's regions, but also how these relative strengths determine which regions are best suited to hosting each of the six economic development opportunities identified in the State Infrastructure Strategy Vision.

The MCA framework for this assessment is based on 71 individual indicators, which are grouped into seven categories presented below.

- **Economy**: provides a critical view of each region's current and potential economic strengths using 13 individual indicators that span broader economic indicators, more specific industry indicators, current and future major projects, and business numbers in a specific region.
- **Industry**: provides a critical view of each region's current and potential industry base by focussing on a number of key industries and the factors of production that are critical to their long term success. This category uses 15 individual indicators that span a number of key industry indicators specifically called out in the SIS Vision opportunities, as well as indicators that assess a region's key factors of production that are critical to industry development.
- **Human Capital**: provides a critical view of each region's human capital as an enabler of economic growth and development using 16 individual indicators spanning population trends and composition, workforce characteristics, education and skills, and the degree of welfare dependence in a region.
- **Liveability**: provides a critical assessment of the liveability of each region using nine individual indicators spanning the factors influencing liveability, including the overall cost of living in a region, the provision of essential services, the size of key regional centres, and the overall proximity of the region to Perth.
- **Infrastructure**: provides a critical view of each region's infrastructure network using five individual indicators that help to assess the key infrastructure in the region. Indicators such as port access, airport access and road and rail infrastructure availability were based on spatial analysis, while data on mobile coverage, internet coverage and electricity generation were able to be sourced through public sources.
- **Climate**: provides a critical view of each region's climate conditions using five individual indicators to better understand the key climatic conditions in the region and the extent to which these conditions can support renewable energy opportunities (wind and solar), as well as the extent to which the climate can enhance or detract from a region's liveability.
- **Natural Environment**: provides a critical view of each region's natural environment using seven individual indicators to better understand the natural environment advantages in the region and the extent to which these conditions can support tourism opportunities, as well as the extent to which the natural environment enhances or detracts from a region's liveability. Spatial based analysis was undertaken to assess each region's coverage of World Heritage Areas, National Parks, Conservation Parks, Marine Parks, Marine Nature Reserves and State Forests.

A description of each indicator under each category is presented in Section 3 of this report. The indicators were also used to generate detailed economic and social profiles for each of the development regions, which have been presented in Part II (Sections 4 to 12) of this report.

To assess the relative strengths of each region, ACIL Allen weighted each of the indicators within each category according to its relative importance in determining a region's category strength. Under ACIL Allen's MCA framework each region's relative strength across the seven categories can be objectively assessed.

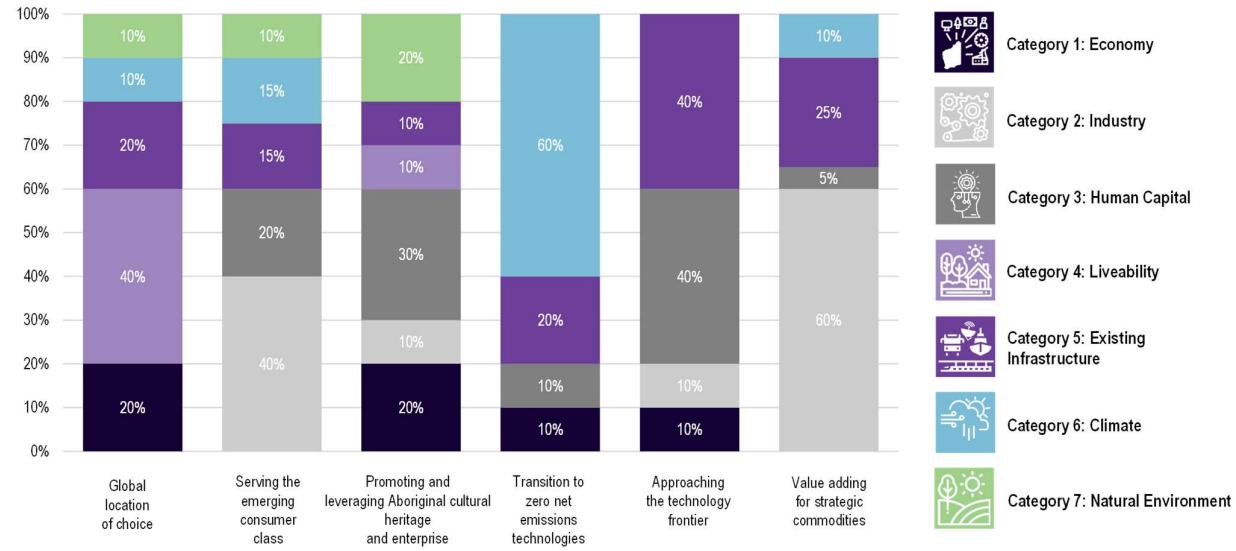
For a detailed presentation of the relative weightings that were applied to each indicator in each regional strength category, please see Section 13.2 of this report.

To assess each region's capacity to realise any of the six opportunities, ACIL Allen's MCA framework then weighted the importance of each of the seven categories to realise each opportunity. Each of the category-to-opportunity weightings is different, reflecting the fact the combination of strengths required differs across the opportunities. When each of the individual indicator weightings is multiplied by the category weightings, a set of detailed MCA indicator weightings was calculated for each opportunity.

A summary of the Opportunity weightings (how each Category drives the assessment of a region's capacity to host an Opportunity) is presented below. Each of the six opportunities are unique, and therefore require different magnitudes of importance of key regional strengths in determining whether a region has the potential to realise a particular opportunity defined under the State Infrastructure Strategy Vision.

For a detailed presentation of the relative weightings that were applied to each industry strength category for each opportunity, please see Section 13.3 of this report.

Figure ES 1 Opportunity weightings: Summary of Opportunity to Category weightings



Source: ACIL Allen

Regional strengths assessment results

Overall, the regional strengths assessment undertaken through ACIL Allen's MCA tool found that the Perth Metropolitan Area ranked highest across five of the seven categories (Economy, Industry, Human Capital, Liveability, Infrastructure). Outside of Perth, the Pilbara, Peel and South West regions were the best performing regions across the key economic development categories, with the Gascoyne and Mid West regions assessed highly for the Climate category (as it relates to renewable energy opportunities) and the Kimberley and Gascoyne regions best performing for the Natural Environment category.

A brief summary of ACIL Allen's regional strengths assessment is presented below and in Figure ES 1, with a more detailed summary presented in Section 14.1 of this report.

From an **Economy** perspective, the Perth Metropolitan Area was the highest ranked region due to its large, diversified and service-based economy which has a significant number of employing businesses which support its large population base. Outside of Perth, the Pilbara region ranked next highest, reflecting is its significant contribution to the national economy through its mineral and energy production and significant level of investment earmarked for current and future major projects. The South West region also ranked highly due to its sustained level of economic growth, strong service sector, low rate of business insolvency and a modest level of investment earmarked for current and future major projects.

Through the lens of the **Industry** category, the Perth Metropolitan Area was the highest ranked region, despite the absence of a major presence in mining or primary agricultural production, due to its strength in tertiary education and tourism industries, a high availability of land for future industrial and commercial development, and a high value of aquaculture, seafood and, food and beverage manufacturing production and capabilities. The Peel and South West regions rank high due to their availability of industrial and commercially zoned land and, the availability of land suitable for agricultural production and existing production of primary agricultural products (ie. South West's production of horticulture and forestry). The South West region was also assessed highly due to its above average level of building activity, water resources, interstate and international visitation and tertiary education offerings. The Pilbara region also scores highly due to its strength in operating mines sites, proven and measured resources and building approvals.

Human Capital is a critical enabler of economic and social development in the regions. As home to around three quarters of the State's population and labour force, the Perth Metropolitan Area ranked the highest in this category. For similar reasons, the Peel and the South West regions were the highest ranking regional areas due to their relatively large and growing population.

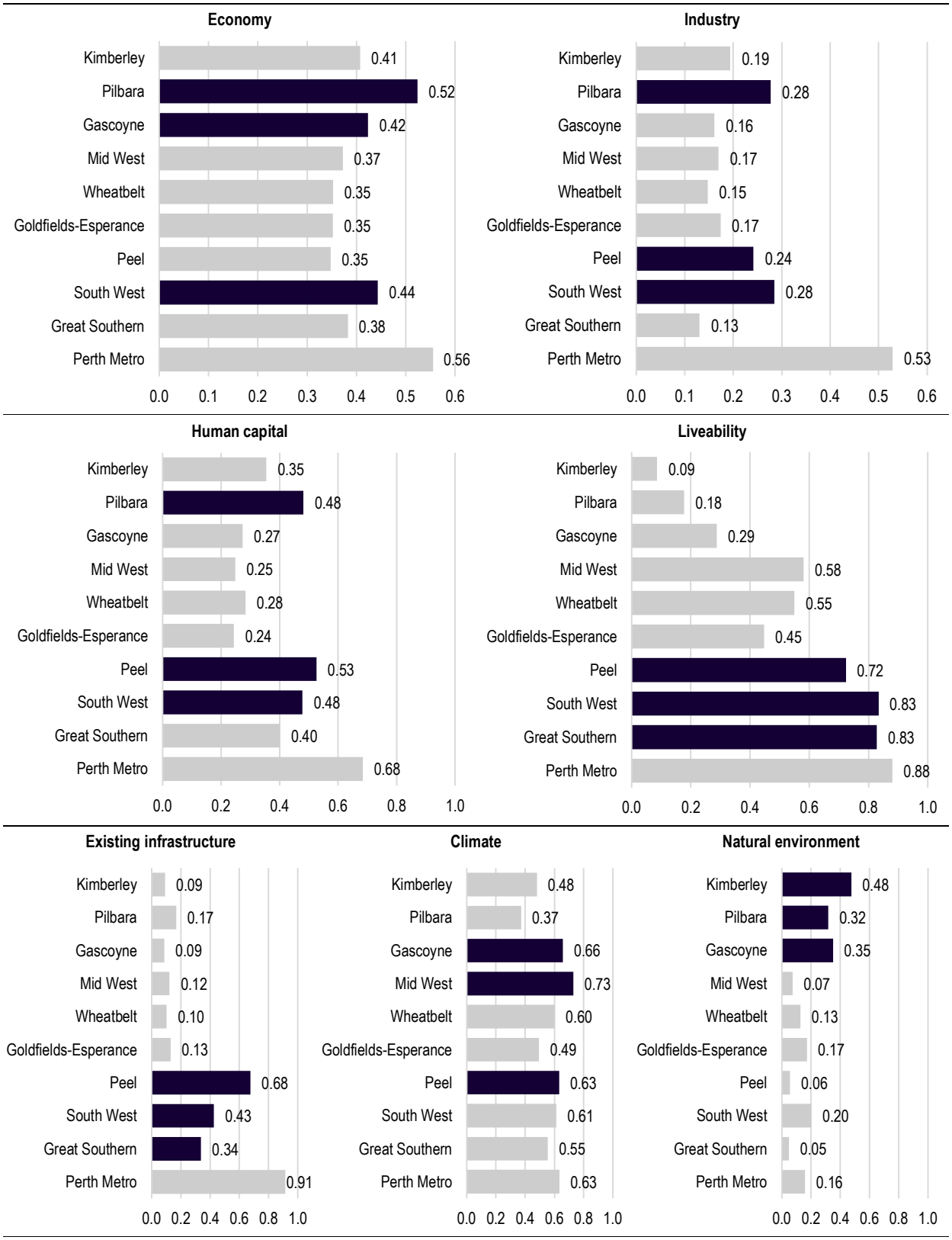
When assessing **Liveability** as a source of regional strength, the regions in the south and west of the State perform significantly stronger than regions to the north and east. The Perth Metropolitan Area ranks the highest in terms of liveability, with the Peel, South West and Great Southern regions also scoring highly due to their proximity to Perth, relatively large regional centres with adequate levels of service and infrastructure, and their relative affordability compared to regions in the north.

As the **Infrastructure** strengths assessment assesses how well supplied a region is with economic and transport infrastructure today, as opposed to assessing its capacity to provide infrastructure in the future, the Perth Metropolitan Area was assessed as having the highest rating, due to access to ports, freight road and rail, airports and telecommunications infrastructure. Other regions in the south west of the State also perform well, due to existing ports infrastructure in particular.

From a **Climate** perspective, the Mid West, Gascoyne and Peel were assessed to exhibit strength in this category in supporting solar and wind renewable energy generation potential. While the Pilbara region is increasingly seen as a prospective region for solar energy generation, it's score was weighed down by its scores on temperature, rainfall and average wind speed for the purposes of generating renewable energy.

Finally, from a **Natural Environment** perspective, the Kimberley region ranked highly in this category due to its large share of Nature Reserves and environmental assets. The Gascoyne region also ranked highly due to its two World Heritage Sites.

Figure ES 2 Summary of regional strengths analysis



Source: ACIL Allen

Regional opportunities assessment results

Collectively, the six opportunities identified in the State Infrastructure Strategy Vision present a broad spectrum of economic and social development aspirations for regional Western Australia. However, the potential for a region to realise any of the six opportunities will be dependent on the capabilities of each region, both in an absolute sense and a relative sense.

ACIL Allen's MCA results provide an objective comparative assessment of the capacity of a region to be able to host any of the six opportunities identified by the State Infrastructure Strategy Vision.

A brief summary of ACIL Allen's regional opportunities assessment is presented below and in Figure ES 2, with a more detailed summary presented in Section 14.2 of this report.

In relation to **Opportunity 1 (Global location of choice)**, the Perth Metropolitan Area scored highest because of its high degree of liveability, access to existing infrastructure and strong economic base. Regions in the south of the State, namely Peel, the South West and the Great Southern, performed well due to their liveability and infrastructure, which is a relative weakness of regions in the north of the State.

For **Opportunity 2 (Serving the emerging consumer class)**, the Perth Metropolitan Area again scored highest due to its strength across multiple industry categories and in particular tourism and education which are defined in the opportunity. The Peel and South West regions score relatively well because of their strengths in individual industries. However, because this opportunity is targeted at tourism, education and agrifood, the assessment ranks those regions that have strengths across all of these opportunities highest.

For the purposes of analysis, ACIL Allen was able to run three separate scenarios to assess how the overall results would change if the opportunity was isolated to tourism, education and agrifood exports. From a tourism perspective, the South West, Gascoyne and Kimberley regions were identified as the most prospective regions due to their relative strengths across tourism a range of indicators (see Tourism Composite Index discussed in **Section 3.3**).

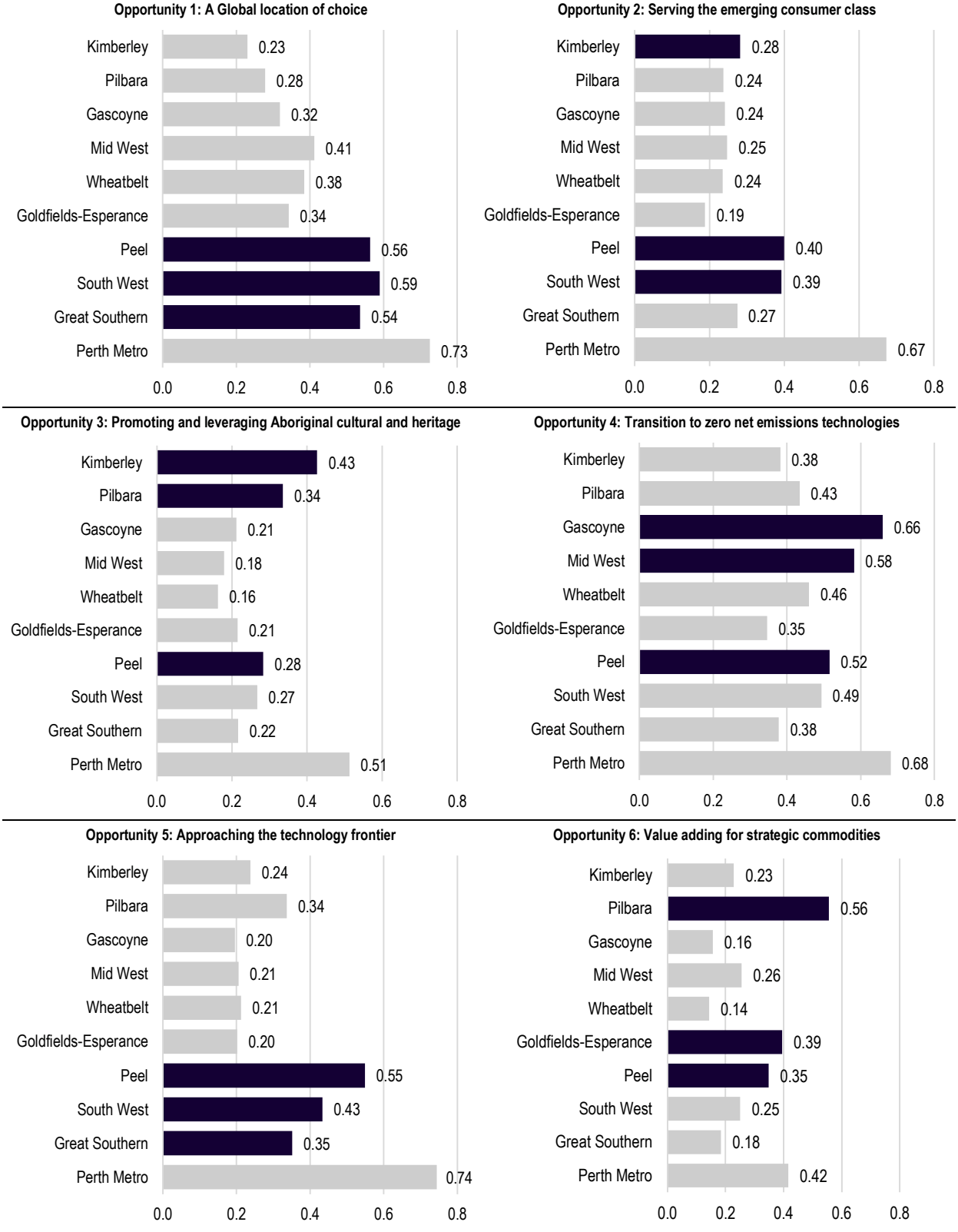
From an agriculture perspective (and outside of the Perth Metro region), the Wheatbelt, Great Southern and South West regions were identified as the most prospective regions for livestock and livestock products; the Wheatbelt, Great Southern and Mid West regions were most prospective for grains and feeds and; the South West, Peel and Wheatbelt were most prospective for horticulture and irrigated crops (more information on these results can be found in **Section 14.2.3**). These results were largely driven by a region's relative strength in value added by sector.

For **Opportunity 3 (Promoting and leveraging Aboriginal heritage and enterprise)**, ACIL Allen's MCA indicator weightings were overridden to better reflect the importance of the most relevant data sets centred on diversity and Aboriginal Australians (share of businesses which are Aboriginal Businesses, share of the region's population which are of Aboriginal descent, and the share of the region's population with one or more parents born overseas).

The Perth Metropolitan Area ranked highest due to its population diversity, high share of Aboriginal businesses and generally supportive business environment. The Kimberley and Pilbara regions also rank highly due to their high share of the State's Aboriginal population, the share of operating Aboriginal business and strong scores on natural environment indicators (which reflects the findings of the State Infrastructure Strategy Vision that Aboriginal economic development opportunities are strongly linked to culture and country).

In relation to **Opportunity 4 (Transition to zero net emissions technology)**, ACIL Allen's MCA indicator weightings for the Climate category were overridden to restrict the strength assessment to underlying renewable energy generation capacity. Regions with capacity to provide both high quality wind and solar resources were scored more favourably than those with one resource, and those with limited resources scored poorly.

Figure ES 3 Summary of regional opportunity analysis



Source: ACIL Allen

The Perth Metropolitan Area ranked highly due to its existing infrastructure and prospective renewable energy capacity from a wind perspective. The Gascoyne and Mid West regions score

highly due to their favourable climate that can support renewable energy generation, however, they are weighed down by weaker scores in terms of infrastructure provision.

The Pilbara region didn't rank highly on this initial assessment due to its relatively poor scores on existing public infrastructure and relatively poor performance on the wind resources indicator, which ran contrary to current private sector investment activity, and in particular the prospective Asian Renewable Energy Hub development. To address this concern, ACIL Allen conducted a further analysis of the MCA to eliminate the penalties associated with a poor score in one of the two renewable energy generation capacity indicators, by adopting the maximum score across the two categories as the driver of the Climate strength. The change results in scores increasing across all regions but notably in the Pilbara, Kimberley and Great Southern regions due to their strength in either wind speed or solar exposure.

Opportunity 5 (Approaching the technology frontier) was a challenging opportunity to assess within the MCA framework, as there was a lack of definition about the factors which would drive a region's competitive and comparative advantages in technology outside of access to telecommunications infrastructure. This is reflected in the weightings which apply to this opportunity, which are primarily centred on general human capital and access to existing infrastructure.

The Perth Metropolitan and Peel regions score high due to their strength in human capital resources and telecommunication infrastructure. Other regions score poorly because of their lack of capability in the important factors that underpin this opportunity, in particular existing infrastructure.

For **Opportunity 6 (Value adding strategic commodities),** ACIL Allen's MCA indicator weightings for the Industry category were overridden to restrict the strength assessment to underlying primary industry production capacity, being the factors of production associated with agriculture and mining. Regions with capacity to provide both agriculture and resources factors of production were scored relatively stronger than those with capacity to support one of the two.

The Pilbara region ranked highest on this opportunity due to its significant measured and proven mineral resources, the number of operating mines in the region, and its reasonably strong performance in renewable energy potential. The Goldfields-Esperance region also performed strongly under this assessment due to its proven mineral resources and its number of operating mines.

In a similar manner to Opportunity 2, the framing of this opportunity within the State Infrastructure Strategy Vision is primarily centred on the opportunity to "value add to strategic commodities" first, with the specific industries where this could be achieved (minerals and agriculture) a secondary consideration. Agriculture and mining have very different factors of production and therefore underlying strengths. To better reflect this in the MCA, ACIL Allen conducted secondary analysis which isolated each region's underlying strengths in agriculture and mining separately.

In the case where strategic mineral commodities is the focus of the opportunity, the Pilbara region ranks even higher under this scenario due to a heavier weight being placed on proven mineral resources and the share of operating mine sites. The adjustment to the Climate indicator weights strengthens the Pilbara's score as it has a high solar exposure rating. The Mid West rating has improved because of its wind energy potential and number of operating mine sites.

When the focus is on strategic agricultural commodities, the results change, with the South West, Wheatbelt and Great Southern regions scoring the highest due to their availability of agricultural land, existing level of agricultural production across various sub-sectors (e.g. grains or livestock and livestock products), level of rainfall, existing infrastructure and moderately suitable climate for renewable energy. Perth also scores strongly due to its existing infrastructure and its capacity in food and beverage manufacturing.

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Preliminaries

I

Introduction and purpose of report 1

1.1 Introduction

Infrastructure WA is Western Australia's expert advisor on a range of infrastructure matters, particularly regarding the infrastructure needs of Western Australia in support of the following objectives.

— Assist in enhancing the efficiency and effectiveness of infrastructure planning and coordination

— Promote the adoption and use of policies, practices, information and analysis to support sound decision-making in relation to infrastructure.

Infrastructure WA's primary focus since it was formed on 1 July 2019 has been to develop Western Australia's first 20 year State Infrastructure Strategy. The intent of the State Infrastructure Strategy is to identify needs and priorities to support Western Australia's growing population and economy.

Infrastructure WA engaged a third party consultant to conduct scenario planning to inform the development of the first State Infrastructure Strategy. This included the development of Infrastructure WA's vision, and the selection of a desired scenario for the future of Western Australia. This scenario has been termed *The Future We Plan For*.

The central opportunities identified in the analysis and selection of the preferred scenario are for Western Australia to be (by 2040):

1. A global location of choice to work, live and invest, with highly liveable, stable and inclusive communities, with access to top quality public services.
2. Serving the emerging consumer class, through high quality tourism, agrifood and education exports.
3. Promoting and leveraging Aboriginal heritage and enterprise, to underpin new enterprises and business opportunities, and foster a society which is more inclusive and sustainable.
4. Supporting the transition to green energy technologies, by deploying its world-class physical and intellectual capital to develop its green energy resources, allowing it to both transition its domestic energy use and become a global renewable energy exporter.
5. Approaching the technology frontier, by leveraging its existing leadership in advanced technology to create a robust technology start up and investment ecosystem.
6. Value-adding for strategic commodities, by leveraging cheap, reliable, renewable energy and supply chain security, to process strategic mineral and agricultural commodities within the State, becoming a producer and exporter of value-added downstream products.

The articulation of these six opportunities for Western Australia provide the basis for Infrastructure WA's State Infrastructure Strategy Vision.

"Western Australia is a sought-after place to live, work study and invest, with infrastructure improving productivity and equity, and unlocking industry growth – particularly in opportunities that leverage WA's advantage and diversify its economic base."

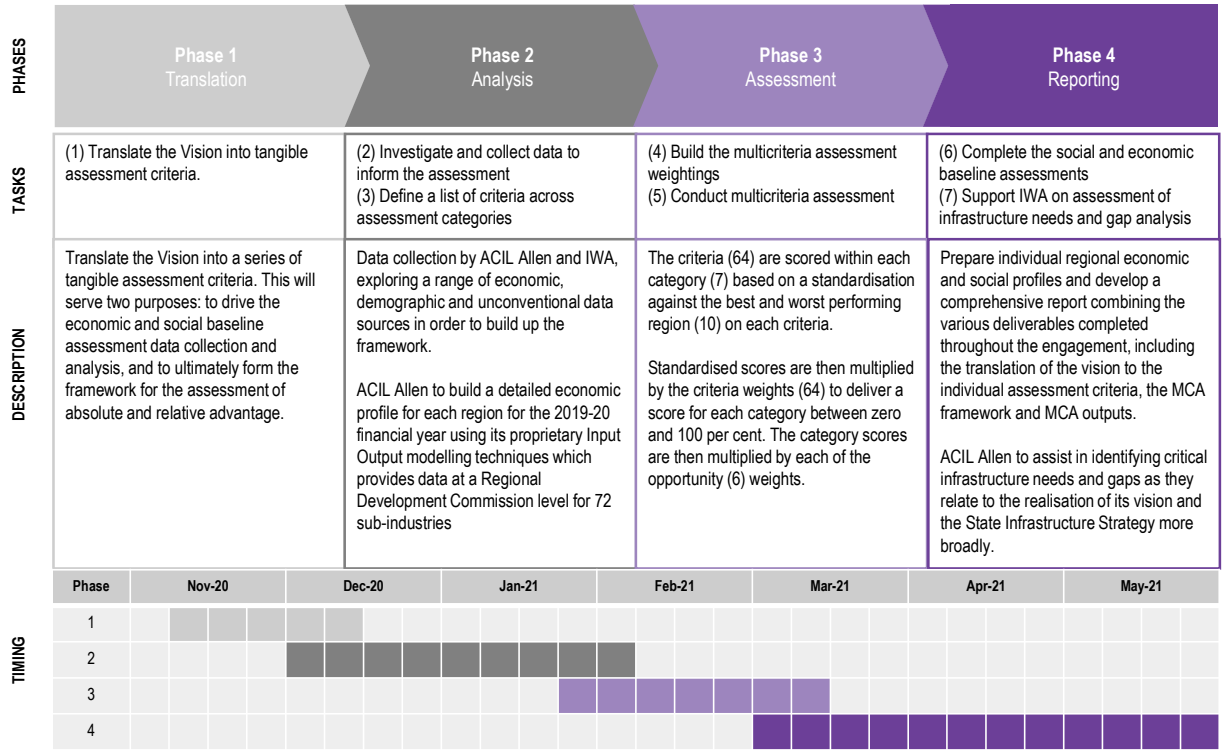
In order to progress the development of the State Infrastructure Strategy, Infrastructure WA has identified a need to contextualise and ground its vision to the current and future economic and social context of Western Australia, and to do so via the State's existing regional development framework.

To assist in this regard, ACIL Allen has been asked to help "regionalise" Infrastructure WA's vision through the development of an economic and social baseline assessment of each of Western Australia's 10 regions (the nine Regional Development Commission regions, plus the Perth Metropolitan Area), and identify the geographic spread of strengths and opportunities across the regions.

ACIL Allen's approach to undertaking a comparative assessment of each of the State's 10 Development Regions against each of the six opportunities identified by Infrastructure WA is centred on the development of a Multicriteria Assessment (MCA) tool. This tool will allow ACIL Allen to assess each region against a number of economic and non-economic indicators which together provide a holistic view of its economic and social potential.

ACIL Allen's general approach to this engagement is summarised in **Figure 1.1** below.

Figure 1.1 ACIL Allen's methodology



Source: ACIL Allen

Each of these critical steps are presented sequentially in this report, and summarised further below.

1.2 Report structure

This report has been structured into two main parts and 15 sections, which provides a logical build up of ACIL Allen's methodology that it has used for this engagement to determine each region's strengths and capacity to realise the future opportunities identified in the SIS vision.

Part I: Preliminaries – The first part of this report provides an introduction into the purpose of this report, the State Infrastructure Strategy and the six opportunities developed as part of the SIS vision, and the development of the regional indicators.

1. **Introduction and purpose of the report** – This section provides a general introduction to this engagement and ACIL Allen's overall approach.
2. **Overview of the State Infrastructure Strategy Vision** – This section provides an overview of the role and purpose of Infrastructure WA and the articulation of the State Infrastructure Strategy vision through the six broad opportunities.
3. **Development of regional indicators** – This section provides an overview of the regional indicators that have been developed to assess a region's strengths and capacity to realise the six opportunities identified in the State Infrastructure Strategy vision.

Part II: Regional Economic and Social Profiles – This part of the report provides detailed profiles of each of the Development Regions in Western Australia presented below, based on the regional indicators and categories defined in the previous section. Metropolitan Perth has been used for comparison purposes within each of these profiles.

4. Kimberley region
5. Pilbara region
6. Gascoyne region
7. Mid West region
8. Wheatbelt region
9. Goldfields-Esperance region
10. Peel region
11. South West region
12. Great Southern region

Part III: Regional strengths and opportunities assessment – This part of the report provides a detailed examination of each region's strengths and abilities to realise any of the six opportunities defined in the SIS vision.

13. **Methodology** – This section provides an overview of the multicriteria assessment framework that ACIL Allen has developed to assist in understanding a region's comparative strengths, and a region's capacity to realise the opportunities that underpin the State Infrastructure Strategy vision.
14. **Summary findings and directions** – This section presents the results of the MCA and the relative strength of each region across the seven categories developed for this assessment, and the relative potential of each region to realise any of the six opportunities defined in the SIS vision.

1.3 Key terms used in this report

The tables below provide a list of key terms and acronyms used in this report.

Table 1.1 List of key terms and acronyms

Heading	Heading
ABARES	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ACIL Allen	ACIL Allen Pty Ltd
AREMI	Australian Renewable Energy Mapping Infrastructure
BoM	Bureau of Meteorology
CPI	Consumer Price Index
DBCA	Department of Biodiversity, Conservation and Attractions
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications
DMIRS	Department of Mines, Industry Regulation and Safety
DMP	Department of Mines and Petroleum
DOH	Department of Health
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DSS	Department of Social Services
DWER	Department of Water, Environment and Regulation
FTE	Full Time Equivalent
GVA	Gross Value Added
GRP	Gross Regional Product
GSP	Gross State Product
IWA	Infrastructure Western Australia
LGA	Local Government Area
Population centroid	The point at which a population has the smallest sum of squared distance
RPI	Regional Price Index
SA2 level	Statistical Areas Level 2
SIS	State Infrastructure Strategy
WA	The State of Western Australia
Units	
ºC	Degrees Celsius
ha	Hectares
km^2	Square kilometres
km	Kilometres
MJ/m^2	Mega Joules per square metre
MW	Megawatts of electricity
$m	Million dollars, AUD

Source: ACIL Allen

Overview of State Infrastructure Strategy Vision 2

This section provides an overview of the role and purpose of Infrastructure WA and the articulation of the State Infrastructure Strategy vision through the six broad opportunities.

2.1 Role and Purpose of Infrastructure WA

Infrastructure WA is Western Australia's expert advisor on a range of infrastructure matters, particularly regarding the infrastructure needs of Western Australia in support of the following objectives.

- Assist in enhancing the efficiency and effectiveness of infrastructure planning and coordination
- Promote the adoption and use of policies, practices, information and analysis to support sound decision-making in relation to infrastructure.

Infrastructure WA's primary focus since it was formed in July 2019 has been to develop Western Australia's first 20 year **State Infrastructure Strategy** (as prescribed by the IWA Act). The intent of the State Infrastructure Strategy is to identify needs and priorities to support Western Australia's growing population and economy.

As per the IWA Act 2019, the **State Infrastructure Strategy** must:

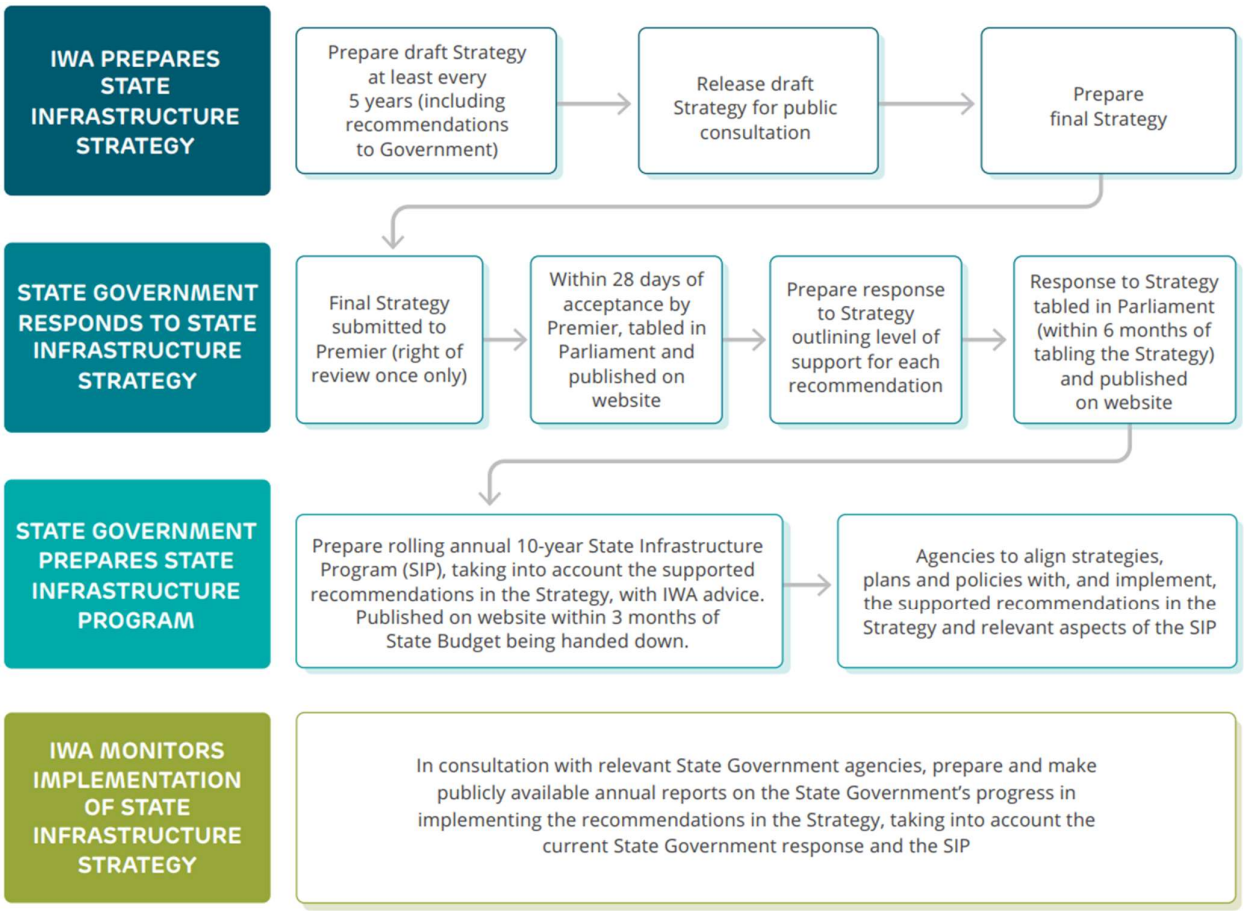
- Identify the economic, social and environmental objectives against which Western Australia's infrastructure needs are assessed;
- Include prioritised recommendations on projects, programs and other options (for example, policy, regulatory, pricing, technology and governance reforms/settings), to meet the State's infrastructure needs and priorities; and,
- Include recommendations about options for funding and financing, where appropriate.

IWA's role in the process is to assess the current state of infrastructure in the State including analysis on the capacity, standard and asset life of existing infrastructure. In addition to this, IWA is tasked with identifying the current and future infrastructure deficiencies, the available options including new versus existing infrastructure options. Ultimately, the State Government remains as the decision maker in terms of which projects are to be funded. This process (as prescribed by the IWA Act) is presented in **Figure 2.1** below.

In June 2020, IWA developed a paper termed **A Stronger Tomorrow: State Infrastructure Strategy Discussion Paper** which encourages a productive, open and robust discussion in relation to various issues. Some of the issues include disruptive technologies (data and digital connectivity), demographic and population changes, climate change, social, economic and environmental shocks (such as COVID-19). The Paper also discusses some regional issues such as population dispersion, urbanisation, biodiversity loss, liveability and cultural opportunities.

Following the release of the Discussion Paper, Infrastructure WA engaged a third party consultant to conduct scenario planning to inform the development of the first State Infrastructure Strategy. The consultant's report **State Infrastructure Strategy Scenario Planning**[1] included the development of Infrastructure WA's vision, and the selection of a desired scenario for the future of Western Australia. This scenario has been termed ***The Future We Plan For***.

Figure 2.1 State Infrastructure Strategy process



Source: IWA

2.2 Developing the State Infrastructure Strategy

The **State Infrastructure Strategy Scenario Planning** report contains a SIS Vision Statement which aligns with ***The Future We Plan For*** scenario:

> *The right infrastructure at the right time: supporting diversification; enhancing wellbeing and aims to place Western Australia as…a sought-after place to live, work, study and invest, with infrastructure improving productivity and equity, and unlocking industry growth – particularly in opportunities that leverage WA's advantage and diversify its economic base."*

To contribute to the translation of the SIS Vision into a response, the most attainable opportunities for Western Australia to expand its economy and improve the wellbeing of its citizens in the long

[1] DAE (2020). State Infrastructure Strategy Scenario Planning, Infrastructure WA

term were described. To realise these opportunities, it is suggested that the State must leverage its comparative advantages and strengths that intersect with global drivers of change such as service sector growth, demographical change and technological changes.

The central opportunities identified in the analysis and selection of the preferred scenario are for Western Australia to be (by 2040):

1. A global location of choice to work, live and invest, with highly liveable, stable and inclusive communities, with access to top quality public services.
2. Serving the emerging consumer class, through high quality tourism, agrifood and education exports.
3. Promoting and leveraging Aboriginal heritage and enterprise, to underpin new enterprises and business opportunities, and foster a society which is more inclusive and sustainable.
4. Supporting the transition to green energy technologies, by deploying its world-class physical and intellectual capital to develop its green energy resources, allowing it to both transition its domestic energy use and become a global renewable energy exporter.
5. Approaching the technology frontier, by leveraging its existing leadership in advanced technology to create a robust technology start up and investment ecosystem.
6. Value-adding for strategic commodities, by leveraging cheap, reliable, renewable energy and supply chain security, to process strategic mineral and agricultural commodities within the State, becoming a producer and exporter of value-added downstream products.

The State Infrastructure Strategy Vision is part of the development of Infrastructure WA's first State Infrastructure Strategy. The State Infrastructure Strategy is intended to be a multi-faceted document which identifies priority infrastructure developments, policies and programs which will support the economic and social development of the State over the next 20 years.

ACIL Allen's engagement is designed to provide a new evidence base to support Infrastructure WA in the development of its State Infrastructure Strategy, and in particular to assist in the assessment of infrastructure priorities.

Development of regional indicators 3

This section provides an overview of the regional indicators that have been developed to assess a region's strengths and capacity to realise the six opportunities identified in the State Infrastructure Strategy vision.

3.1 Overview and approach

This engagement requires ACIL Allen to develop detailed economic and social profiles of each of the State's development regions, and provide a comparative assessment of each of the development region's strengths, and the capacity of each region to be able to realise any of the opportunities that have been specified in the SIS Vision.

To ensure that both aspects of the engagement are consistent, ACIL Allen undertook an extensive investigation to determine the data that exists that could then be transformed into a set of indicators to support the assessment.

ACIL Allen's approach to the extensive data review and analysis was to build a set of indicators that addressed the following objectives:

1. **Availability**: the data must be available from public or subscription-based sources to allow for replication over time.
2. **Time series**: the data must be available on a time series basis, to allow for trend analysis to be undertaken.
3. **Region specific**: the data must be available at a regional level to allow for comparative analysis to be undertaken.
4. **Linked to opportunities**: the data must help to understand the degree to which a region is able to realise any of the opportunities identified in the SIS Vision.

Through this engagement, ACIL Allen was confronted with **significant data gaps in developing a set of indicators across the regions that could objectively and consistently assess the relative assessment of each region**. To bridge this data gap, ACIL Allen has used **geo-spatial methods and sources of information to develop indicators** that can help to inform the regional assessments.

From an initial long list of data sources and potential indicators, ACIL Allen arrived at a consolidated list of **71 indicators**, which were then **grouped into seven categories** that together help to assess a region's strengths and capacity to realise any of the opportunities that have been identified in the SIS Vision. A description of the indicators that fall under each of the seven categories is presented in the remainder of this section of the report.

The 71 indicators and seven categories represent the critical first step in ACIL Allen's approach to the development of the Multicriteria Assessment (MCA) framework. The development of the MCA is presented in Part II of this report.

Importantly, however, the **seven categories also form the basis from which ACIL Allen has undertaken its economic and social profiles** of each of the development regions, ensuring they have been presented on a consistent basis to enable comparative analysis to be undertaken. The presentation of the economic and social profiles for each of the development regions reflecting the 71 indicators and seven categories is presented in Sections 4 through to 12 in Part I of this report.

3.2 Economy

The Economy category provides a critical view of **each region's current and potential economic strengths**. To ensure a strong, defensible and transparent basis of the assessment of each region under this category, ACIL Allen has included 13 individual indicators for this category assessment that span broader economic indicators, more specific industry indicators, current and future major projects, and business numbers in a specific region.

Table 3.1 below provides a summary of each of the 13 indicators selected to assess a region's economic base, the reason for its inclusion, and the source of the data to develop the indicator.

Table 3.1 Economic indicators

Indicator	Measure	Rationale	Source
Growth in GRP	Average growth in GRP between 2011 and 2019	Measures the long term economic performance of a region	ABS
Share of GRP	Average regional share of GSP between 2011 and 2019	Addresses the role of a region in the State's economy	ABS
GRP of primary industries	Share of GRP	Measures the share of a region's economy that specialises in primary industry production	ACIL Allen
Manufacturing industry GRP	Share of GRP	Measures the share of a region's economy that specialises in manufacturing and processing industry production	ACIL Allen
Service industry GRP	Share of GRP	Measures the share of a region's economy that specialises in providing services	ACIL Allen
Export intensity	Value of exports as a share of GRP	Measures a region's capacity to generate market opportunities outside of the region	ACIL Allen
Import intensity	Value of imports as a share of GRP	Measures a region's relative self-sufficiency to the extent that it can source inputs and supplies from within the region	ACIL Allen
Current major projects	Committed or under construction major projects as a share of GRP	Measures the current level of private and public investment in a region	DAE; Business News
Planned major projects	Possible or under consideration major projects as a share of GRP	Measures the future level of private and public investment in a region over the longer term	DAE; Business News
Employing businesses	Share of employing businesses as a share of WA's total	Measures the depth and diversity of employment opportunities in a region	ABS
Aboriginal businesses	Share of employing Aboriginal businesses as a share of WA's total businesses	Measures the regional representation of Aboriginal businesses	Wirra Hub
Aboriginal businesses	Share of employing Aboriginal businesses in WA	Measures the relative number of Aboriginal business in a region	Wirra Hub
Business insolvencies	Insolvencies per employing businesses in the region	Assesses the level of ease (or difficulty) of conducting business in a region	AFSA

Source: ACIL Allen

3.3 Industry

The Industry category provides a critical view of **each region's current and potential industry base by focussing on a number of key industries and the factors of production that are critical to their long term success**. To ensure a strong, defensible and transparent basis of the assessment of each region under this category, ACIL Allen has included 15 individual indicators for this category assessment that span a number of key industry indicators that have specifically been called out in the SIS vision opportunities, as well as indicators that assess a region's key factors of production that are critical to industry development.

One of these 15 indicators is a Composite Tourism Indicator that ACIL Allen has developed from six individual tourism indicators to inform a region's comparative strength in relation to tourism opportunities. The composite indicator is compiled by weighting the relative strength of each data point in the same way that standard indicators are weighted, in order to produce a single score at a composite level. This allows for the assessment of the tourism opportunity for each region.

Table 3.2 below provides a summary of each of the indicators selected to assess a region's industry base, the reason for its inclusion, and the source of the data to develop the indicator.

Table 3.2 Industry indicators

Indicator	Measure	Rationale	Source
Agriculture and agri-food			
Available agricultural land	Contextualised ABS National Resource Management Area. Share of region's total land area used for improved agricultural production	Measures the future potential of a region to support agricultural production	ABS
Agricultural GVA	Share of the State's total agricultural GVA	Measures the contribution of a region to WA's total agricultural value added	ACIL Allen
Livestock GVA	Share of the State's total livestock and livestock products GVA	Measures the contribution of a region to WA's total livestock and livestock product value added	ACIL Allen
Grains, seeds and hay GVA	Share of the State's total grains, seeds and hay GVA	Measures the contribution of a region to WA's total grains, seeds and hay value added	ACIL Allen
Horticulture and irrigated crops GVA	Share of the State's total horticulture and irrigated cropping GVA	Measures the contribution of a region to WA's total horticulture and irrigated agriculture value added	ACIL Allen
Foods and beverage GVA	Share of the State's total food and beverage manufacturing GVA	Measures the contribution of a region to WA's total food and beverage manufacturing value added	ACIL Allen
Aquaculture and seafood GVA	Share of the State's total aquaculture and seafood GVA	Measures the contribution of a region to WA's total aquaculture and seafood value added	ACIL Allen
Forestry GVA	Share of the State's total forestry GVA	Measures the contribution of a region to WA's total forestry value added	ACIL Allen
Aquaculture sites under licence	Share of the State's area of aquatic based aquaculture licenced sites	Provides an indication of the existing ability of a region to service growth in WA's aquaculture sector	ACIL Allen, DPIRD
Food Product Manufacturing Businesses	Share of the State's total food product manufacturing businesses, weighted by size of employee base	Measures the existing ability of a region to produce manufactured food products	ABS, DPIRD

Indicator	Measure	Rationale	Source
Beverage and Tobacco Product Manufacturing Businesses	Share of the State's total beverage manufacturing businesses, weighted by size of employee base	Measures the existing ability of a region to produce manufactured beverage products	ABS, DPIRD
Tourism (Composite Tourism Indicator)			
Hotel rooms	Number of hotel rooms as a share of WA	Measures the ability of a region to accommodate tourists	Australian Accommodation Monitor
Visitor nights	Interstate and international leisure visitor nights as a share of WA (Perth adjusted to reflect transit passengers into regions)	Measures the strength of a region's tourism industry and its 'drawcards'	ACIL Allen, Tourism Research Australia
Cruise ship visitors	Share of the State's cruise calls and passengers	Measures the ability of a region to facilitate travelers arriving by cruise ship	Tourism WA
Airports	Share of the State's RPT airports, weighted towards overseas and interstate airports	Measures the ability of a region to facilitate inbound intrastate, interstate and overseas travelers by aircraft	ACIL Allen
Attractions	Share of the State's top 250 attractions	Measures the ability of a region to entertain and host tourists in region due to its major drawcards	ACIL Allen, TripAdvisor
Tourism expenditure per capita	Level of spend in tourism related industries (ie. accommodation, food and entertainment, heritage and culture, sports and recreation, and gambling)	Measures the willingness to spend in a region by visitors in tourist related activities	ACIL Allen
Other			
Operating mining properties	Operating mine sites as a share of WA	Measures the existing level of mining activity in a region	DMP
Non operating mining properties	Proposed or under development mine sites as a share of WA	Provides an indication of the potential level of mining activity in a region	DMP
Proven and measured resources	Resource deposits as a share of WA	Provides an indication of the potential future mining activity of a region	DMIRS
Industrial and commercial zoned land	Existing zoned and planned land as a share of WA	Provides an indication of the future development potential of a region for industry or commercial purposes	DPLH
Education	Tertiary education institutions, weighted by main (x1.0) and satellite (x0.25)	Measures a region's relative ability to provide face to face tertiary education to its residents	ACIL Allen
Building approvals	Value of residential and non residential building approvals as a share of WA	Provides an indication of the future levels of building activity in a region	ABS
Water resources	Volume of available surface, ground and mine dewater water	Measures a region's relative water drawdown capacity for future purposes	DWER

Source: ACIL Allen

3.4 Human Capital

The Human Capital category provides a critical view of **each region's human capital, which is a critical enabler of economic growth and development in a region**. To ensure a strong,

defensible and transparent basis of the assessment of each region under this category, ACIL Allen has included 16 individual indicators for this category assessment that span a number of key human capital indicators spanning its population trends and composition, its workforce characteristics, the education and skills of its current workforce, and the degree of welfare dependence in the region.

Table 3.3 below provides a summary of each of the 16 indicators selected to assess a region's human capital base, the reason for its inclusion, and the source of the data to develop the indicator.

Table 3.3 Human Capital indicators

Indicator	Measure	Rationale	Source
Population growth	Ten year population growth rate	Measures the relative population growth of a region	ABS
Population share	Share of WA's population	Measures the relative size of a region's population	ABS
Dependency	Non working age as a share of working age population	Measures the level of dependency in a region to its working age population	ABS
Migration	Net internal and overseas migration as a share of the region's population	Measures the flow of internal and external people in and out of a region	ABS
Aboriginal population	Aboriginal people as a share of the regional population	Measures the relative size of a region's Aboriginal population	ABS Census
Parents born overseas	One or both parents born overseas as a share of the regional population	Provides an indication of the relative level of cultural diversity in a region	ABS Census
Primary industry employment	Primary employment as a share of total regional employment	Measures the ability of a region's labour force to participate in primary industries	ACIL Allen
Secondary industry employment	Secondary employment as a share of total regional employment	Measures the ability of a region's labour force to participate in manufacturing and downstream processing industries	ACIL Allen
Tertiary industry employment	Services employment as a share of total regional employment	Measures the ability of a region's labour force to participate in service industries	ACIL Allen
Skilled Occupation Index	Population weighted skilled jobs as a share of total jobs (skilled jobs 1.0, medium skilled 0.5 & low skilled 0.0)	Measures the relative skill base of a region's labour force	ACIL Allen, ABS Census
Labour force share	Labour force as a share of WA	Measures the relative size of a region's labour force	Labour Market Information Portal
Labour force growth	Ten year average annual growth rate	Measures the growth (or decline) in a region's labour force	Labour Market Information Portal
Unemployment rate	Ten year average unemployment rate	Measures the level of unemployment in a region	Labour Market Information Portal
Disadvantage	Population weighted SEIFA Index	Measures the relative level of disadvantage of a region	ABS Census
Welfare dependency	Newstart or Jobseeker recipients as a share of the regional population	Addresses the proportion of the regional population dependent on welfare	DSS
Education Attainment Index	Population weighted education qualifications	Measures a region's access to an educated workforce	ACIL Allen, ABS Census

Source: ACIL Allen

3.5 Liveability

The Liveability category provides a critical assessment of **the liveability of each region**. To ensure a strong, defensible and transparent basis of the assessment of each region under this category, ACIL Allen has included nine individual indicators for this category assessment that span a number of factors influencing liveability, including the overall cost of living in a region, the provision of essential services, the size of key regional centres, and the overall proximity of the region to Perth.

Table 3.4 below provides a summary of each of the nine indicators selected to assess a region's liveability, the reason for its inclusion, and the source of the data to develop the indicator.

Table 3.4 Liveability indicators

Indicator	Measure	Rationale	Source
Home ownership	Rate of home ownership	Provides an indication of the degree of "permanency" of a population	ABS Census
Residential building approvals	Value of approvals as a share WA total	Measures the relative level of housing investment in a region	ABS
Cost of living	Average Regional Price Index since 2013	Measures the relative cost of living in a region	ABS; DPIRD
Secondary education	Enrolled students (Y7-12) per resident aged under 15y.o.	Measures the capacity of a region's secondary education system to accommodate its population	Department of Education
Hospitals	Residents per public hospital bed	Measures the level of access to health care services in a region	AIHW
Crime rates	Two year average crime per capita rate	Measures the crime rates in a region	WA Police Force
Regional bus services	Distance of bus routes per land area	Measures the provision of public transport in a region	Transperth
Proximity to Perth	Distance between the regional population centroid and the Perth Metropolitan Area	Measures the proximity to Perth and its key services	ABS; ACIL Allen
Regional centre population	Regional population residing in a centre over ten thousand residents	Provides an indication of the services that can be supported in a region based on the size of its population centres	ABS; ACIL Allen

Source: ACIL Allen

3.6 Infrastructure

The Infrastructure category provides a critical view of **each region's infrastructure network**. To ensure a strong, defensible and transparent basis of the assessment of each region under this category, ACIL Allen has included five individual indicators for this category assessment to better understand the key infrastructure in the region.

Table 3.5 below provides a summary of each of the six indicators selected to assess a region's infrastructure base, the reason for its inclusion, and the source of the data to develop the indicator.

Table 3.5 Infrastructure indicators

Indicator	Measure	Rationale	Source
Port access	Proportion of region that overlaps with a cargo port within 200 kilometres	Measures the relative accessibility of a region to a cargo port	ACIL Allen; data.gov.au
Airport access	Proportion of region that overlaps with an airport within 100 kilometres	Measures the relative accessibility of a region to an RPT airport	ACIL Allen; data.gov.au
Road and rail infrastructure	Freight road and rail routes as a share of the region's land area	Measures the relative availability of, and accessibility to, freight routes in a region	Landgate
Mobile coverage	Coverage complaints weighted by population	Measures the relative quality of mobile coverage in a region	DITRDC (DTC)
Internet speed	Proportion of regional population served by fixed line NBN	Measures the access and quality of a region's internet connection	NBN Co Limited
Electricity	Regional electricity generation as a share of WA	Measures a region's access to an electricity source	DEE

Source: ACIL Allen

3.7 Climate

The Climate category provides a critical view of **each region's climate conditions**. To ensure a strong, defensible and transparent basis of the assessment of each region under this category, ACIL Allen has included five individual indicators for this category assessment to better understand the key climatic conditions in the region and the extent to which these conditions can support renewable energy opportunities, as well as the extent to which the climate can enhance or detract from a region's liveability.

Table 3.6 below provides a summary of each of the five indicators selected to assess a region's climate, the reason for its inclusion, and the source of the data to develop the indicator.

Table 3.6 Climate indicators

Indicator	Measure	Rationale	Source
Solar exposure	Solar exposure by region (mega joules per metre squared)	Measures a region's relative level of solar exposure for industry purposes (ie. solar energy)	BoM
Wind	Average wind speed at a 150m elevation at the windiest regional area (metres per second)	Measures the level of wind exposure in a region for industry purposes (ie. wind energy)	AREMI
Rainfall	Average rainfall per annum, millimeters per annum	Addresses the relative level of rainfall in a region, which is important for agriculture purposes	BoM
Rainfall	Change in average rainfall, 1970-80 compared to 2009-19 mean (mm)	Measures the change in rainfall over time, which can impact industry growth and development	BoM
Temperature	Average maximum monthly temperature (C°) based on Matzarakis and Mayer thermal comfort scale	Measures the relative level of thermal comfort in a region, which is important from a liveability perspective	BoM

Source: ACIL Allen

3.8 Natural Environment

The Natural Environment category provides a critical view of **each region's natural environment**. To ensure a strong, defensible and transparent basis of the assessment of each region under this category, ACIL Allen has included seven individual indicators for this category assessment to better understand the natural environment advantages in the region and the extent to which these conditions can support tourism opportunities, as well as the extent to which the natural environment enhances or detracts from a region's liveability.

Table 3.7 below provides a summary of each of the seven indicators selected to assess a region's natural environment, the reason for its inclusion, and the source of the data to develop the indicator.

Table 3.7 Natural Environment indicators

Indicator	Measure	Rationale	Source
World Heritage Areas	Number of areas as a share of WA	Provides a measure of a region's World Heritage Areas	DBCA
National Parks	Land area as a share of WA	Provides a measure of a region's National Parks	DBCA
Nature Reserves	Land area as a share of WA	Provides a measure a region's Nature Reserves	DBCA
Conservation Parks	Land area as a share of WA	Provides a measure of a region's Conservation Parks	DBCA
Marine Parks	Land area as a share of WA	Provides a measure of a region's Marine Parks	DBCA
Marine Nature Reserves	Land area as a share of WA	Provides a measure of a region's Marine Nature Reserves	DBCA
State Forests	Land area as a share of WA	Provides a measure of a region's State Forests	DBCA

Source: ACIL Allen

ACIL ALLEN

Regional Economic and Social Profiles

II

4 Kimberley region

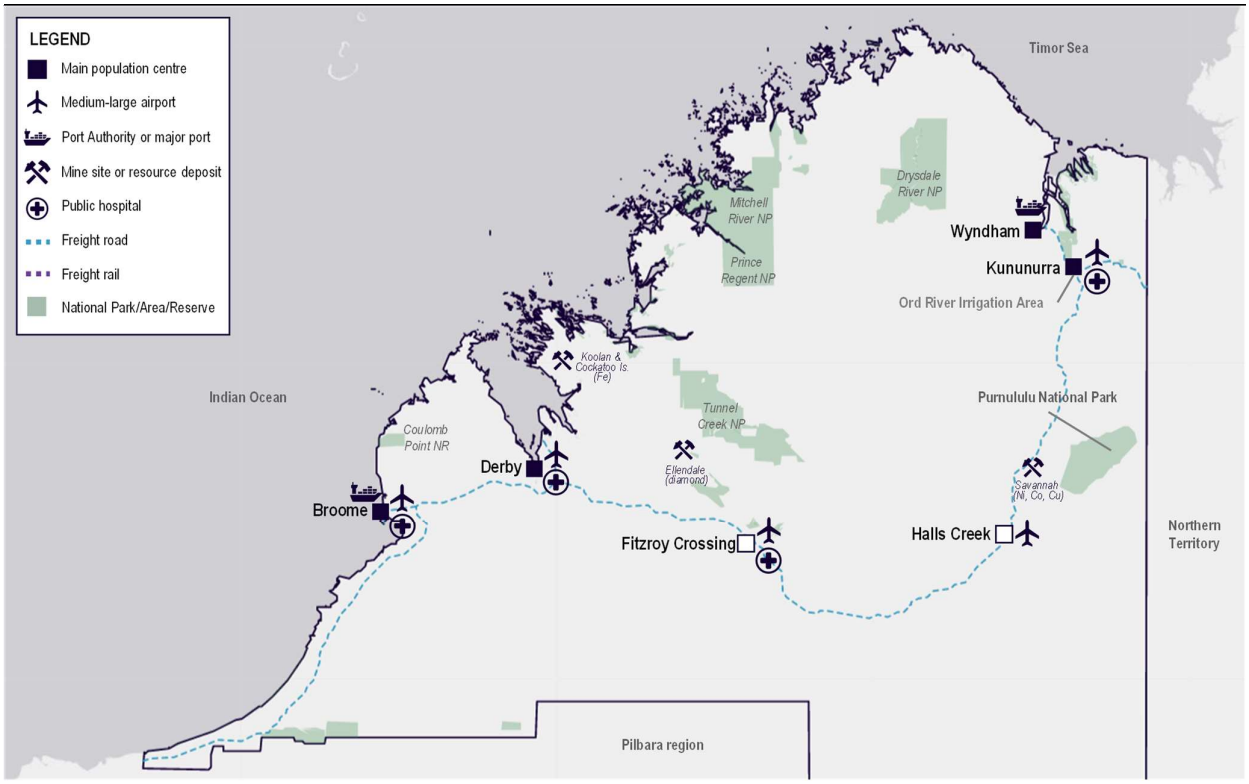
This section presents a profile of the Kimberley region through the lens of the seven regional development categories presented in Section 3.

4.1 Overview of the Kimberley region

The Kimberley region covers around one sixth of WA's land area (42.5 million hectares) and borders the Northern Territory, Pilbara region and Indian Ocean coastline. The region has four local government areas including: Broome, Derby-West Kimberley, Halls Creek and Wyndham-East Kimberley, with most of the population living in the regional centres of Broome, Derby and Kununurra. The region is sparsely populated and is renowned for its rich culture and history, unique and intact environment, wide open spaces, tourist attractions, and mining and agricultural production.

The region and its key regional centres and infrastructure assets are presented in **Figure 4.1**.

Figure 4.1 Kimberley region



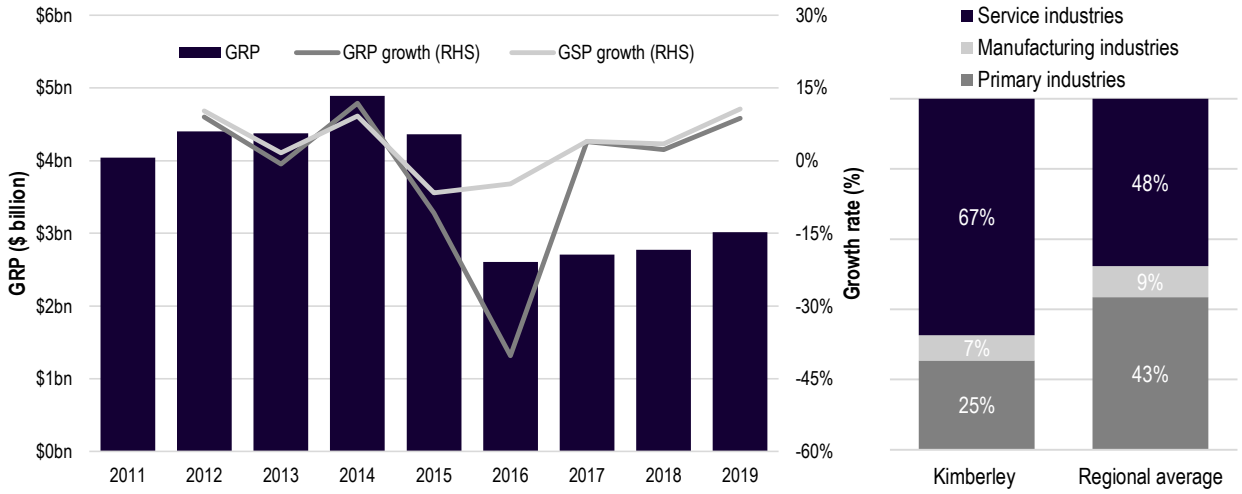
Source: ACIL Allen

4.2 Economy

The Kimberley region has the State's second smallest regional economy, however, it is diverse with significant development potential. The economy is built around the service industries that support its resident population as well as the estimated 160,000 interstate and international tourists that visit the region each year. Primary industries such as agriculture and mining are also prominent in the region. The region's Gross Regional Product (GRP) peaked at $4.9 billion in 2014 before contracting sharply over the subsequent two years in line with the broader downturn in the mining industry across the State. After declining by 40 per cent in 2015 and 2016, the region has experienced a steady recovery, with growth rates averaging five per cent per annum, which is broadly in line with the growth in the WA economy (**Figure 4.2**).

Unlike other regions, services are the most important sector for the Kimberley's economy, headlined by healthcare and residential care (9.4 per cent of GRP), construction (6.6 per cent) and retail and wholesale trade (3.5 per cent). Transport related services are also an important contributor to the region's economy including employment, travel agency and administration (4.4 per cent) and transport support services and storage (4.2 per cent).

Figure 4.2 Gross Regional Product and Industry structure – Kimberley region



Source: ABS, ACIL Allen

There are 1,900 employing businesses in the region which are primarily small businesses with less than 20 employees. This is 1.2 per cent of the State's employing businesses. Around 165 businesses or 8.4 per cent of businesses in the region are Aboriginal owned which is one fifth of Western Australia's Aboriginal businesses. This is the highest ratio of Aboriginal owned businesses in the State.

The Kimberley region's key primary industries reflect the wealth of its offshore and onshore resources with oil and gas extraction (Ichthys LNG Project and Shell's Prelude Floating LNG Project), non metallic and non ferrous mining (15.3 per cent of GRP), and agricultural production that is supported by the Ord River Irrigation Area (8.8 per cent GRP) all providing key roles in the economy.

The region's economic outlook is prospective, highlighted by an estimated $4.9 billion in possible major projects earmarked for the region, the value of which is more than one and half times the size of the region's economy in 2019. This is the second highest investment to GRP ratio in the State. These projects include major private investments in the oil and gas sector including Shell's $2 billion offshore Crux gas field project, as well as the proposed investments in transport and

tourism related infrastructure, including the $125 million Kununurra Heavy Vehicle Route and the $110 million Kimberley Marine Support Base.

4.3 Industry

The economy leverages the Kimberley region's unique and intact natural assets, onshore and offshore resource deposits, and access to water resources.

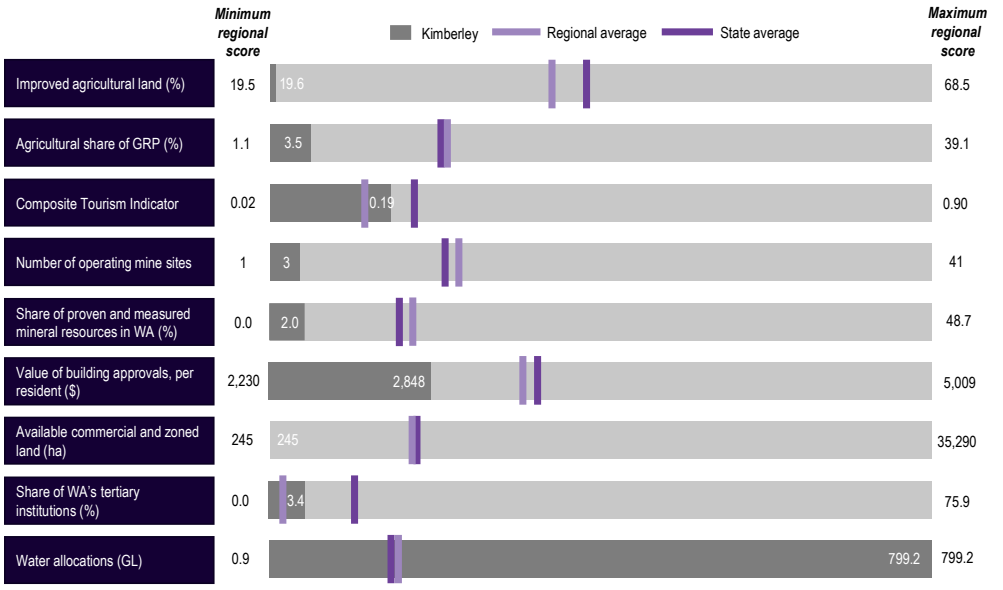
Agriculture is a small but important contributor to the economy with the livestock industry providing nearly all of the value add created by the sector. The horticulture industry also provides a valuable contribution and this share is expected to grow as additional investments in the Ord River Irrigation Area come on line. The indicator for the aquaculture industry ranks the third highest in the State and the livestock industry ranks fourth highest.

The region is an important destination for interstate and international tourists, with visitors spending around 3.4 million nights in the region each year making it the fifth most visited region in WA and reflects the unique natural assets including the Purnululu World Heritage Area and other areas of ecological, scientific, and cultural significance. The region's relative strength in spend per capita, access to RPT airports and attractions places it above the regional average in terms of tourism potential (see Composite Tourism Indicator below).

The region's mining industry is supported by three operating mine sites which produce iron ore, gold and diamonds (excluding the recently shut Argyle Diamond mine). There are three mines that are proposed or under development, focussed on iron ore and copper which can sustain the industry in the future. Beyond these developments, the mineral prospectively is relatively limited with the region, which accounts for just two per cent of the State's proven resources.

The Kimberley has the State's highest amount of available and allocated surface and ground water resources, which acts as an enabler and input to various industries including agriculture. Similarly, the availability of agricultural land is an enabler for growth, providing potential for expansion of irrigated agriculture and for value adding in the pastoral industry.

Figure 4.3 Industry indicator performance – Kimberley region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

The region is also home to the University of Notre Dame Broome campus, which provides an Aboriginal research and academic focus.

The performance of the Kimberley region against the key Industry indicators is presented in **Figure 4.3** below. Overall, the region is below the State and regional average across all indicators, with the exception of the water allocation indicator and the Composite Tourism Indicator.

4.4 Human Capital

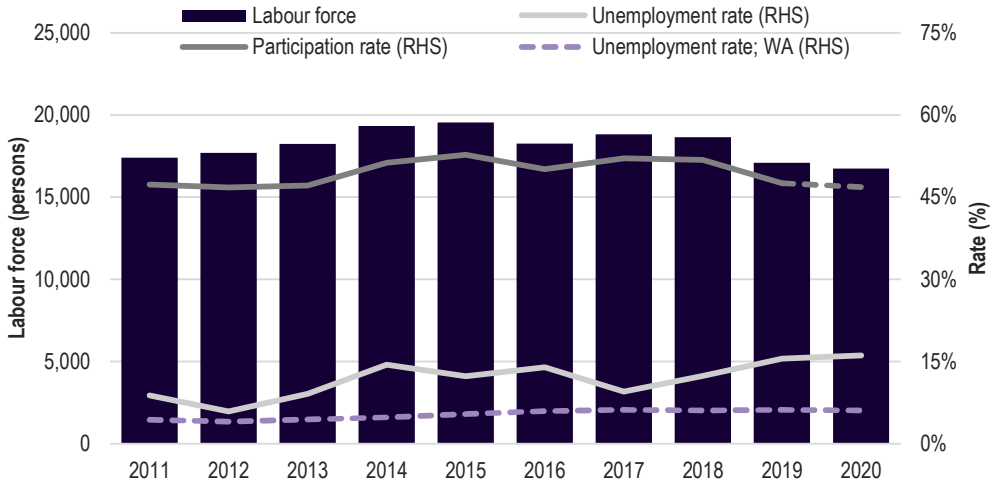
The Kimberley region is home to around 1.5 per cent of the State's population (35,901 in 2019) and 1.3 per cent of the State's labour force (16,734 in 2020), making it the second smallest regional population and labour force. Both the region's population and labour force have declined since 2014 in line with the broader contraction in the region's economic base. Since its peak in 2013, the region's population has declined by 7.3 per cent, while the labour force has declined by 13.5 per cent since 2014. The rise in the region's rate of unemployment to its current rate of 16.1 per cent is the highest of any region and well above the State-wide average of 6.1 per cent (**Figure 4.4**).

The Kimberley region is culturally rich, with around 40.6 per cent of its population are Aboriginal, representing the largest Aboriginal population in regional Western Australia and 19 per cent of the State's Aboriginal people. There are over 150 Aboriginal Communities in the region and 30 different language groups.[2]

The Kimberley's workforce is highly skilled and has proportionately more managers, professionals, technicians and service workers compared to the average region in the State. This is consistent with the structure of the Kimberley's workforce profile which is oriented towards service industries. As of the 2016 Census, 81 per cent of the workforce was employed in the services sector and 13 per cent in primary industries.

The region has a relatively low rate of dependency, with around 32 per cent of its population being non-working age (the second lowest in the State). However, it has the highest level of disadvantage and welfare dependency in the State with 10.3 per cent of residents receiving Newstart or Jobseeker, compared to a State-wide average of 4.0 per cent.

Figure 4.4 Labour force – Kimberley region



Note: The rate of participation for the Kimberley region in 2020 has been estimated using the region's three year average population growth rate.

Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

[2] REMPLAN (2021). Our Place - Our Community

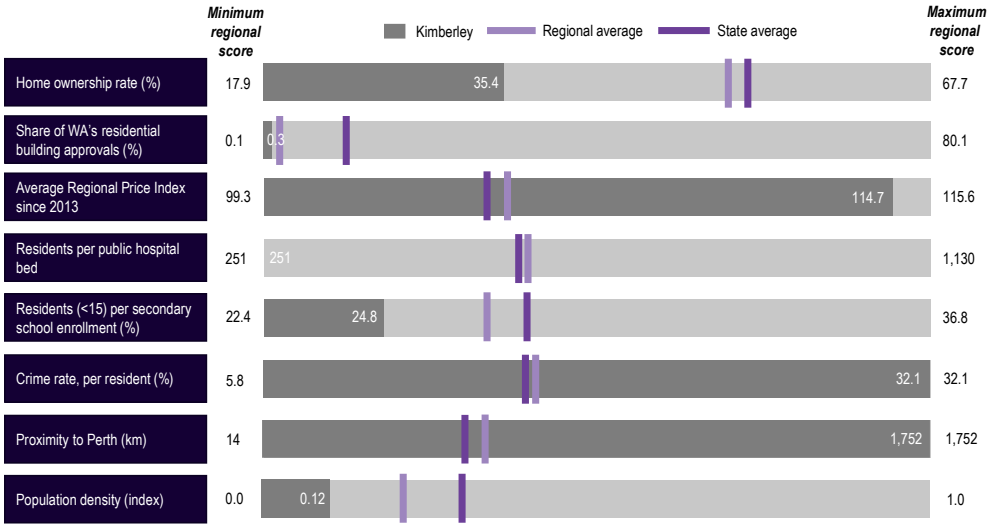
4.5 Liveability

The overall levels of liveability in the region are influenced by its relatively high cost of living, above average crime rates, and its overall degree of remoteness and distance from Perth which impacts the availability of key essential services for residents. The level of home ownership in the region is also relatively low compared to the regional average, reflecting its more transient population. This is broadly consistent with net internal migration which saw an average outflow of 778 residents per annum between 2017 and 2019. This outflow of residents is partially offset by a natural increase of 480 people per annum (births minus deaths) and 134 overseas arrivals per annum.

Acknowledging these challenges, there are some other determinants of liveability in the region such as the amenity and value derived from its natural environment, pristine landscapes, culture and history, and flora and fauna which are desirable traits from a liveability perspective.

The performance of the Kimberley region against the key liveability indicators is presented in **Figure 4.5** below. Overall, the region is below the State and regional average across all indicators.

Figure 4.5 Liveability indicator performance – Kimberley region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

4.6 Infrastructure

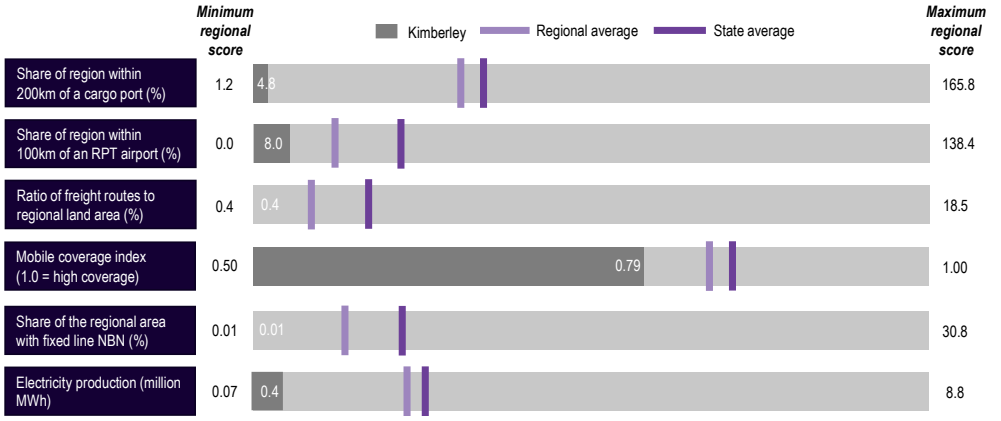
As the most remote region in the State, the Kimberley region has relatively low accessibility to cargo ports, RPT airports and freight route infrastructure. The quality of telecommunications in the region is also below the State's regional average and is a factor of its relatively small population, population dispersity and wide open spaces (which typically don't demand high quality internet or coverage).

Around five per cent of the region is within 200 kilometres of a cargo port and eight per cent is within 100 kilometres of an RPT airport. The main ports in the region include the Port of Broome (which trades stock exports, oil and gas vessels, pearling plus fishing boats) and the Port of Wyndham (which trades agriculture exports from the Ord River Irrigation Area).

The Great Northern Highway is the main freight corridor in the region which covers around 1,600 kilometres of road in the region and is the key connecting route to the south of the State.

The performance of the Kimberley region against the key infrastructure indicators is presented in **Figure 4.6** above. Overall, the region is below the State and regional average across all indicators.

Figure 4.6 Infrastructure indicator performance – Kimberley region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

4.7 Climate

The Kimberley's climate is sub-tropical with separate dry and wet seasons which can occasionally bring tropical rain and cyclone events. The region receives an around 677 millimetres of rain each year which is around 14.1 per cent higher than the regional average. The region is also warmer than the average region in WA, with a monthly average maximum of 33.5 C. This categorises the region in the 'moderate heat stress' category for much of the year which may impact the level of liveability in the region.[3]

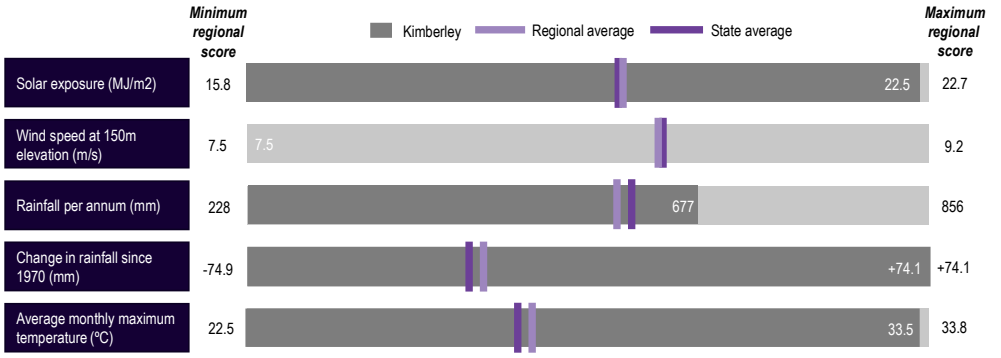
The region's warm climate and availability of land, water and natural resources enhances the region's prospects in developing and investing in its agriculture industry, including irrigated agriculture and pastoral agriculture. The Ord River Irrigation Scheme near Kununurra has significant potential to support future growth in these sectors of the economy.[4]

The region has a very high level of solar exposure which provides the opportunity for greater solar energy generation. The high potential of solar energy in the region was supported by a recent announcement by the State Government to invest $21 million into a *Battery Energy Storage System* in Broome and Yungngora as part of the *WA Recovery Plan.*[5]

The performance of the Kimberley region against the key climate indicators is presented in **Figure 4.7** above.

3 Matzarakis and Mayer (1997): Comfort/sensation scale of physiological equivalent temperature.
4 WA Government Media Statement (2021). Powering ahead on Ord cotton gin
5 Horizon Power (2020). The Kimberley to benefit from a $21 million investment in renewables energy projects

Figure 4.7 Climate indicator performance – Kimberley region



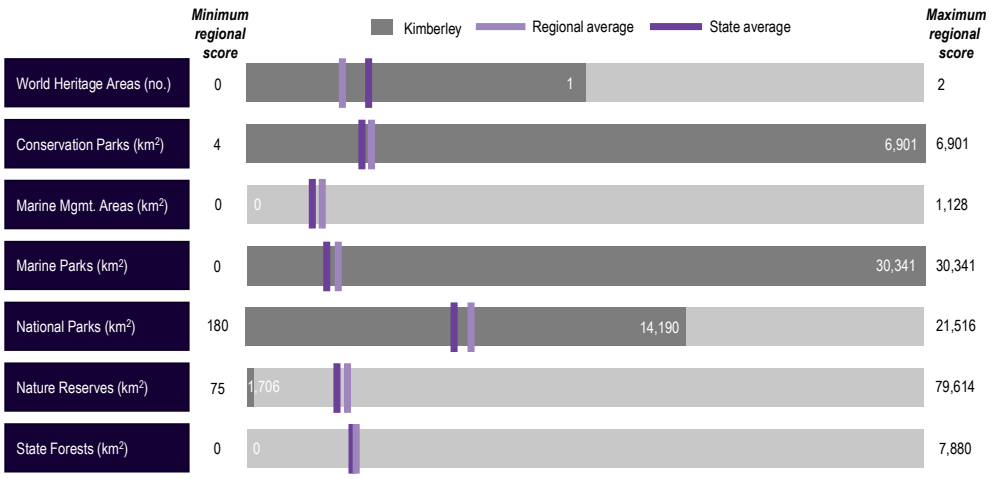
Source: ACIL Allen; AREMI; BoM

4.8 Natural Environment

The Kimberley is internationally recognised for its unique and intact natural environment which includes World Heritage Areas of Purnululu National Park, Mitchell Falls, El Questro Wilderness Park and Broome's Cable Beach, as well as numerous other gorges and waterfalls. The Purnululu National Park (Bungle Bungle Range) is one four World Heritage areas in the State.

Adding to the value of these natural assets is the spiritual and cultural connection provided to the Aboriginal people who live in the region, as the original custodians. These natural places support significant connection to Country and Native Title has been determined across more than 80 per cent of the region.[6]

Figure 4.8 Natural environment indicator performance – Kimberley region



Source: ACIL Allen; DBCA

The region is abundant in terms of its share of land categorised under DBCA reserve category, containing 53.1 million hectares of reserves and parks and conservation areas. This includes

[6] Kimberley Land Council (2021)

around half of WA's conservation parks, two thirds of WA's marine parks, and 20.7 per cent of WA's national parks area.

The performance of the Kimberley region against the key natural environment indicators is presented in **Figure 4.8** above.

5 Pilbara region

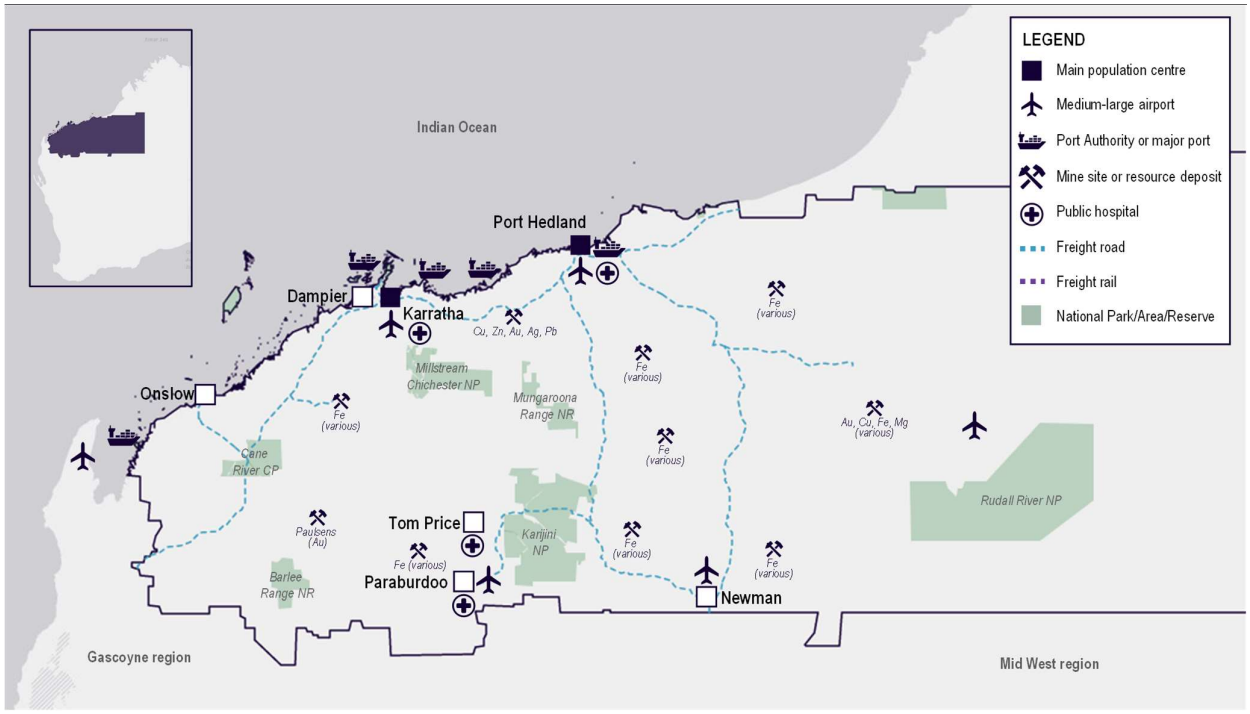
This section presents a profile of the Pilbara region through the lens of the seven regional development categories presented in Section 3.

5.1 Overview of the Pilbara region

The Pilbara region comprises of four Local Government Areas that together cover an area of 50.8 million hectares or 19 per cent of WA's land area. The region borders the Gascoyne, Goldfields Esperance, Kimberley and Mid West regions as well as the Northern Territory and the Indian Ocean coastline. The population of the region is scattered with most of the population living in the regional centres of Karratha and Port Hedland and the smaller population centres of Newman, Tom Price, Paraburdoo, Onslow, and Marble Bar. There are also over 20 Aboriginal communities located in the region representing 31 language groups. While the region is renowned for its mineral resources, it is also known for its rich culture and heritage, unique environment, tourist attractions, and its pastoral industry.

The region and its key regional centres and infrastructure assets is presented in **Figure 5.1** below.

Figure 5.1 Pilbara region



Note: Some of the East Pilbara has been excluded from this map for formatting purposes.
Source: ACIL Allen

5.2 Economy

The Pilbara region has the largest regional economy with a GRP of $46.6 billion which is 16 per cent of WA's GSP. The economy is built on the primary industries sector and particularly the resources industry.

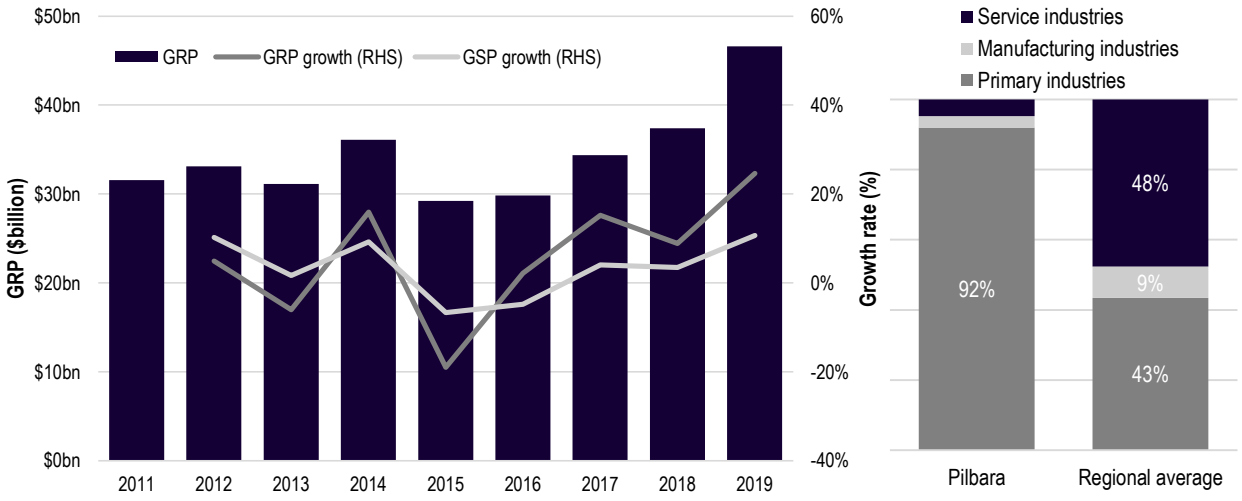
The region has recorded above average long term economic growth of 5.8 per cent per annum which is one of the highest rates of growth in the State and almost double the State average of 3.5 per cent per annum (**Figure 5.2**). Despite this, economic growth in the region is variable with the region's GRP contracting in 2015 in line with a downturn in the mining industry. Since then, economic growth has accelerated, with the economy increasing by 25 per cent in 2019 as the resources sector increased capacity in line with rising commodity prices.

There are 1,800 employing businesses in the region including 200 medium sized (20-199 employees) businesses, and nine that employ more than 200 people. This includes 109 businesses that are Aboriginal owned, which represents six per cent of all businesses in the region and 14 per cent of the State's Aboriginal owned businesses.

The region's primary industries reflect the wealth of its onshore and offshore resources with the region producing $140.6 billion of minerals value or 82 per cent of WA's resources production. This includes $101.2 billion of iron ore and $37.4 billion of offshore oil and gas. The pastoral industry remains an important component of the economy, providing additional diversification to the region's economic base.

With the largest pipeline of new developments in the State, including around $28.4 billion of committed projects and $132.2 billion of planned and possible projects, the economic outlook of the region is highly prospective. These projects primarily include private investments in the resources sector and the infrastructure required to support this industry, including Woodside's Scarborough LNG project, and the Asian Renewable Energy Hub.

Figure 5.2 Gross Regional Product and Industry structure – Pilbara region



Source: ABS, ACIL Allen

5.3 Industry

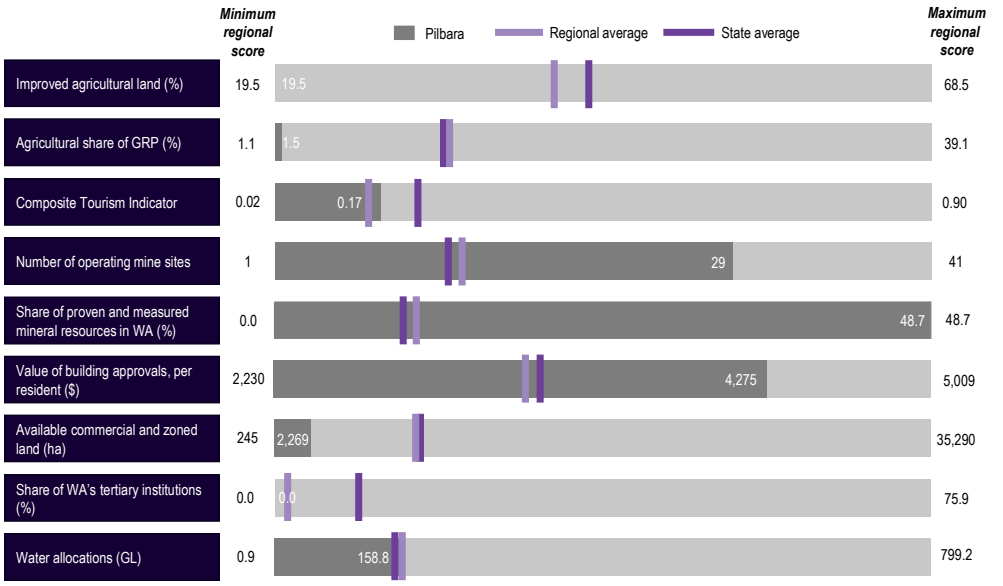
The economic foundation of the region is based on its onshore and offshore resource deposits, its natural assets, and its land. Its petroleum, natural gas and iron ore deposits contribute significantly to the Western Australian economy. The region boasts 25 per cent of the State's operating mines, nearly all of which produce iron ore. A further 13 mines are proposed in the region and it remains highly prospective with 49 per cent of the State's proven resources.

The region is an important destination for travellers with 940,000 overnight visitors to the region each year representing 7.6 per cent of the State's overnight visitors. Over 80 per cent of these visitors are from WA while 129,000 are from interstate and 42,000 from overseas. While many of these visitors are business travellers, a large share also visit the region for its attractions including the Karijini and Millstream Chichester national parks, and its Aboriginal cultural sites at the Burrup Peninsula and the Dampier Archipelago. The region's relative strength in tourism spend per capita, access to RPT airports and the availability of hotel rooms places it above the regional average in terms of tourism potential (see Composite Tourism Indicator below).

The agriculture sector provides a small contribution to the economy with the key activities the fishing, aquaculture, and pastoral industries. The indicator for the pastoral industry ranks well below the state average because of the strength of other industries located in the region. The fishing and aquaculture industry ranks slightly higher although below the State average.

The region is a proven investment destination, and it is well resourced to support further development in a range of industries. This includes 22.7 hectares of industrial and commercial land enabling growth in primary industries and manufacturing. The construction sector remains robust with an average of $300 million per annum of building approvals, of which $278 million per annum are commercial developments. The region has the third largest amount of available and allocated surface and groundwater, which is a key input into the resources and agriculture industries.

Figure 5.3 Industry indicator performance – Pilbara region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

It is well serviced by power including the North West Interconnected System, which is a network that connects electricity generation assets to mining developments and towns throughout the region. There is potential to locate additional generation assets along the network route. This includes the potential for large scale renewable power generation.

The performance of the Pilbara region against the key Industry indicators is presented in **Figure 5.3**. Overall, the region is above the State and regional average for those indicators that relate to the resources and construction industries and similar to the State and other regions in terms of water allocation and tourism. It is below the averages for those indicators the relate to agriculture, tertiary education, and commercial land availability.

5.4 Human Capital

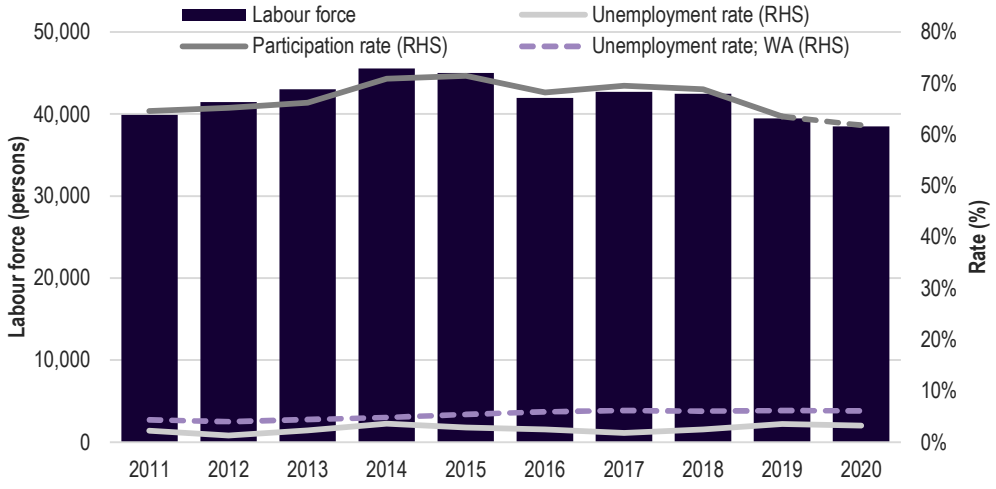
The Pilbara has a population of 62,000 people which is 2.4 per cent of the State's population. In addition, the region is home to a large semi permanent workforce associated with fly in – fly out work practices in the resources sector. Because of the region's dependence on the resources sector, population varies according to the activity in the sector, with below average long term population growth of 0.6 per cent per annum the result of a downturn in the sector in 2015.

In 2020, the region had a resident workforce of 38,500 people which represented the third largest regional workforce in the State. Two thirds of the resident workforce are employed in the primary industries and the manufacturing sector with almost all employed in mining. The region consistently records the lowest unemployment rate in the State with an average unemployment rate over the past decade of 2.7 per cent, which is well below the State average (**Figure 5.4**). The workforce is largely made up of unskilled and semi skilled workers, reflecting the work that is available in the region.

The Pilbara is culturally diverse with 8,000 Aboriginal people who make up 13 per cent of the regional population and 11 per cent of the State's Aboriginal population. There are over 20 Aboriginal communities in the region representing 31 language groups. A further 43 per cent of the population have one or both parents born overseas, with the region attracting 200 migrants from overseas each year.

It supports the lowest levels of dependency in the region with 26 per cent of the region of non-working age. It is one of the most advantaged regions in the state and has the lowest welfare dependency ratio in WA with just 3.2 per cent of the population recipients of Newstart or Jobseeker, compared to a State-wide average of 4 per cent. Despite this, there are sections of the population that experience high social and economic disadvantage.

Figure 5.4 Labour force – Pilbara region



Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

5.5 Liveability

The Pilbara region is one of the most isolated regions in the State, however there are good air transport links particularly to the coastal areas of the region. Its remote location, scattered population, and harsh climate impacts its overall liveability with many of its indicators falling well below the State and regional averages.

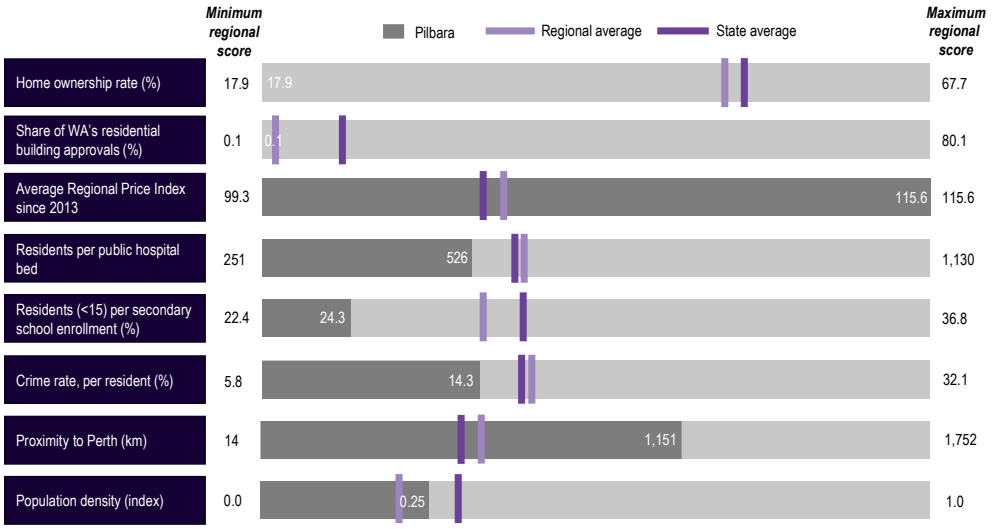
The cost of living in the region is the highest in the State with prices an estimated 15.6 per cent higher than in Perth. The region the lowest level of home ownership in the State, and the highest share of the population living in rental accommodation with just 18 per cent of homes owner occupied and 71 per cent of homes rented. It currently has the lowest share of the State's new residential building approvals.

It is not well serviced by public health compared to the rest of the State with 526 residents per public hospital bed compared to an average of 501 for the State. However, it is well serviced by other social infrastructure including education services, with 966 children per secondary school compared to a State average of 1,700, and a public transport system operating in the towns of Karratha and Port Hedland.

There is a relatively high level of population density in the region compared to regional Western Australia with an estimated 25 per cent of the population living in larger regional centres.

The performance of the Pilbara region against the key liveability indicators is presented in **Figure 5.5**. With the exception of crime rates, the region is below the State and regional average across all indicators.

Figure 5.5 Liveability indicator performance – Pilbara region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

5.6 Infrastructure

The Pilbara has significant economic infrastructure that supports the resources sector, much of which is privately owned. There is also important public infrastructure in the region which supports its liveability and its economy. Further investment in public infrastructure will assist in supporting additional economic and population growth in the region.

Around 18 per cent of the region is located within 200km of a general cargo port with facilities located at Dampier and Port Hedland. The Port of Ashburton is a multi-user port which accommodates LNG and other gas processing for Western Australia's domestic market. Significant privately owned port infrastructure services the resources sector.

Whilst only six per cent of the area of the region lies within 100km of an airport, there are airports that handle large amounts of RPT traffic at Karratha and Port Hedland as well as smaller RPT airports at Paraburdoo, Onslow, and Newman. Port Hedland International Airport services overseas flights. There are also numerous privately owned airports that largely cater to the resources sector.

There is 2,109km of freight roads in the region of which the primary routes are the North West Coastal Highway and the Great Northern Highway. The region has the third largest freight road network in the State. There is no freight rail network however there are significant privately owned rail networks that transport iron ore to port terminals.

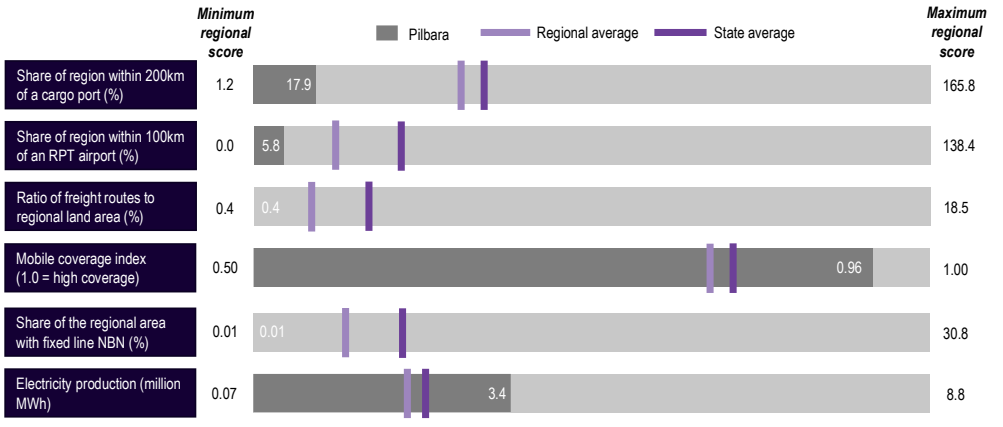
There are broadband connections in major population centres and satellite connections are available for remote towns, stations, and communities. Mobile telephone coverage is comprehensive.

Horizon Power supplies electricity to Dampier, Karratha, Roebourne, and Port Hedland through the NWIS. This system connects with electricity transmission and generation assets owned by Alinta Energy, ATCO, and resources companies that cater for towns including Tom Price, Paraburdoo, and Newman. Other towns and communities are supplied by their own systems. The region is the third largest generator of electricity generating 3.4 million MWh of power per annum for general use which is 15 per cent of electricity generated for this use in WA.

WA's key transmission pipeline, the Dampier to Bunbury Gas Pipeline links offshore gas fields in the Pilbara region to the State. The pipeline route runs through the centre of the region and services a number of mineral processors and electricity generators along its route.

The performance of the Pilbara region against the key infrastructure indicators is presented in **Figure 5.6**. With the exception of mobile telephone coverage and electricity generation, the region is below the State and regional average across all other public infrastructure indicators.

Figure 5.6 Infrastructure indicator performance – Pilbara region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

5.7 Climate

The Pilbara's climate is characterised by its hot summers, mild winters and relatively low levels of rainfall. The region's climate is often challenging for its residents, and it holds a number of climate

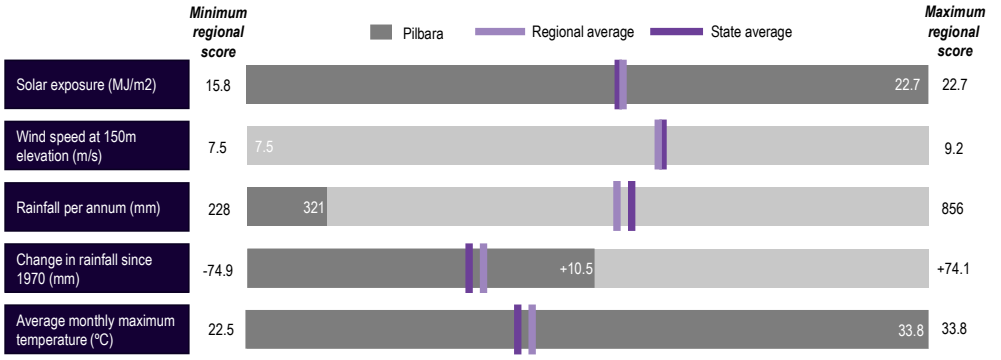
records for the State including, having many of the hottest days on record, most sunshine hours per day and it is also the most cyclone prone coastline in Australia.[7]

The region has the highest level of solar exposure in the State which provides the opportunity for solar energy generation. Investment and interest in this area is emerging, with a recent proposal to develop a $50 billion *Asian Renewable Energy Hub* in the Pilbara[8] which could see new mines, downstream mineral processing and green hydrogen for domestic and export markets.

The region receives below average rainfall of 321mm each year which is the second lowest rainfall of any region in the State. However, it is one of three regions that has experienced long term rainfall growth. The region experiences the State's hottest temperatures with an annual mean temperature of 33.8ºC and seven months of the year when the mean temperature exceeds 35.0ºC. There are just three months of the year when temperatures fall between 18C and 30ºC which is considered the most optimal temperature from a liveability perspective.

The performance of the Pilbara region against the key climate indicators is presented in **Figure 5.7**.

Figure 5.7 Climate indicator performance – Pilbara region



Source: ACIL Allen; AREMI; BoM

5.8 Natural Environment

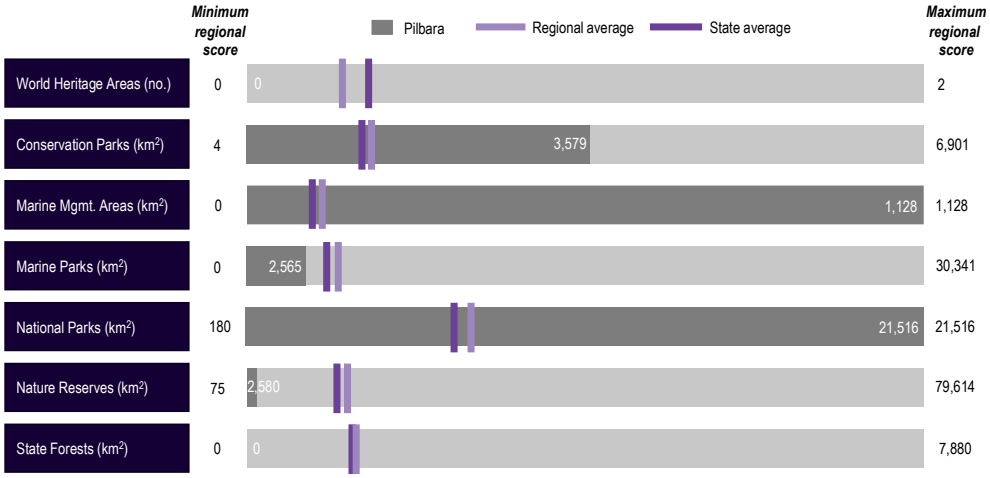
The Pilbara region's natural environment is renowned for its spinifex-covered plains, vast and wide-open rangelands, gorges and wildlife diversity. The region has rich cultural and natural heritage ties and is revered by Aboriginal people who maintain a strong link with Country. Local Aboriginal people also play an important role in protecting and managing the region's key natural assets. This includes one of the world's largest collection of Aboriginal engraved rock art on the Burrup Peninsula. This significant connection has resulted in multiple Native Title applications that cover much of the region.

The region includes 3.1 million hectares of the State's reserves and parks including 80 per cent of the State's marine management areas, and the largest area of national parks including the the Karijini, Millstream Chichester, Murujuga, and Karlamilyi national parks. Karijini National Park is WA's second largest National Park.

The performance of the Pilbara region against the key natural environment indicators is presented in **Figure 5.8** below.

[7] DPIRD (2020). Climate in the Pilbara region of Western Australia
[8] The Asian Renewable Hub (2021). Low cost renewable energy for local and export markets

Figure 5.8 Natural environment indicator performance – Pilbara region



Source: ACIL Allen; DBCA

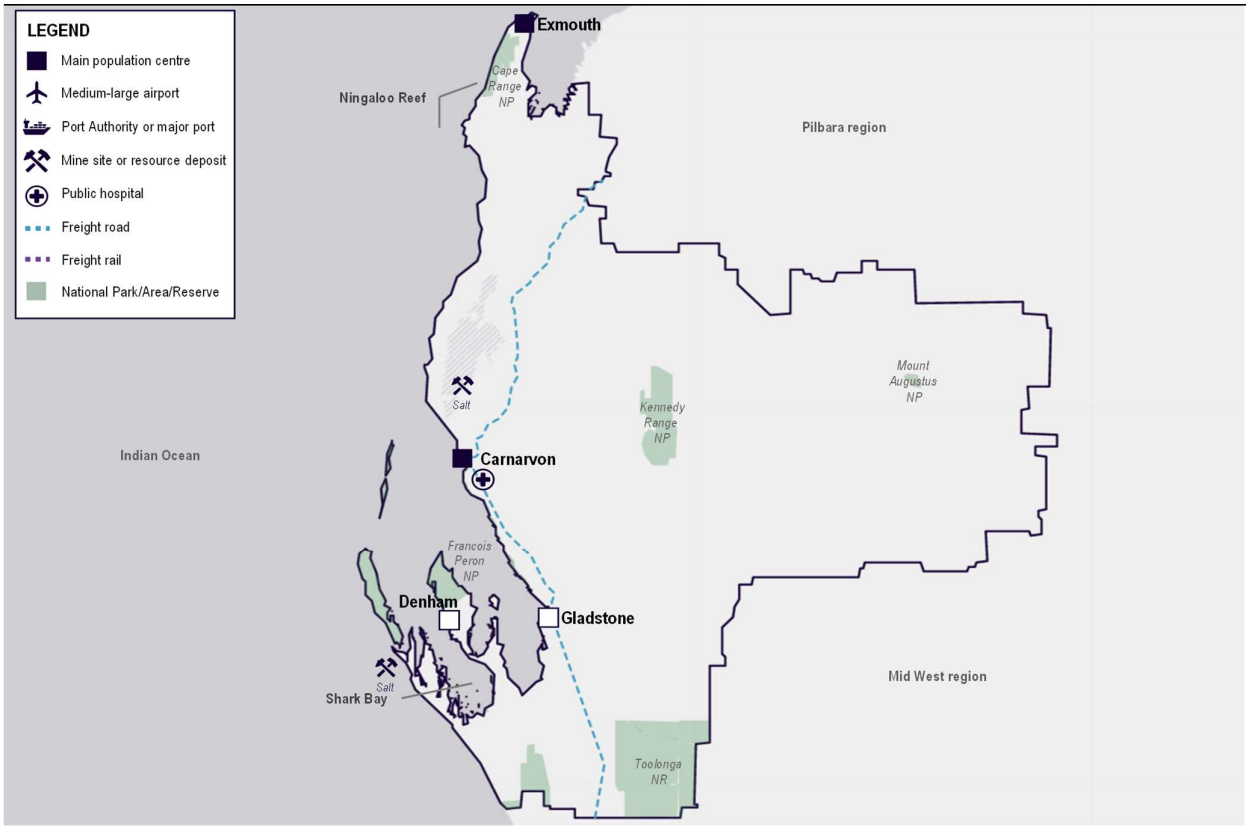
6 Gascoyne region

This section presents a profile of the Gascoyne region through the lens of the seven regional development categories presented in Section 3.

6.1 Overview of the Gascoyne region

The Gascoyne region covers around 5.2 per cent of Western Australia's land area (13.8 million ha) and borders the Pilbara to the north and Mid West to the south-east. The region is made up of four Local Government Areas:Carnarvon, Exmouth, Shark Bay, Upper Gascoyne. Carnarvon is the major population and service centre in the region with smaller townsites at Exmouth, Coral Bay, Denham, and Gascoyne Junction and the Aboriginal community, of Burringurrah, located 480km east of Carnarvon. The region is built on the agriculture and fishing industries while the mining industry and the region's world renowned environment and cultural history are becoming increasingly important.

Figure 6.1 Gascoyne region



Source: ACIL Allen

The region and its key regional centres and infrastructure assets is presented in **Figure 6.1** above.

6.2 Economy

The Gascoyne region is the smallest regional economy with a GRP of $1.4 billion however it has the strongest regional economic growth with an average long term growth rates of 7.3 per cent per annum compared to State-wide growth of 3.5 per cent per annum.

The economy is built on its primary industries, particularly the pastoral, irrigated horticulture, fishing, aquaculture and mining industries. Despite this, the services sector provides the major share of the economy contributing $481 million or 56 per cent of GRP while the primary industries sector contributes a 37 per cent share.

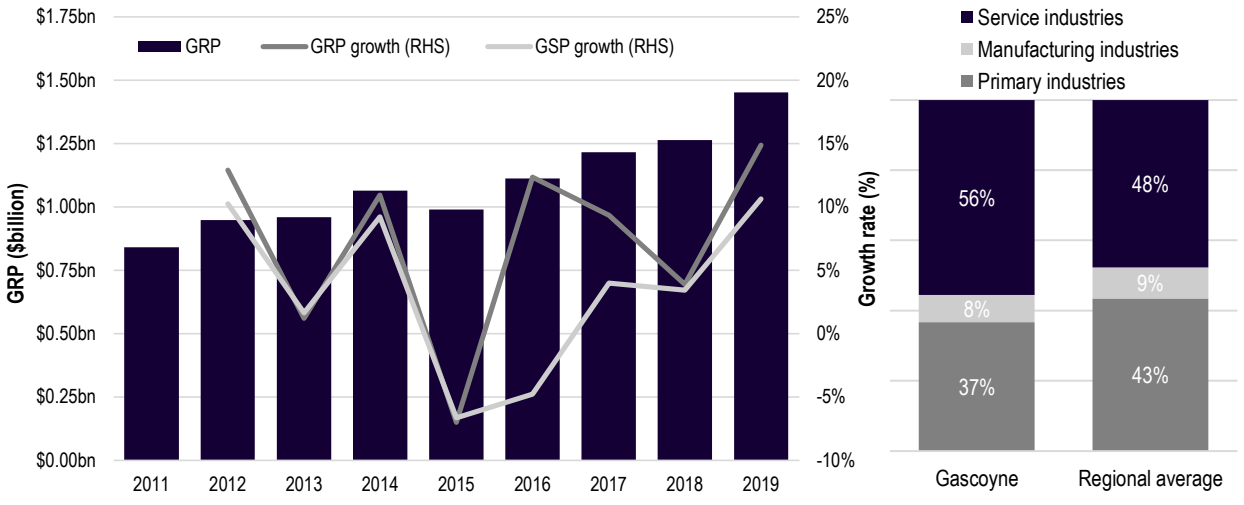
The region's key primary industries reflect its coastline and resources with the mining industry contributing $245.2 million of the value of GRP, and the agriculture sector contributing $73.6 million including $29.9 million from horticulture, $21.3 million from livestock, and $18.7 million from fisheries and aquaculture.

The Gascoyne region's economic outlook is favourable with over $800 million of planned and possible projects earmarked for the region, the value of which is more than half of the current size of its economy. This includes private investments in the resources sector as well as improvements to freight routes throughout the region.

The region supports the smallest share of the State's employing businesses with 866 small to medium sized businesses including five Aboriginal owned businesses.

The region and its key regional centres and infrastructure assets are presented in **Figure 6.1**.

Figure 6.2 Gross Regional Product and Industry structure – Gascoyne region



Source: ABS, ACIL Allen

6.3 Industry

The key industries in the region reflect its natural resources and its attractions, particularly those along its vast coastline.

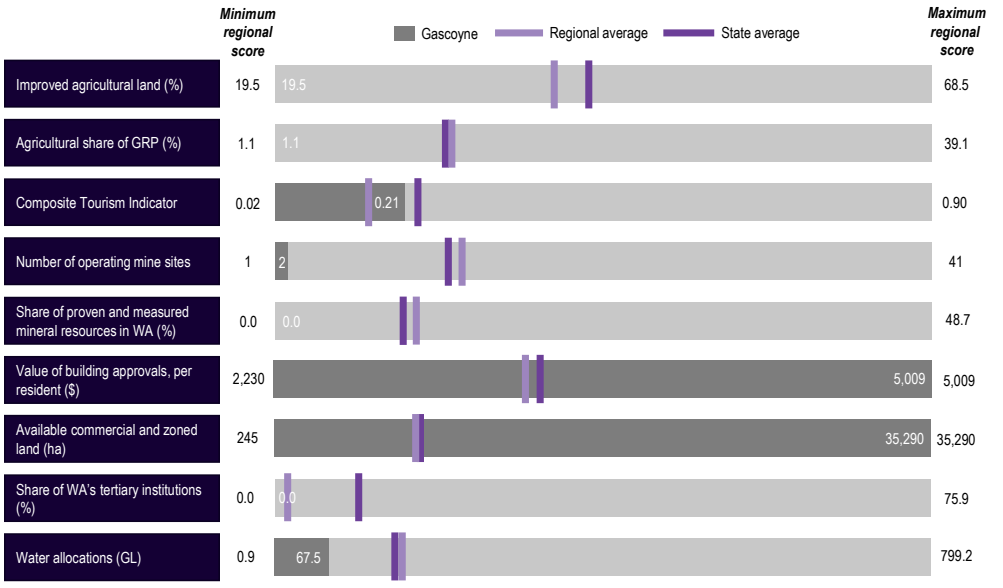
The horticulture industry is the most valuable agricultural industry in the region contributing around one third of agriculture's contribution to the regional economy with the other key contributions coming from the livestock, and aquaculture and fishing industries. Despite this, the region ranks below the State average for all agricultural indicators.

There are currently two mines operating in the region that both produce salt, and three projects planned for the region focussing on heavy mineral sands, rare earths, and gold which will assist in growing and diversifying the economy and providing opportunities for local businesses. However, the mineral prospectively in the region is limited with no proven resources in the region.

The region is an important tourist destination with visitors primarily attracted to coastal attractions including the two World Heritage Areas as well as local attractions including the Gwoonwardu Mia Aboriginal Cultural Centre in Carnarvon. In 2018-19, the region attracted 306,000 overnight visitors which is 2.5 per cent of all overnight visitors to the State. This includes 50,000 visitors from interstate and 56,000 visitors from overseas resulting in the region having one of the largest shares of interstate and overseas visitor nights of any region. There are plans to develop attractions in the region including visitor upgrades at Monkey Mia and restoration of the One Mile Jetty in Carnarvon which will assist in sustaining and growing this industry providing potential for small business development including for Aboriginal owned businesses. The region's relative strength in tourist spend per capita, access to RPT airports and its attractions places it above the regional average in terms of tourism potential (see Composite Tourism Indicator below).

The region is well positioned for future industrial development, with ample supplies of land, and water. This includes 353 hectares of current and planned industrial land which is the largest allocation of any region. Whilst the Gascoyne region has one of the smaller regional allocations of water, with 67.5GL of water availability, it provides potential for development, particularly in the agriculture and aquaculture industries.

Figure 6.3 Industry indicator performance – Gascoyne region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

Building approvals remain steady at around $45 million per annum which is consistent with the size of the economy. Around two thirds of this value are commercial construction projects providing a platform for future growth.

The performance of the Gascoyne region against the key Industry indicators is presented in **Figure 6.3** above. Overall, the region is below the State and regional average across all indicators, with the exception of those for building approvals, commercial land (both the highest in regional WA) and tourism.

6.4 Human Capital

With a population of 9,300, the Gascoyne is Western Australia's least populated region accounting for 0.4 per cent of the State's population. The major population centre is the town of Carnarvon where over half of the population of the region resides, and Exmouth which is home to one third of the population.

There has been long term population decline of 0.3 per cent per annum despite a stronger economy and stable job opportunities.

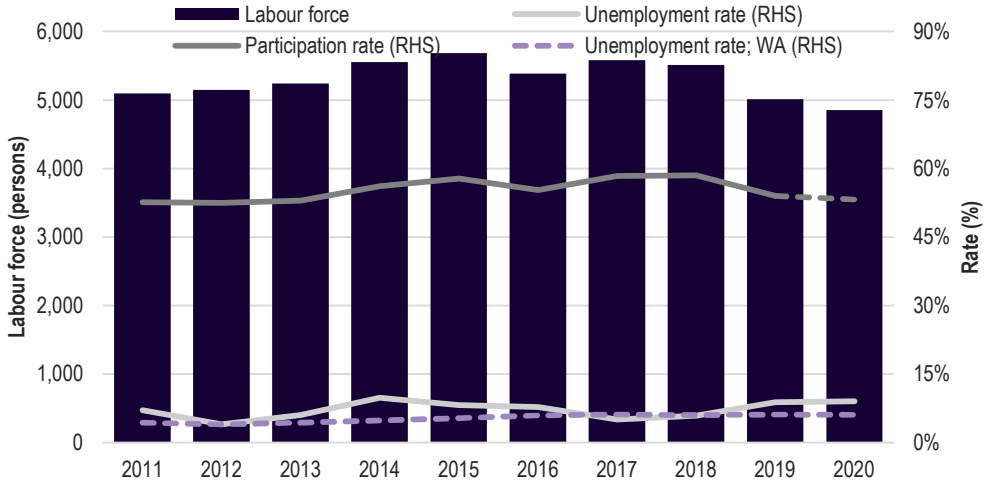
There are 1,300 Aboriginal people representing five different language groups who live in the region, and comprising 13 per cent of the population. This share is four times that of the State and represents 1.7 per cent of all Aboriginal people living in Western Australia. A relatively low share (37 per cent) of the population has one or more parents who were born in another country despite around 275 people moving to the region each year from overseas.

The region supports Western Australia's smallest workforce with 4,901 people in employment or seeking work, equivalent to 0.3 per cent of the State's labour force. Two thirds of the region's workforce are employed in the services sector and 27 per cent in primary industries. This weighting towards the services sector means that the workforce has a higher than average skills base relative to other regions in the State.

The average unemployment rate of 9.1 per cent in 2020 is the second highest of any region and above the long term rate for the region of 7.2 per cent (**Figure 6.4**).

There is a low level of dependency in the region with 35 per cent of the region of non-working age but a high level of welfare dependency with 7.5 per cent of residents recipients of Newstart or Jobseeker, compared to a State wide average of 4 per cent. It is one of the most disadvantaged regions in Western Australia with a SEIFA index of 963 compared to 971 for the State.

Figure 6.4 Labour force – Gascoyne region



Note: Participation for the *Gascoyne* region has been estimated for 2020 using the region's three year average population growth rate.
Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

6.5 Liveability

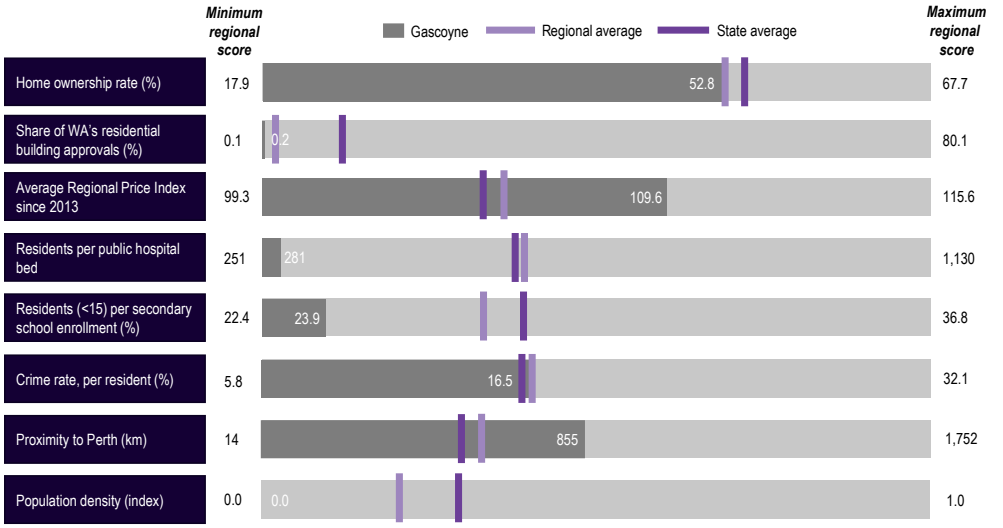
The Gascoyne region is one of the most isolated regions in the State, but is well connected by road and air services. It is an attractive place in which to live and visit and is characterised by an average crime rate, and a high level of public education infrastructure, and the highest rate of public health infrastructure per capita in the State. Its scattered population provides service delivery challenges resulting in key infrastructure, including a public transport system, largely confined to Carnarvon.

The region's towns have the lowest level of population density in the State. There is below average home ownership with 53 per cent of homes owner occupied and few new residential building projects in the pipeline. Over 28 per cent of the housing stock is rented, which is comparable with the average for the state.

The cost of living is one of the highest in the State, at 9.6 per cent more than in Perth.

The performance of the Gascoyne region against the key liveability indicators is presented in **Figure 6.5**. Overall, the region performs well in terms of education and health infrastructure, and its crime rates are low, however the region performs below the State and regional average across the remainder of the indicators.

Figure 6.5 Liveability indicator performance – Gascoyne region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

6.6 Infrastructure

The Gascoyne region has a standard of infrastructure consistent with its small population and economy. Around nine per cent of the region lies within 100km of an airport with key airports at Learmonth (Exmouth), Carnarvon and Denham that cater for RPT services. Learmonth Airport, is a joint use Royal Australian Air Force base and one of three defence air bases in WA.

The region is well catered by freight roads with 539 km of freight roads including the Brand Highway and the Great Northern Highway. There is no freight rail network in the region. It is not well serviced by ports with no general cargo port in the region and just 1.2 per cent of the land area located within 200km of a cargo port. There are public boat harbours located at Carnarvon and Exmouth capable of servicing fishing and charter operators.

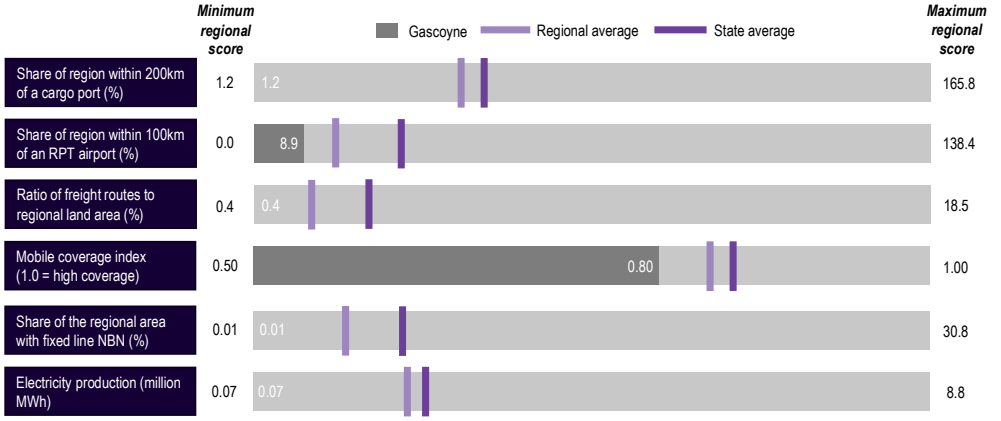
There are broadband connections to houses in larger towns with satellite connections in less populated areas. Mobile telephone coverage is available but is limited in remote areas.

There is no power network in the region with all towns generating their own electricity. The region produces 0.07 million MWh of electricity for general use which is less than one per cent of all electricity produced in Western Australia.

The Dampier to Bunbury Gas Pipeline runs through the region and includes a lateral that services Carnarvon providing opportunity for developments along its route.

The performance of the Gascoyne region against the key infrastructure indicators is presented in **Figure 6.6**. Overall, the region performs well below the State and regional average for all infrastructure indicators.

Figure 6.6 Infrastructure indicator performance – Gascoyne region



Source: ACIL Allen; DEE, DITRDC; DOT; PTA

6.7 Climate

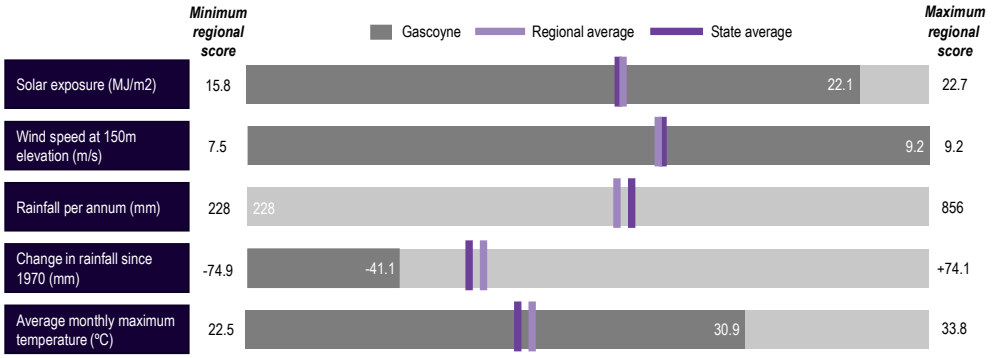
The Gascoyne region has a sub-tropical climate and can be subject to seasonal cyclones. It receives annual rainfall of 228mm which is the lowest in the State, and has experienced moderate long term average rainfall decline of 41mm per annum. The average temperature ranges from 23ºC in winter to 36.4ºC in summer in the areas around Carnarvon while inland areas can experience more extreme temperatures. Overall, the region experiences five months of the year when temperature falls between 18 and 30ºC making it one of the more liveable regions in the State.

With a suitable climate together with land, coastline, and water availability, the region is considered prospective for agricultural and aquaculture development. The climate plays a key factor in the liveability of the region and in attracting tourists to its many natural attractions.

The Gascoyne ranks in the top three regions for solar exposure and has the highest wind speed which makes the region highly prospective for renewable energy particularly to support the mining industry and remote communities. This is supported by a recent proposal to develop a *Battery Energy Storage System (BESS)* in Carnarvon and surrounding towns and a future potential investment near Exmouth.[9] The performance of the Gascoyne region against the key climate indicators is presented in **Figure 6.7** below.

[9] Horizon Power (2021). More customers to access renewable energy through BESS

Figure 6.7 Climate indicator performance – Gascoyne region

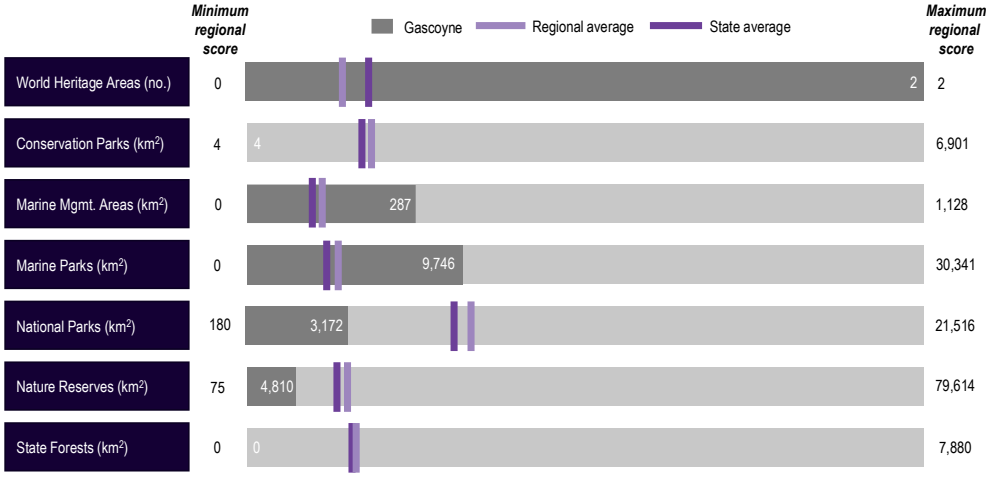


Source: ACIL Allen; AREMI; BoM

6.8 Natural Environment

The Gascoyne region has two of the four World Heritage Areas in WA which include the internationally recognised Shark Bay and Ningaloo Coast World Heritage Areas. These places are recognised as having 'outstanding universal value' due to their cultural and natural significance for present and future generations. The Shark Bay area covers 2.2 million hectares and is one of few sites that satisfy all four of the natural criteria for World Heritage listing.[10] The Ningaloo Coast is one of the longest near-shore reefs in the world and is recognised for its diverse habitat, natural beauty and biodiversity. In total, the region contains 18 million hectares of reserves and parks including 21 per cent of the State's marine parks and 20 per cent of its marine management areas.

Figure 6.8 Natural environment indicator performance – Gascoyne region



Source: ACIL Allen; DBCA

These areas of World Heritage and other natural sites (including Mt Augustus and Wilgie Mia) in the region are highly significant to Aboriginal people who have strong historical and cultural ties with Country. There are Native Title claims covering the whole region.The performance of the Gascoyne region against the key natural environment indicators is presented in **Figure 6.8** above.

[10] DBCA (2019)

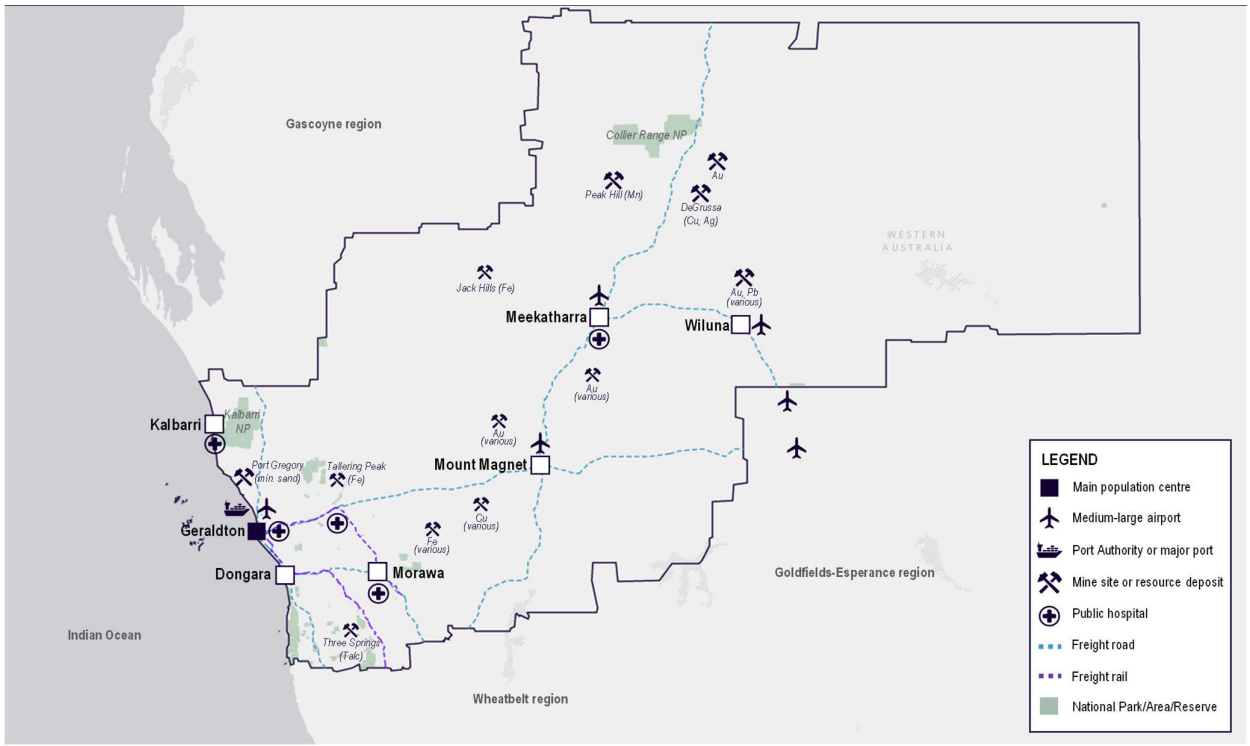
7 Mid West region

This section presents a profile of the Mid West region through the lens of the seven regional development categories presented in Section 3.

7.1 Overview of the Mid West region

The Mid West region is Western Australia's third largest region with a land mass of around 47.8 million hectares. It located around 350km north of the Perth Metropolitan Area and is bordered the Indian Ocean to the west, the Gascoyne and Pilbara regions in the north, the Wheatbelt region to the south and the Goldfields Esperance region in the south east. It is comprised of 17 Local Government Authorities with the most populous being the City of Greater Geraldton which includes the towns of Geraldton, Greenough, and Mullewa. Whilst the majority of the population lives in the coastal areas, there are population centres scattered throughout the region. The region is renowned for its coastal areas, natural attractions, Aboriginal culture and history, and the mining and agriculture industries.

Figure 7.1 Mid West region



Source: ACIL Allen

The region and its key regional centres and infrastructure assets are presented in **Figure 7.1** above.

7.2 Economy

The Mid West region is the State's 6th largest economy, generating a GRP of $8.2 billion in 2019. It has a diverse economy built around mining, agriculture, tourism and fishing. Reflecting its large primary industries base, the region can experience variable growth rates from year to year. Since 2011, the region has recorded below average long term growth of 3.2 per cent per annum but has recorded above average growth since 2017 (**Figure 7.2**).

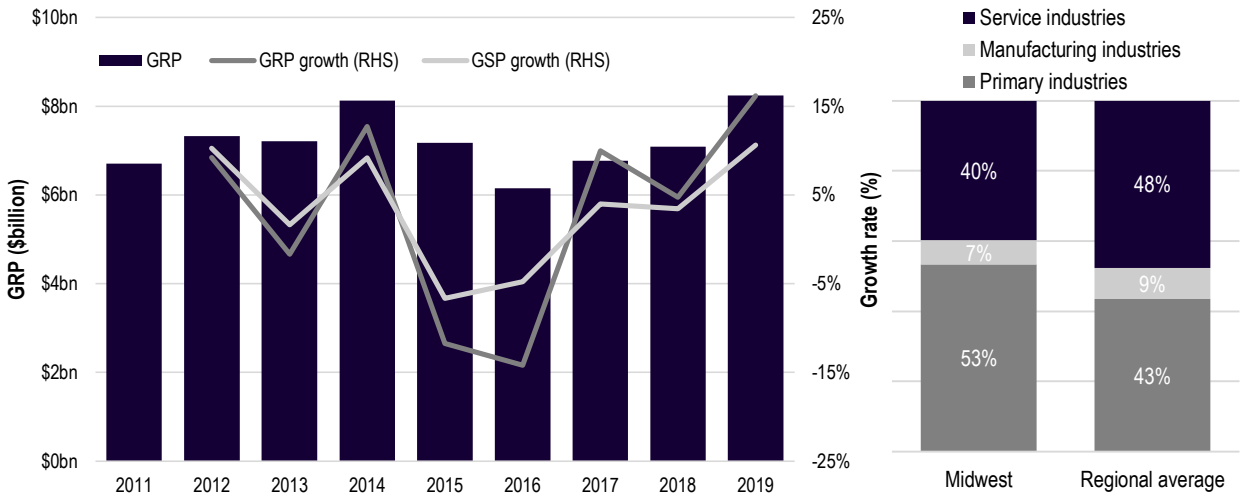
The region's mining and agriculture industries dominate the economy, accounting for over half of the total economic output produced each year. In value terms, mining and minerals exploration generated $2.6 billion to GRP, with $0.7 billion generated by the agriculture and fishing industries. Key agricultural commodities produced include grains and livestock, while commercial fishing is also a valuable industry.

There is a strong resources sector in the Mid West with the region the third largest producing resources province in the State. In 2019, the region has 18 operating mines that produced $4.8 billion of minerals resources, of which $2.6 billion was associated with the production of gold, $1 billion of iron ore and $0.9 billion of copper, lead and zinc.

The region is well placed for future economic growth, with an estimated $6.6 billion of major projects currently planned for the region which is 80 per cent of the current value of the region's economy. This includes significant private investments being considered in the resources sector, including in the less populated areas of the region which will support economic opportunities to these areas. The most significant non-resources project is the $2.2 billion Square Kilometre Array Consortium project, which is scheduled to commence in 2022.

The region has a strong business sector with 3,934 employing businesses representing 2.4 per cent of all employing businesses in the State and 4.2 per cent of Western Australia's Aboriginal businesses. The majority of the employing businesses are small, with 226 medium sized (20-199 employees) and three large businesses (>200 employees).

Figure 7.2 Gross Regional Product and Industry structure – Mid West region



Source: ABS, ACIL Allen

7.3 Industry

The economy of the region is built on its onshore resource deposits, its valuable agricultural land, access to coastal waters, and its place as a tourist destination.

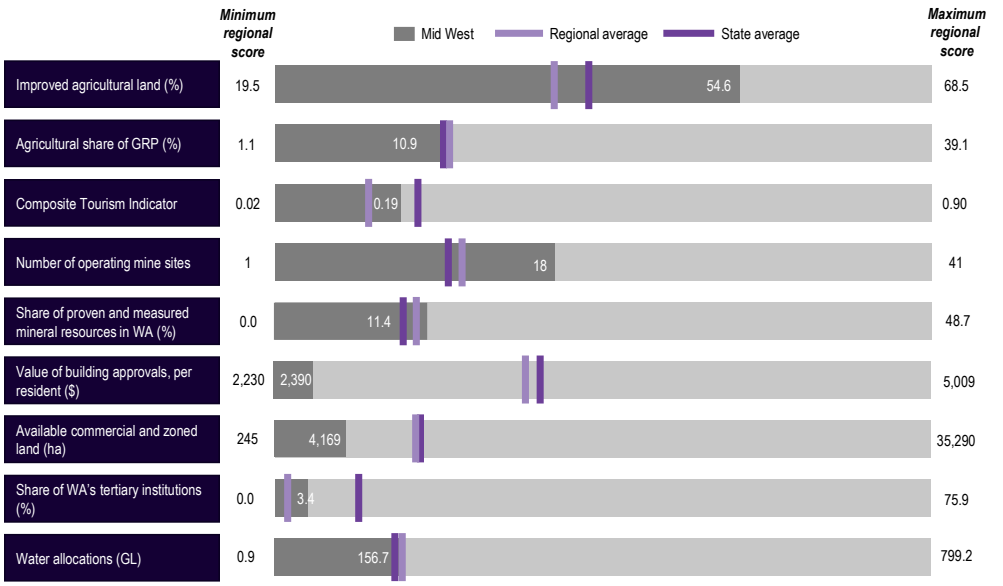
The region supports a strong fishing industry and this is reflected in the indicator for the aquaculture and fishing industry in the region ranking the highest in the State. There is also a strong broadacre industry with the indicator for the grains industry ranking the second highest in the State.

The region is an important tourist destination attracting 709,000 overnight visitors to the State. This represents 5.7 per cent of the State's overnight visitors and includes an estimated 73,000 interstate visitors and the 67,000 visitors from overseas makes it the third most visited region in Western Australia by overseas visitors. Key attractions include the coastal areas, Kalbarri National Park, and Houtman Abrolhos Islands. The region's relative strength in spend per capita, visitor attractions and cruise ship visitors places it above the regional average in terms of tourism potential (see Composite Tourism Indicator below).

There are currently 18 operating mines in the region producing gold, copper, lead, zinc, iron ore and mineral sands. There are a further 15 proposed open pit resources projects that target a range of minerals including iron ore, and speciality and precious metals. The region is home to 11.4 per cent of the State's identified mineral resources, the third largest of any region.

The Mid West is well positioned for future industrial development, with adequate supplies of land, power and water. This includes some 4,169 ha of existing and planned industrial and commercial land to support future industry developments, the State's fourth largest regional allocation of water, and connections to the State power network. The region currently generates renewable energy that feeds into the network and is ideally placed to produce additional renewable generation.

Figure 7.3 Industry indicator performance – Mid West region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

The region also offers tertiary education services through the Geraldton Universities Centre which supports courses offered by three national universities.

The performance of the Mid West region against the key Industry indicators is presented in **Figure 7.3** above. Overall, the performance of the region against the indicators is mixed, with the

region performing above the State and regional averages for agriculture and mining, and below average for building approvals and commercial land indicators.

7.4 Human Capital

The region has a small and sparse population of around 53,000 people, accounting for two per cent of the State's population. Most of the population lives in the City of Geraldton and in the surrounding coastal towns and agricultural areas.

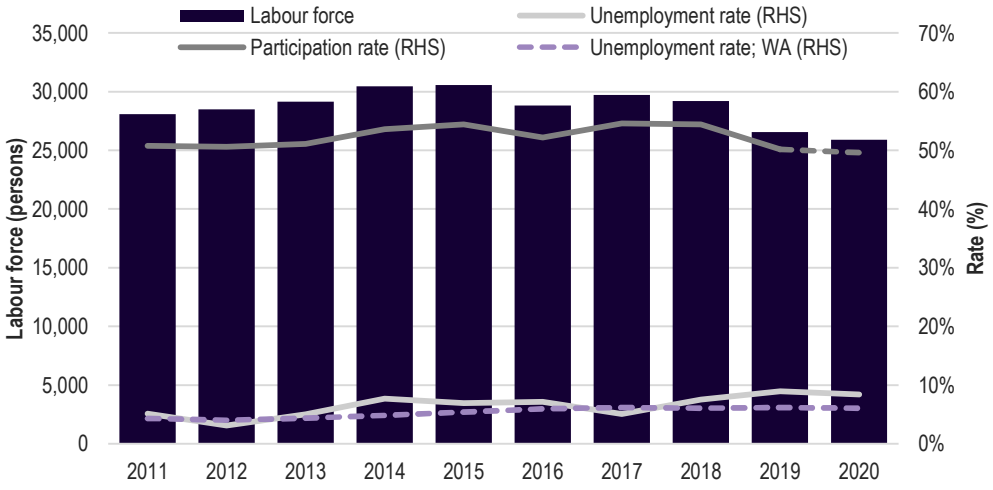
The Mid West has a diverse population, with around 5,100 Aboriginal people, representing 9.4 per cent of the region's population and seven per cent of the State's Aboriginal people. There are seven Aboriginal language groups in the region and Aboriginal people live in towns and communities throughout the region.

Around 32 per cent of the population has one or both parents who were born overseas, with an estimated 300 people per year moving to the region from overseas. Despite the numbers of overseas migrants choosing to live in the region each year, the population has been in decline since 2013, with the population falling by 7.2 per cent over the period.

The region supports a small workforce of 26,000 people, equivalent to 1.8 per cent of the State labour force. Labour market conditions have been relatively weak over the medium term, with the region's workforce falling by 15 per cent since 2015, and the unemployment rate increasing to a decade-high of 8.4 per cent in 2020 compared to a long term average unemployment rate of 6.5 per cent (**Figure 7.4**).

There is a relatively higher level of dependency in the region with 37 per cent of the region of non-working age. An estimated 6.5 per cent of the population recipients of Newstart or Jobseeker, compared to a State wide average of 4 per cent. The region has a SEIFA index of 963 compared to a State average of 971 making it one of the disadvantaged socio-economic regions in the State.

Figure 7.4 Labour force – Mid West region



Note: Participation for the *Mid West* region has been estimated for 2020 using the region's three year average population growth rate.
Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

7.5 Liveability

The Mid West region is an attractive place to live and to visit. Whilst it is one of the most isolated regions in the State, there are good road and air transport links particularly to Geraldton.

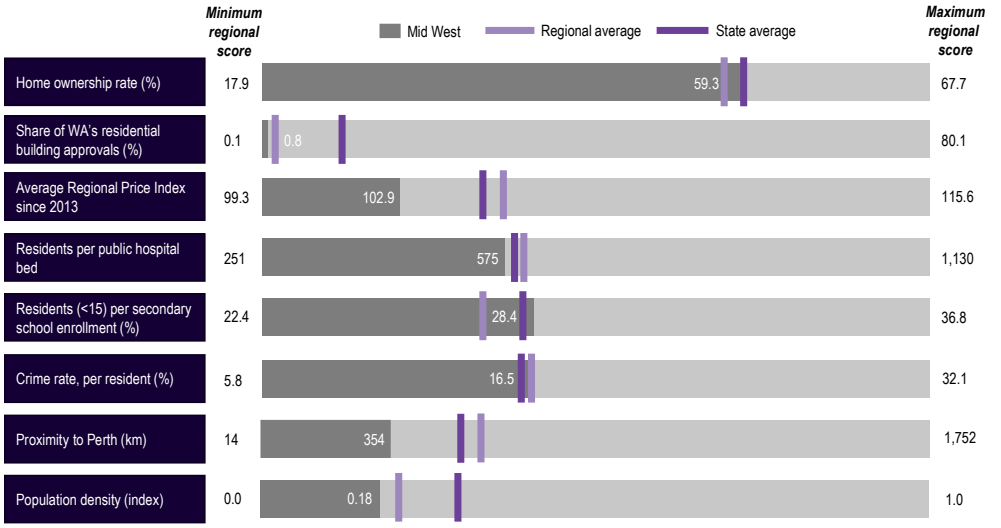
A key attraction is the region's relative affordability, however, the cost of living has increased from 2.8 per cent higher than Perth in 2013 to 4.6 per cent higher in 2019.

The region is comparatively poorly serviced by public health and education infrastructure compared to the rest of the State. However, there is a high level of private providers in the region. It is one of two regions that support a public and a private hospital, and there are several private secondary schools in the region. There is a small public transport system in Geraldton.

Around 59 per cent of homes in the region owner occupied compared to a State average of 64 per cent. There is an average of around $40 million of new residential developments constructed in the region each year which will assist in improving home ownership rates and in attracting further population to the area. Around 18 per cent of the region's population lives in its major regional centres. There is relatively high rates of crime in the region.

The performance of the Mid West region against the key liveability indicators is presented in **Figure 7.5**. Overall, the region performs well in terms of its proximity to Perth, cost of living and in public health infrastructure provision but at or below the State and regional average across the remainder of the indicators.

Figure 7.5 Liveability indicator performance – Mid West region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

7.6 Infrastructure

The Mid West region is well serviced by infrastructure and particularly the coastal areas where the bulk of the population and businesses are located. There is opportunity to expand public infrastructure to further economic and population growth in the region.

There is a general cargo port at Geraldton which services the grains, minerals and live cattle trade. Despite just nine per cent of the region's land mass located within 200km of a port, there are good road and rail links to Geraldton Port as well as ports in other regions.

Around 12 per cent of the land mass of the region lies within 100 km of an RPT airport with the key regional airport located at Geraldton as well as smaller airports located at Meekatharra, Wiluna and Mt Magnet.

The largest freight road system in the State is located in the region with 2,272km of freight roads including the Great Northern Highway and the Brand Highway. In addition, there is 497km of freight

rail that connects Geraldton and the grain growing regions to Geraldton Port and the State rail network.

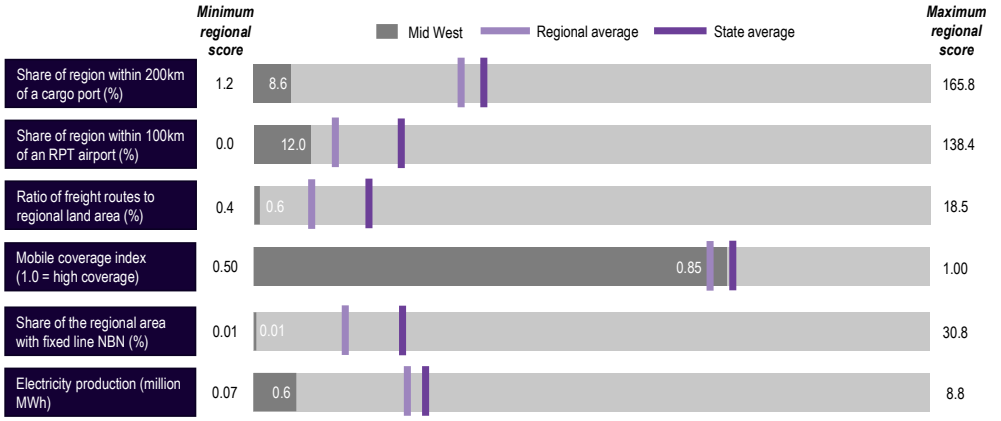
There are broadband connections in larger population centres while satellite connections are available in less populated areas. Mobile telephone coverage is available but is limited in many parts of the region.

Parts of the region are serviced by the South West Interconnected System (SWIS) electricity network including 330KV transmission line that runs to Three Springs providing potential for industrial development including minerals processing. The towns in the east of the region produce their own electricity.

The region produces 558MW of electricity including gas fired electricity from the Mungarra power station near Geraldton and from renewable energy that feeds into the SWIS. Collectively, the region generates 2.4 per cent of all electricity produced in Western Australia. Additional solar power generation is expected to come on line and its favourable climate, port infrastructure, and links to the State transmission network provides opportunity for further electricity generation.

The performance of the Mid West region against the key infrastructure indicators is presented in **Figure 7.6**. Overall, the region is at or below the State and regional average across all indicators.

Figure 7.6 Infrastructure indicator performance – Mid West region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

7.7 Climate

The region supports a varied climate with a warm temperate climate in the coastal areas and hot dry summers and cool winters in the interior. The average regional temperature is 26.8ºC with eight months of the year averaging between 13 and 29˚C making it one of the State's most ideal temperature ranges for lifestyle and providing ideal growing conditions for agriculture.

The region receives an average rainfall of 437mm per annum, however, rainfall in the region is variable with the coastal areas receiving higher falls. The region has one of the lowest rainfalls in the State, and has become drier over time, with average rainfalls decline by around 42mm per annum.

The Mid West region records some of the highest wind speeds in the State and has an above average level of exposure to solar. The proposed development of the *Oakajee Strategic Industrial*

Area (SIA) to the north of Geraldton is one such project that seeks to take advantage of the conditions in this area which is known to have some of the highest wind speeds in the world[11].

The performance of the Mid West region against the key climate indicators is presented in **Figure 7.7** below.

Figure 7.7 Climate indicator performance – Mid West region

Source: ACIL Allen; AREMI; BoM

7.8 Natural Environment

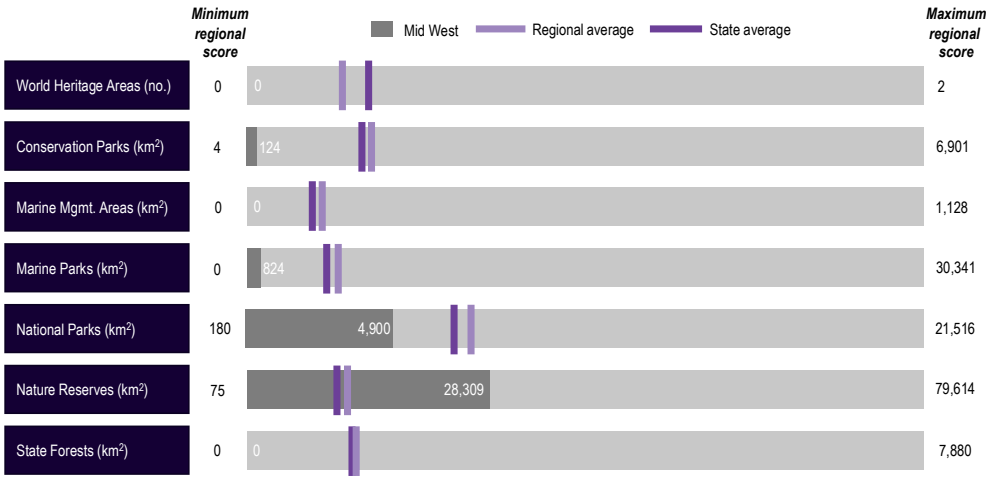
The region is known for its unique natural environment and includes the world's oldest rocks at Jack Hills, as well as a range of natural attractions including Kalbarri National Park, Coalseam Conservation Park, and Houtman Abrolhos Islands. Its coastline and wildflowers are major tourist attractions and they also add to the liveability of the region.

The region includes 12 per cent (or 3.4 million hectares) of the State's reserves and parks including 21 per cent of the State's nature reserves and seven per cent of its National Parks. There are no State Forests or marine management areas in the region, and very few of the conservation parks and marine parks. The region has strong spiritual and cultural links of the Aboriginal people, with Native Title covering much of the region.

The performance of the Mid West region against the key natural environment indicators is presented in **Figure 7.8** below.

[11] Development WA (2020). Overview: Strategic industrial land in Western Australia's Mid West.

Figure 7.8 Natural environment indicator performance – Mid West region



Source: ACIL Allen; DBCA

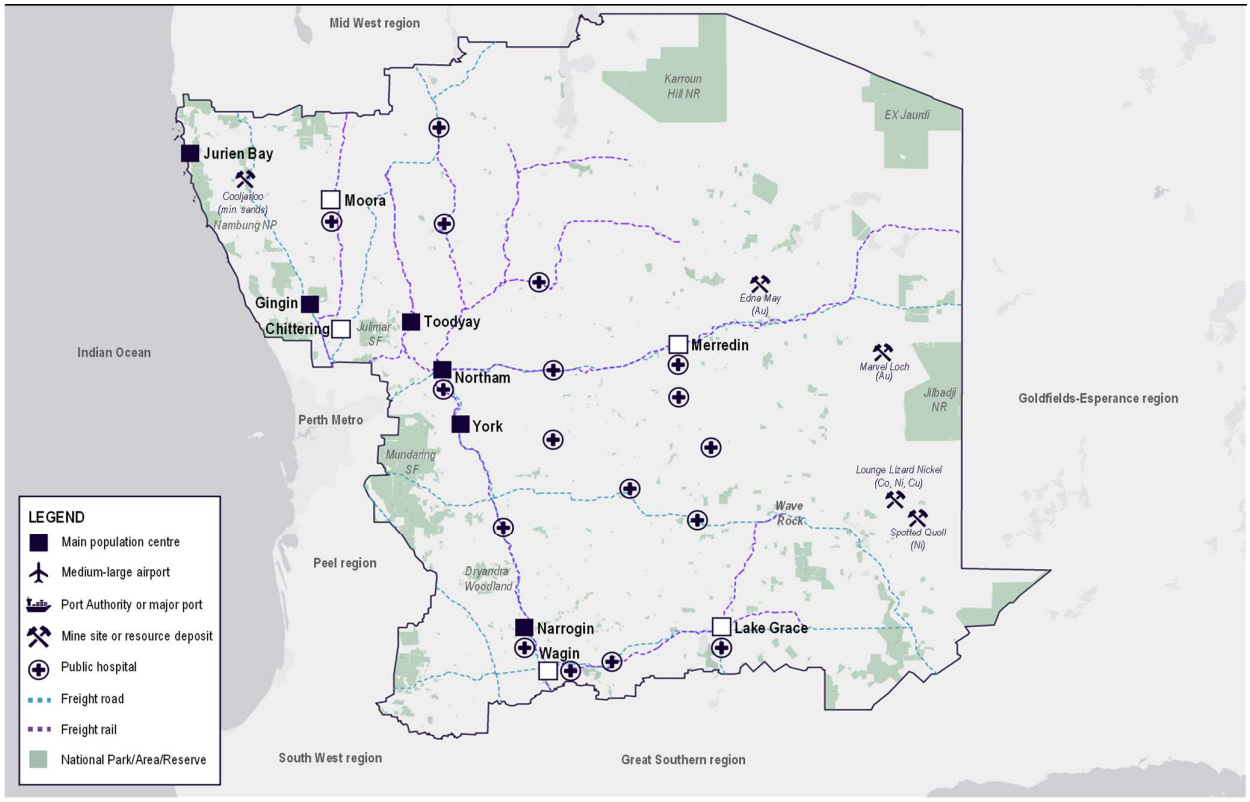
8 Wheatbelt region

This section presents a profile of the Wheatbelt region through the lens of the seven regional development categories presented in Section 3.

8.1 Overview of the Wheatbelt region

The Wheatbelt region consists of 42 Local Government Areas which cover a combined area of over 15.5 million hectares or six per cent of Western Australia's land mass. There is no major population centre in the region, with the population instead spread across over some 200 towns and hamlets. The most populous Local Government Area is the Shire of Northam. The region is renowned for its agricultural industries and is a popular destination for travellers particularly for those from within the State. The economy of the region is diverse, with the mining and manufacturing also prominent in the region.

Figure 8.1 Wheatbelt region



Source: ACIL Allen

The region and its key regional centres and infrastructure assets are presented in **Figure 8.1** above.

8.2 Economy

With a GRP of $7 billion, the Wheatbelt region is Western Australia's fourth smallest economy contributing around 2.5 per cent to GSP. The economy is diversified with key contributions from the services sector (47 per cent of GRP) and primary industries (45 per cent of GRP). The economy of the region has performed well over the long term with above average economic growth of 4.6 per cent per annum, compared to long term average economic growth in the State of 3.5 per cent per annum (**Figure 8.2**).

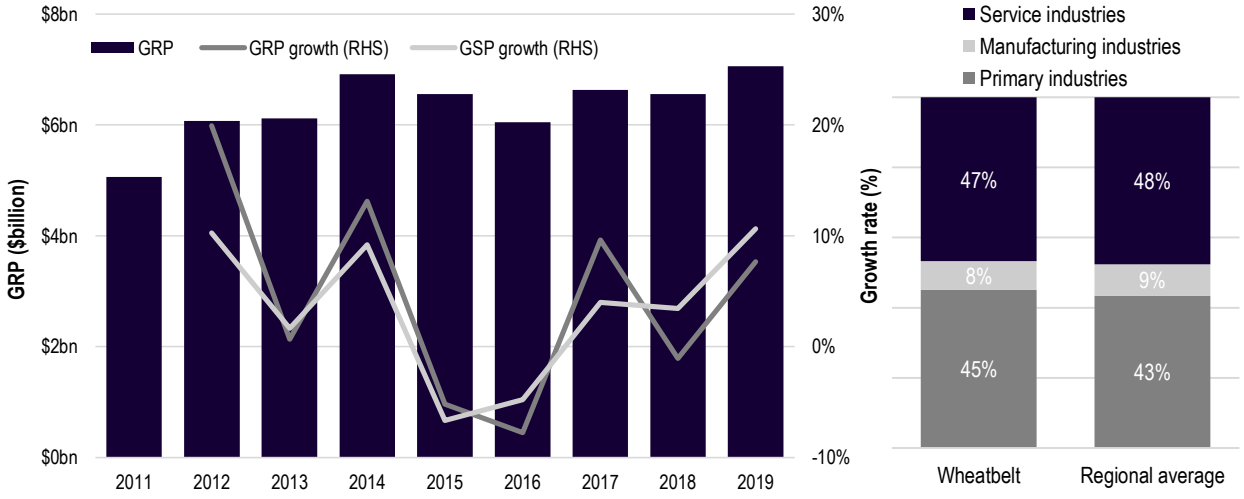
The foundation of the economy is its agricultural industries, reflecting the region's vast area of agricultural land and mild climate. Agriculture remains key to the economy contributing around $2 billion to GRP. Over $1.5 billion of grains and livestock is produced in the region, accounting for almost half of the State's total production. There are also manufacturing activities in the region which contributes $0.5 billion to GRP, including for agricultural processing, minerals processing, and light industrial manufacturing.

The region also supports a significant mining industry, with production of $2.1 billion of minerals resources of which $0.8 billion is from iron ore and $0.5 billion from mineral sands including from the manufacture of synthetic rutile.

With $415 million of possible major projects in the region in the road transport and resources sectors, this will support future economic development in the region.

The region supports the third largest number of employing businesses in the State and the second lowest insolvency rate, with 7,500 employing businesses which together account for 4.5 per cent of all businesses in WA. This includes six Aboriginal owned businesses.

Figure 8.2 Gross Regional Product and Industry structure – Wheatbelt region



Source: ABS, ACIL Allen

8.3 Industry

The economy of the Wheatbelt region is based on the region's rich natural assets that include its agricultural land, minerals, and water resources, as well as its natural attractions, and its proximity to the Perth Metropolitan Area and the State's key transport routes.

The region is a destination for travellers, with around one million overnight visitors staying 2.9 million nights in the region each year. The Wheatbelt has the third largest intrastate visitation of any region as well as 60,000 visitors from overseas and 57,000 visitors from interstate. Major tourist attractions include the coastline, its wildflowers, and natural attractions including the Pinnacles and Wave Rock.

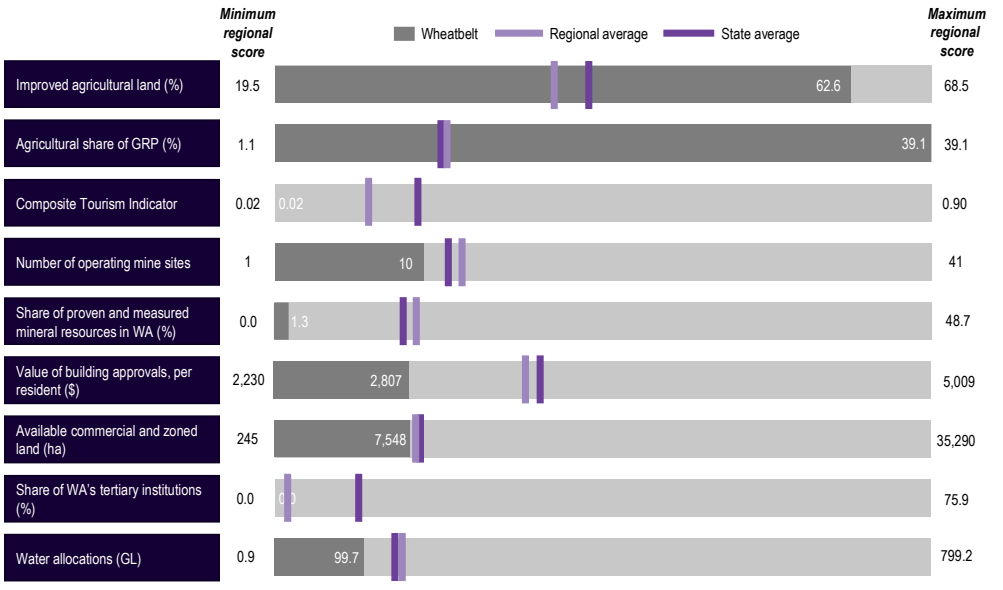
The Wheatbelt region is the State's most valuable agricultural producer. Two thirds of the region's area is improved agricultural land and the region produces one third of the State's agricultural contribution to GSP. The region's agricultural production also benefits other industries in the region including as an input into manufacturing, and as a user of transport services. The Muresk Institute is located near Northam and is focussed on training, education and research in the agricultural industry.

The agriculture sector in the region is dominated by the grains industry and the livestock industry with the indicators for each of these industries ranking the highest in the State. The region also ranks third highest in terms of the indicator for horticulture reflecting the growing number of developments within reach of the Perth Metropolitan Area.

The region's mining industry includes 10 mines producing gold, nickel, iron ore, mineral sands and salt. Nine per cent of the State's mines are located in the region, which is the fourth largest number of mines in the State. A further four mines are proposed for mineral sands, iron ore, and clay production. Beyond these opportunities, mineral prospectively is limited with the region hosting just 1.3 per cent of the State's proven resources.

There is 75.5 hectares of planned industrial and commercial land in the region which is 10 per cent of all land in WA allocated for this purpose. The region's proximity to Perth and the freight network in the region places it in a good position to develop additional land for industry. With an estimated 99.6GL of water available for allocation, the region hosts the fourth largest water allocation in the State which can support future industry and agricultural development. The region benefits from the Goldfields Water Supply Scheme which supplies towns along its route. Most other towns are serviced by underground water.

Figure 8.3 Industry indicator performance – Wheatbelt region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

Building approvals average around $197.5 million per annum with around half of this value from residential construction. This is the fourth largest residential building approval value in regional Western Australia, reflecting its proximity to Perth and the population growth in these peri urban areas. Additional population growth is expected as developments commence along the Tonkin Highway extension.

The performance of the Wheatbelt region against the key Industry indicators is presented in **Figure 8.3** above. Overall, the performance of the region against the indicators is mixed, with the region performing above State and regional averages in agriculture alone but is competitive in terms of its access to commercial land, water and operating mine sites.

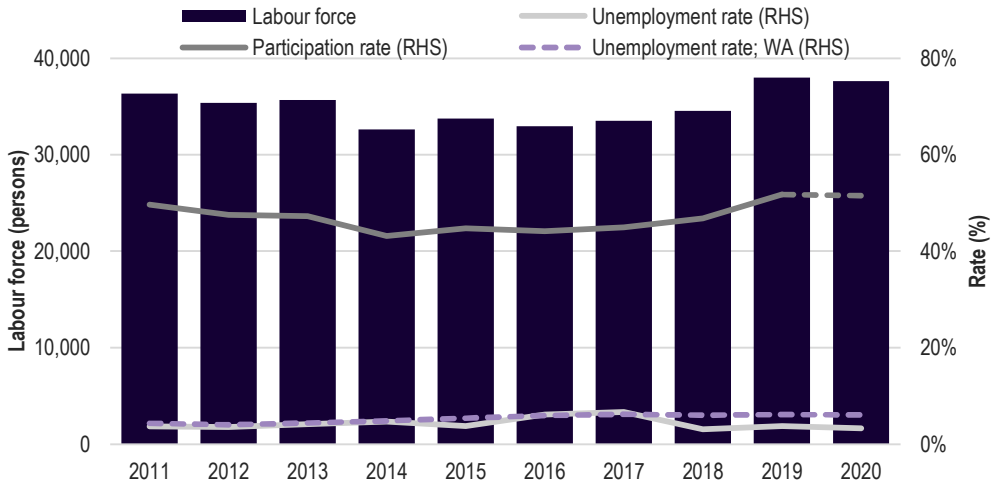
8.4 Human Capital

The Wheatbelt region has a small and scattered population of around 73,500 people which makes up 2.8 per cent of the State's population. On average, the region's population has grown by 1.5 per cent per annum, but has been in trend decline since 2014. Population growth in the region is varied with most of the decline in the more remote areas of the region, with more significant population growth in the areas closer to Perth.

The population lacks diversity despite around 200 people per year moving to the region from overseas. An estimated 35 per cent of the population had one or both parents who were born overseas, compared to a State average of 58 per cent. There are an estimated 3,300 Aboriginal people who live in the region which represents 4.4 per cent of the region's population and 4.4 per cent of the State's Aboriginal people.

The region supports a small but growing workforce of 37,600 people, equivalent to 2.6 per cent of the State's labour force (**Figure 8.4**). Over 54 per cent of the workforce is employed in the services sector and 39 per cent in the primary industries sector. The region's workforce is highly skilled relative to other regions in the State and has one of the lowest unemployment rates with just 3.2 per cent of the workforce unemployed. The long term unemployment rate is 4.3 per cent, which is below the State average of 5.3 per cent.

Figure 8.4 Labour force – Wheatbelt region



Note: Participation for the *Wheatbelt* region has been estimated for 2020 using the region's three year average population growth rate.
Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

There is a relatively low level of dependency in the region with just 4.5 per cent of the population recipients of Newstart or Jobseeker, compared to a State wide average of 4 per cent. However, the region is one of the most disadvantaged with a SEIFA index of 976 compared to a State average of

971, and an estimated 40 per cent of the region are of non working age, which is the highest rate in the State.

8.5 Liveability

The region has a very high level of liveability characterised by a mild climate, high rate of home ownership, a high level of social infrastructure provision, and a low crime rate. There is a growing number of people who are choosing to live in the areas close to the Metropolitan Area which affords them a rural lifestyle and access to jobs, infrastructure, and services in Perth.

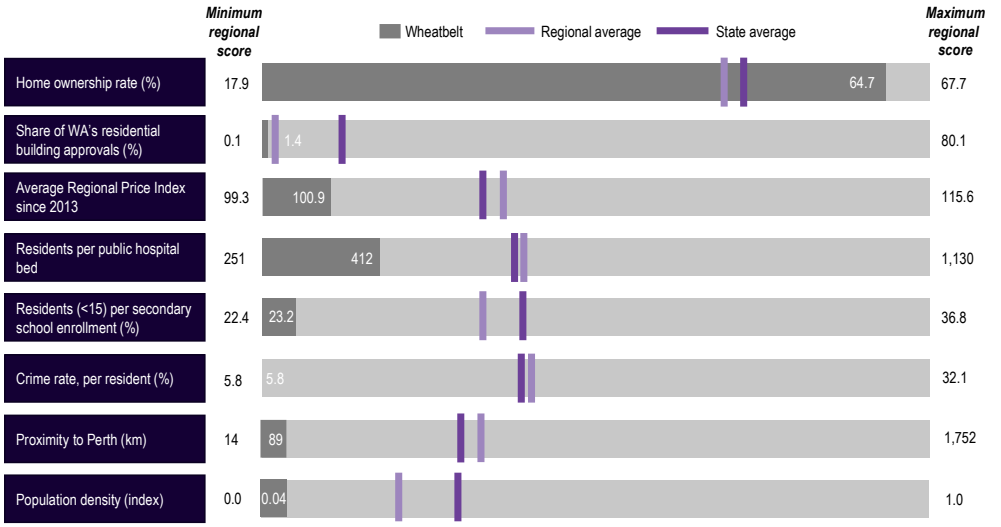
There are over 200 towns located throughout the region in addition to a growing number of peri urban hamlets resulting in less than one per cent of the population living within a large town.

The region has a high rate of home ownership with 65 per cent of all housing owner occupied and 23 per cent rental accommodation. There is a strong pipeline of new dwellings planned for the region. Despite its vast land mass and scattered population, there is a high level of social infrastructure including one hospital bed per 412 people compared to a state average of 501, and 967 children per high school compared to 1,700 in the State.

The cost of living is relatively low, at around 7.3 per cent more than in Perth and has remained constant since 2015. It has the lowest crime rate in the State which adds further to its liveability.

The performance of the Wheatbelt region against the key liveability indicators is presented in **Figure 8.5**. Overall, the region performs very well against nearly all indicators, with the exception of residential building approvals.

Figure 8.5 Liveability indicator performance – Wheatbelt region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

8.6 Infrastructure

The Wheatbelt region supports extensive transport infrastructure that connects key infrastructure in the Perth Metropolitan Area to the east coast of Australia and to other Western Australian regions.

The longest freight rail network in the State is located in the region with 1,817km of rail that provides connections to the east coast and to key port infrastructure in other regions including an integrated network that services the grains sector. There is 1,994km of freight road in the region which is the third largest road freight network in the State and includes the Great Northern

Highway, Brand Highway, Great Eastern Highway, and Great Southern Highway. In addition, there are numerous smaller roads that connect the region's towns and hamlets.

There is no port in the region or RPT airport in the region, however there are sealed airstrips located throughout the region and it is well connected to markets through its road and rail network. An estimated eight per cent of the region's area is within 100km of an airport including the Perth International Airport. One third of the region is within 200 km of a port including the ports of Fremantle and Geraldton.

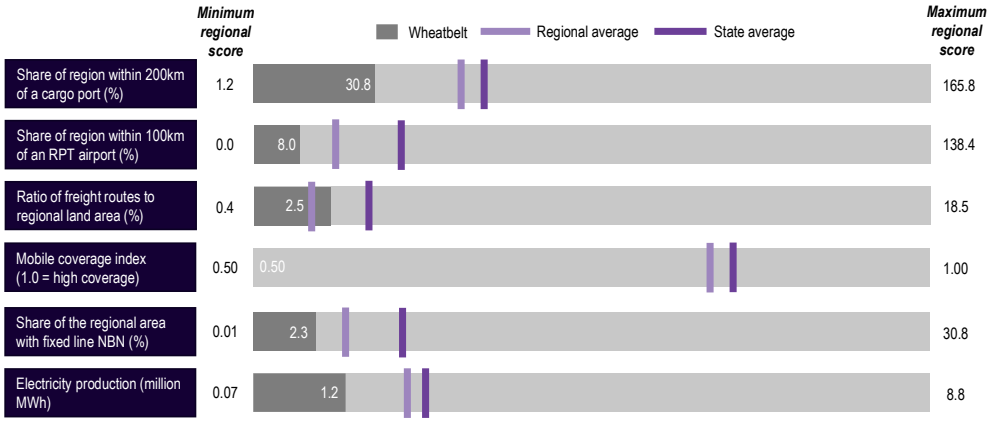
The region is relatively well serviced by telecommunications. There are broadband connections in larger population centres and satellite connections available in less populated areas. Mobile telephone coverage is available but is limited in many parts of the region.

Parts of the region are serviced by the SWIS and there is a 220KV transmission line that runs from Collie to Kondinin, Merredin and Kalgoorlie. The region produces 1,220MW of electricity that feeds into the SWIS which is 5.2 per cent of all electricity produced in Western Australia and there are opportunities for additional power generation in the region due to its favourable conditions for renewable energy.

The Dampier to Bunbury Gas Pipeline runs through the western part of the region providing opportunity for development of industry.

The performance of the Wheatbelt region against the key infrastructure indicators is presented in **Figure 8.6**. Overall, the region is below the State average across all indicators.

Figure 8.6 Infrastructure indicator performance – Wheatbelt region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

8.7 Climate

The Wheatbelt's climate is characterised by its hot and dry summers, mild winters and its moderate level of rainfall. The region has an average temperature of 25.6ºC, and seven months of the year when the temperature falls between 18 and 30ºC, making it one of the best climates in regional WA in which to live.

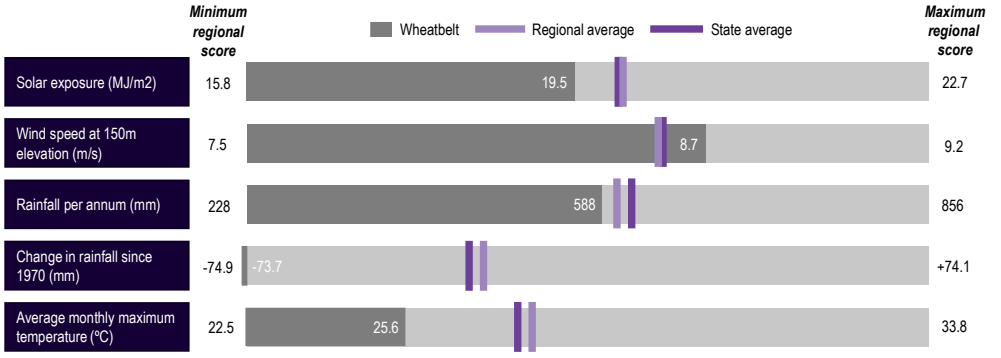
The Wheatbelt region receives an average level of rainfall in comparison to the State with around 588 millimetres of rain falling across the region per year. The region's rainfall has declined by over 70 millimetres when comparing the 1970s to the last decade. A recent report by BCEC (and highlighted by the Wheatbelt NRM) described the changing climate in the region: "*WA's South West and Wheatbelt regions will be among the top 10 per cent of places on earth where rainfall*

decline will be the most severe, driven by climate change".[12] These changes may have significant implications for agricultural production in the region.

The region has an average solar exposure when compared to other regions and one of the lowest average wind speeds. However, it is considered prospective for renewable energy generation particularly given its access to the SWIS and its proximity to ports.

The performance of the Wheatbelt region against the key climate indicators is presented in **Figure 8.7** below.

Figure 8.7 Climate indicator performance – Wheatbelt region



Source: ACIL Allen; AREMI; BoM

8.8 Natural Environment

The Wheatbelt supports a varied natural environment that is characterised by long stretches of coastline, popular natural attractions, and its proximity to the Perth Metropolitan Area. These characteristics add to its liveability and assist in attracting tourists and development to the region.

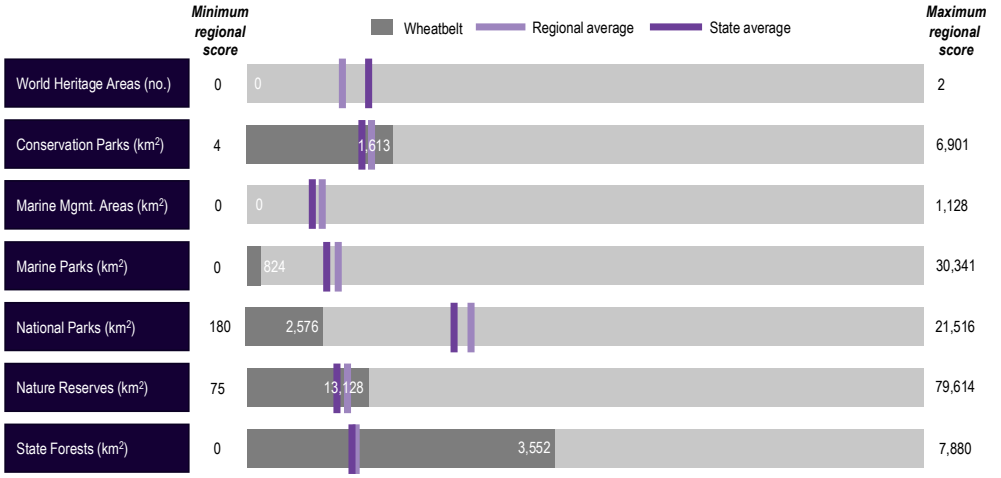
There are 2.2 million hectares of DBCA classified reserves and parks in the region including the Nambung National Park. The region supports 22 per cent of Western Australia's state forestry which is the second largest holding in the State. It also includes the third largest areas of conservation parks and nature reserves in the State.

In addition to the attraction and enjoyment people derive from these natural assets, there are strong spiritual and cultural links of the Aboriginal people which support significant connection to Country for Aboriginal people and as such Native Title covers much of the region.

The performance of the Wheatbelt region against the key natural environment indicators is presented in **Figure 8.8** below.

[12] Wheatbelt NRM (2021). Climate Change is here – What will a sustainable Wheatbelt look like?

Figure 8.8 Natural environment indicator performance – Wheatbelt region



Source: ACIL Allen; DBCA

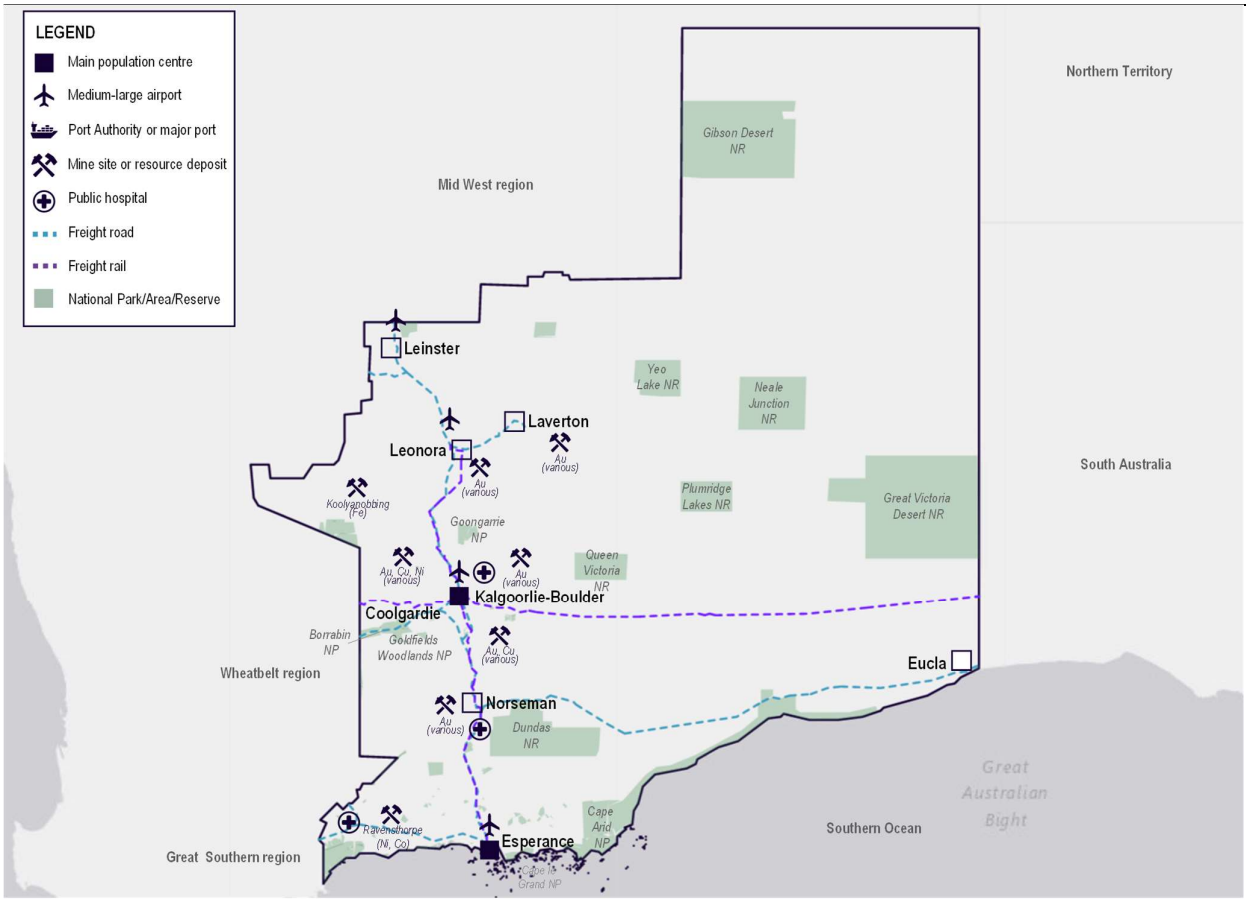
Goldfields-Esperance region 9

This section presents a profile of the Goldfields-Esperance region through the lens of the seven regional development categories presented in Section 3.

9.1 Overview of the Goldfields-Esperance region

The Goldfields-Esperance region is the largest of Western Australia's regional areas. It consists of nine Local Government Areas which cover a combined area of over 77.1 million hectares or 29 per cent of Western Australia's land mass. It is bounded by the Northern Territory and South Australia to the east, and Mid West, Wheatbelt and Great Southern regions to the west, the Pilbara region to the north, and the Great Southern Ocean to the south.

Figure 9.1 Goldfields-Esperance region



Source: ACIL Allen

The key population centres are the towns of Kalgoorlie, Boulder, and Esperance. The region is renowned for its mining industry to the north, its agricultural regions to the south, and its spectacular coastline. It is a popular destination for travellers particularly for those from within the State.

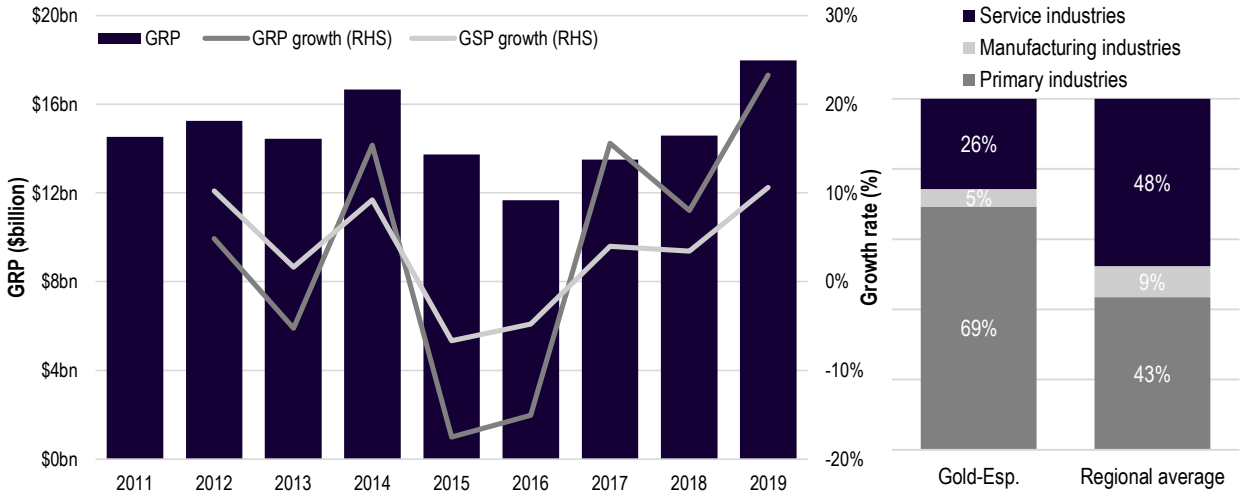
The region and its key regional centres and infrastructure assets is presented in **Figure 9.1** above.

9.2 Economy

The Goldfields-Esperance region has the State's third largest economy with a GRP of almost $18 billion representing six per cent of GSP. The economy is built on the primary industries sector with mining, agricultural production, and commercial fishing providing key contributions. Together, these industries represent 69 per cent of the region's economy. GRP growth in the region tracks closely to the fortunes of its dominant mining industry, with GRP contracting sharply in 2015 and 2016 in line with a State-wide decline in the mining industry, and has been growing since, with a 23 per cent boost to the GRP in 2019. Over the long term, the region has recorded an average growth in GRP of 3.7 per cent per annum compared to a growth rate of 3.5 per cent per annum for the State (**Figure 9.2**).

The largest contributor to the region's GRP is the mining industry, with the mining and minerals exploration industries contributing around two thirds of GRP. The combined agriculture, forestry and fishing industries account for around five per cent of the region's economy. The region's primary industries reflect the wealth of its mineral resources and particularly the production of gold, while its agricultural sector is based on rangeland production in the mining areas and broadacre production in the southern part of the region.

Figure 9.2 Gross Regional Product and Industry structure – Goldfields-Esperance region



Source: ABS, ACIL Allen

The region supports a healthy business sector with one of the lowest insolvency rates in the State. There are currently 3,700 employing businesses in the region which is around 2.3 per cent of all employing businesses in Western Australia. Small businesses are over represented in the region, with an estimated 94 per cent of businesses employing less than 20 employees compared to a State average of 93 per cent. There is also a large number of big businesses in the region with 11 businesses in the region that employ more than 200 people. Only the South West and Peel regions support more businesses of this size. There are an estimated 42 Aboriginal owned businesses in the region which is nearly six per cent of all Aboriginal owned businesses in the State and just over one per cent of all businesses in the region.

The economic outlook of the region is focussed on developments in the mining industry, with four committed resources projects in the region with a combined value of around $690 million. There are a further $5.7 billion of potential projects designated for the region which is just under one third of the current value of the region's GRP.

9.3 Industry

The industry profile of the region reflects its rich mineral resources, agricultural land, and coastline which support a strong and diversified primary industries sector.

The region's mining industry is supported by 41 operating mines which primarily produce gold, nickel and tin. A further 15 mines are planned or under consideration in the region which will underpin the future of the industry. The region is highly prospective, containing 34 per cent of the State's proven and measured resources.

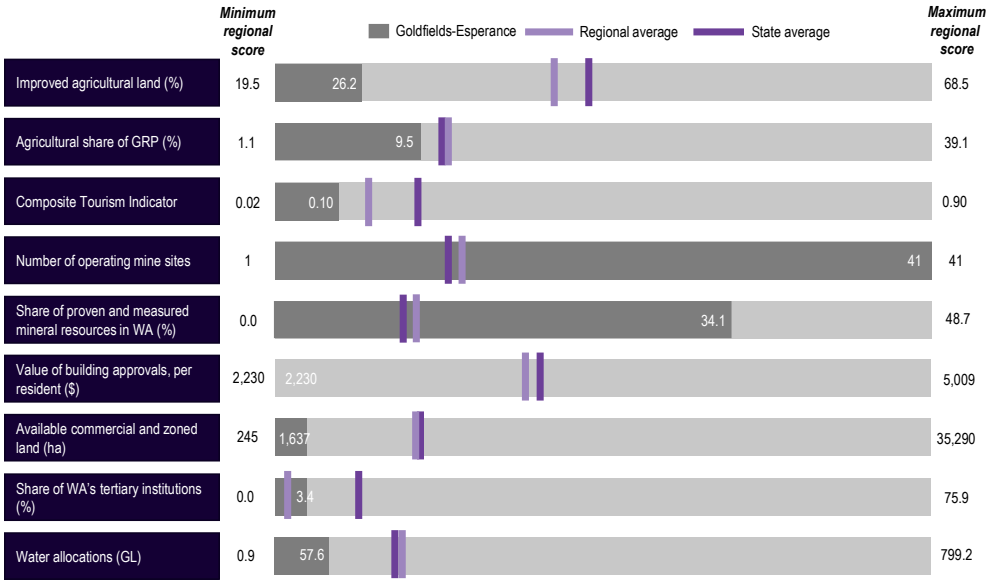
There is a strong agricultural sector in the region, with 26 per cent of its land area comprised of improved agricultural land that supports broadacre crop and livestock production. In addition, a large part of the region supports rangeland livestock production, and there is a commercial fishing sector with catches of abalone, finfish and crabs. There is 57.6GL of water allocations in the region which can further support the mining and agricultural industries.

The Goldfields-Esperance region is rich in cultural heritage and it has a unique natural landscapes which attract around 690,000 overnight visitors each year including 96,000 interstate visitors and 40,000 visitors from overseas. The region's relative strength in spend per capita and access to RPT airports places it slightly below the regional average in terms of tourism potential (see Composite Tourism Indicator below).

Curtin University hosts a WA School of Mines campus in Kalgoorlie which focusses on minerals, energy and chemical engineering.

The performance of the region against the key Industry indicators is presented in **Figure 9.3** below. Overall, the region performs well in terms of the mining industry, including in mining education, but below the State and regional average across all other indicators.

Figure 9.3 Industry indicator performance – Goldfields-Esperance region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

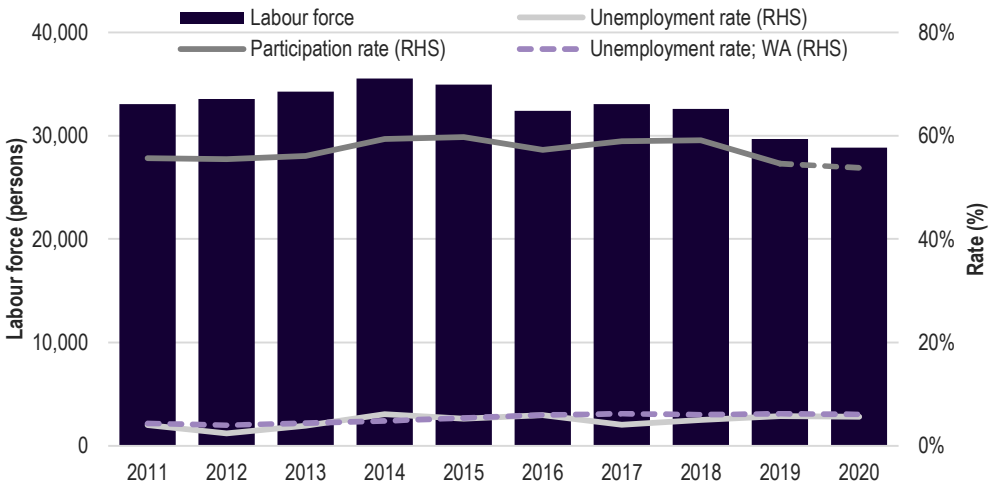
9.4 Human Capital

The region has a small and sparse population of around 54,400 people, accounting for two per cent of the State's population. Most of the population lives in the large regional centres of Kalgoorlie-Boulder and Esperance, but also across numerous smaller towns, Aboriginal communities, and agricultural areas scattered throughout the region. In addition, the region is home to a large fly in – fly out workforce associated with the resources sector.

The region is home to a large Aboriginal population of around 5,300 people, which is nearly ten per cent of the region's population and seven per cent of the State's Aboriginal people. There are as many as 16 Aboriginal language groups in the region with Aboriginal people living in towns and communities throughout the region.

The population of the region has further diversity with around 39 per cent of the population having one or both parents who were born overseas. An estimated 160 people per year move to the region from overseas and 1,450 from other parts of Australia. Despite the numbers of new arrivals choosing to live in the region each year, the population has been in decline since 2013, with the population falling by over 12 per cent over the period. The region has experienced the largest long term population decline of any region of 0.8 per cent per annum, which compares unfavourably against growth of 1.5 per cent per annum across the State.

Figure 9.4 Labour force – Goldfields-Esperance region



Note: Participation for the *Goldfields-Esperance* region has been estimated for 2020 using the region's three year average population growth rate.

Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

The region supports a resident workforce of 28,900 people, equivalent to around 2.4 per cent of the State labour force. Almost 47 per cent of the region's workforce are employed in the services sector and 46 per cent in the primary industries sector. There is also a large transitory workforce that is mainly associated with the resources sector. Labour market conditions have been relatively weak over the long term, with the region's workforce falling by 13 per cent over the past decade, the largest decline in the State. Despite this, the region consistently records low rates of unemployment. In 2020, the unemployment rate in the region was 5.6 per cent compared to an average long term rate of 4.8 per cent and unemployment of 6.1 per cent in the State (**Figure 9.4**).

There is a low level of dependency in the region with 33 per cent of the region of non-working age, and an estimated 4.8 per cent of the population recipients of Newstart or Jobseeker, compared to a State wide average of 4 per cent. The region has a SEIFA index of 974 compared to a State

average of 971 making it one of the more advantaged socio-economic regions in the State. Despite this, there are some sections of the population that experience disadvantage.

9.5 Liveability

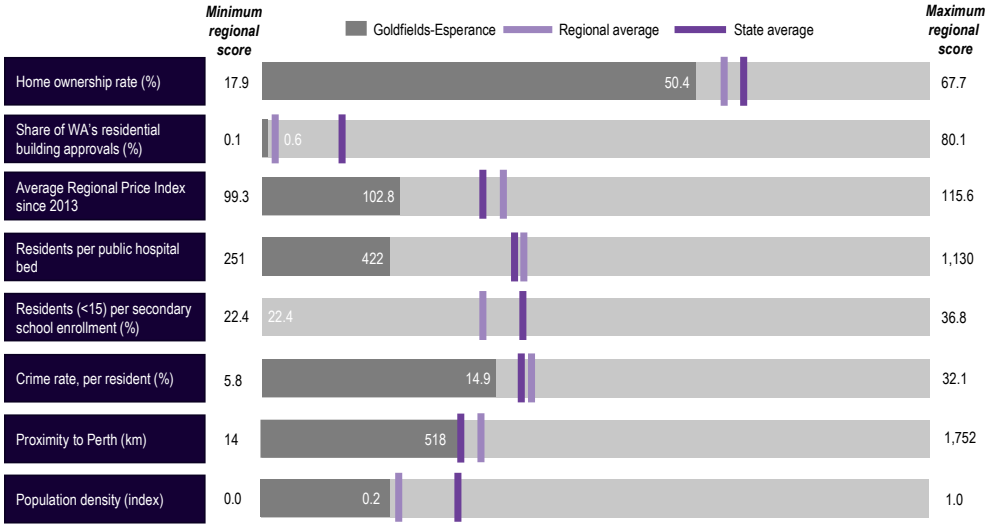
The region has some strong liveability characteristics including its high level of social services infrastructure, a low crime rate, and low cost of living. The population centres of the region are distinct, with the towns of Kalgoorlie and Boulder servicing the inland parts of the region and the surrounding mining and pastoral areas, while the town of Esperance is the major population centre for the coastal and agricultural areas to the south. In addition, there are multiple towns, Aboriginal communities, and farming hamlets located throughout the region.

The region has a relatively low cost of living compared to other regions and below average crime rates. There is a very high level of social services provision, with the region supporting the highest number of secondary school enrolments per resident under 15 of any region.

Home ownership in the region sits at just over 50 per cent across the region, which one of the lowest rates of home ownership in the State – a reflection of the transient nature of the mining industry workforce. There is an average of $30 million of new dwellings planned for the region each year which is one of the lowest rates of new dwelling approvals in WA.

The performance of the Goldfields-Esperance region against the key liveability indicators is presented in **Figure 8.5**. Overall, the region performs well for nearly all indicators with the exceptions being the rate of home ownership and the level of residential building approvals.

Figure 9.5 Liveability indicator performance – Goldfields-Esperance region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

9.6 Infrastructure

The size, remoteness, and population density characteristics of the region mean that it is not well serviced by infrastructure compared to other regions.

There is a general cargo port at Esperance which services trade in grains and minerals. Despite this being the only port in the region, the region is connected to other ports, including the Port of Fremantle, through the State and National road and rail network. The region supports one of the largest freight road networks in WA including the Great Eastern Highway which connects the region

to Perth, and the Eyre Highway which provides links to the east coast of Australia. The region also supports the second largest public freight rail network in the State with 1,531km of rail that connects the towns of Leonora, Coolgardie, Kalgoorlie, Norseman, and Esperance.

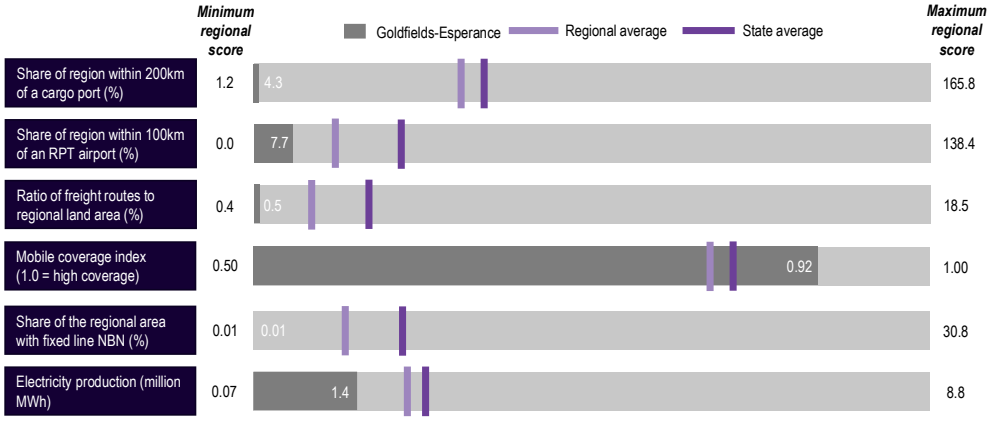
Around eight per cent of the land mass of the region lies within 100 km of an RPT airport with key regional airports located at Kalgoorlie and Esperance, and a smaller airport at Leinster that largely services the surrounding mining sector in that part of the region.

The region is well serviced by the internet with broadband connections in larger population centres and satellite connections are available in less populated areas. Mobile telephone coverage is comprehensive however it remains inconsistent in the more isolated parts of the region.

The region produces 1,400MW of electricity which is six per cent of the State's public electricity generation. There are two key transmission networks in the region which are located at Esperance and Kalgoorlie.

The performance of the Goldfields-Esperance region against the key infrastructure indicators is presented in **Figure 9.6**. Overall, there is high mobile communications coverage in the region but the region performs below the State and regional average across all other indicators.

Figure 9.6 Infrastructure indicator performance – Goldfields-Esperance region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

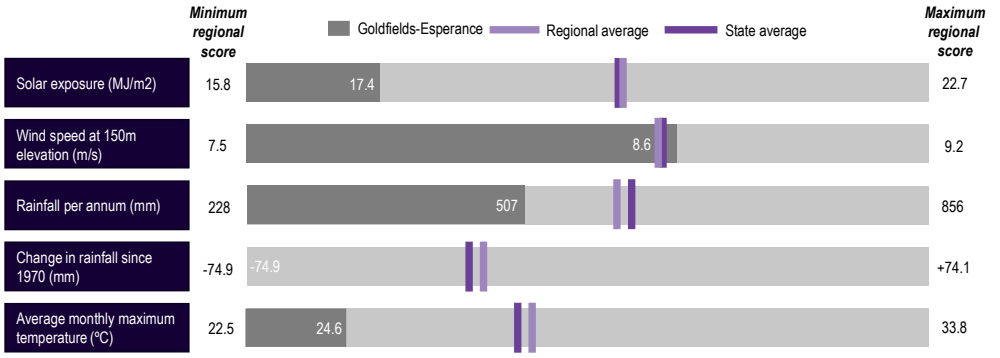
9.7 Climate

Climate in the Goldfields-Esperance region varies between cooler conditions in the southern parts of the region, and hotter and drier conditions in the central and northern areas. On average, the region experiences an average temperature of 24.6^{0}C, with nine months of the year averaging between 13 and 29^{0}C making it one of the State's most ideal temperature ranges for lifestyle and providing ideal growing conditions for agriculture.

The region receives a below average level of rainfall in comparison to the State with around 507 millimetres of rain each year. The region has experienced the State's largest decline in average annual rainfall of over 70 millimetres since the 1970s.

The performance of the region against the key climate indicators is presented in **Figure 9.7**. Overall, the region has a below average level of solar exposure, especially in the southern parts of the region, and lower average rainfall, cooler average maximum temperatures and average wind speeds. However, these indicators vary between the interior parts of the region and the coastal parts.

Figure 9.7 Climate indicator performance – Goldfields-Esperance region

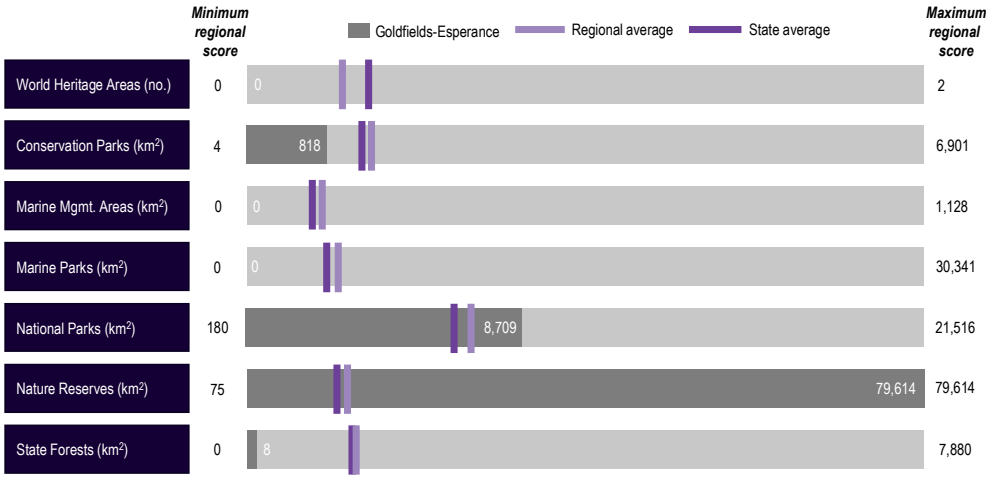


Source: ACIL Allen; AREMI; BoM

9.8 Natural Environment

The Goldfields-Esperance region contains unique natural landscapes, including various deserts, scenic coastal areas and Parks and Reserves which support the region's tourism and agricultural sectors. The region has the largest area of nature reserve in the State, with almost eight million hectares under this classification equivalent to 60 per cent of the State total and include the Dundas, Great Victoria and Gibson Deserts.

Figure 9.8 Natural environment indicator performance – Goldfields-Esperance region



Source: ACIL Allen; DBCA

The region has 0.9 million hectares of land classified as national park, which represents 13 per cent of WA's land area under this classification, and includes the Goongarrie, Goldfields Woodlands and Borrabin.

The performance of the Goldfields-Esperance region against the key natural environment indicators is presented in **Figure 9.8** above.

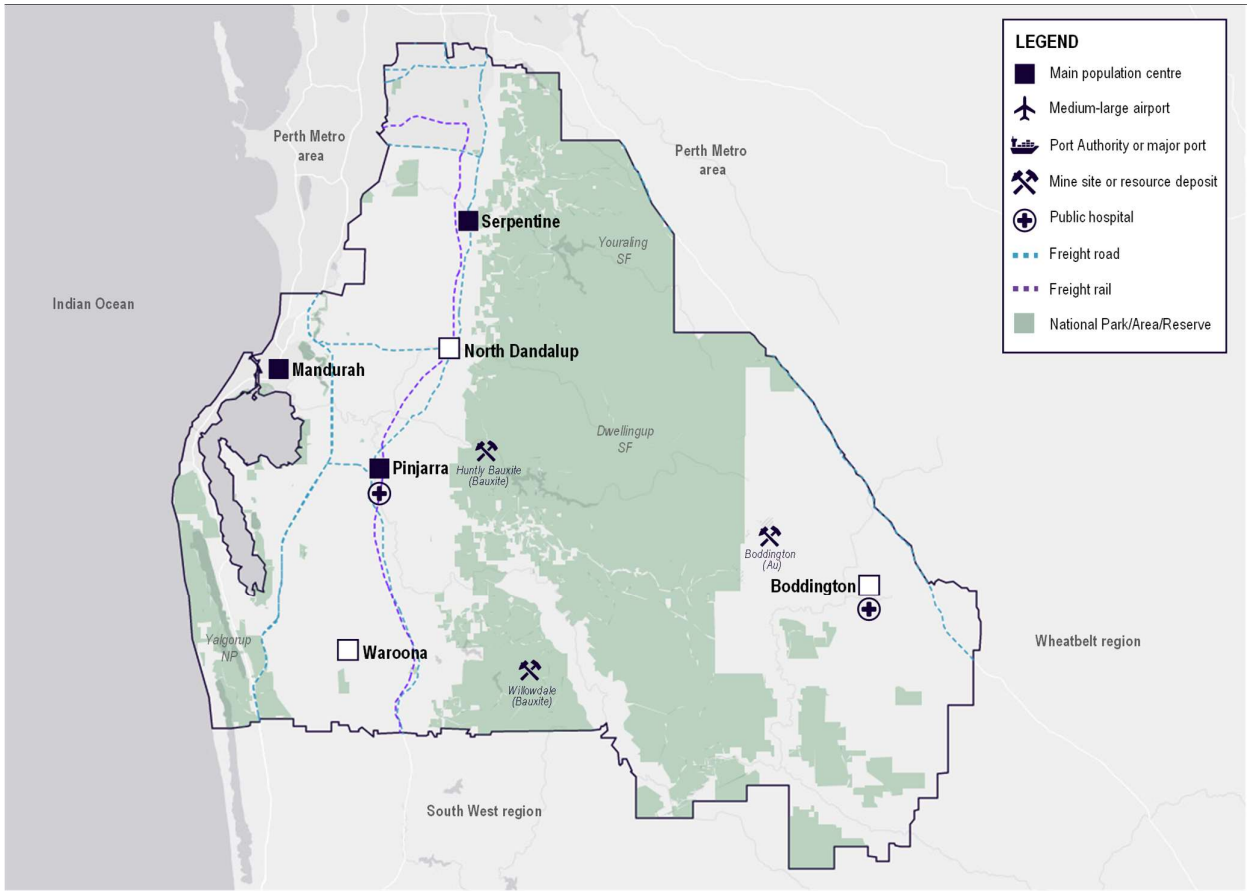
10 Peel region

This section presents a profile of the Peel region through the lens of the seven regional development categories presented in Section 3.

10.1 Overview of the Peel region

The Peel region is Western Australia's smallest geographic region (0.7 million hectares or 6,648km^2) consisting of five Local Government Areas including Boddington, Murray, Serpentine-Jarrahdale, Waroona and Mandurah. The region is bordered by the Perth Metropolitan Area to the north, South West region to the south, Wheatbelt region to the east, and the Indian Ocean to the west.

Figure 10.1 Peel region



Source: ACIL Allen

The Peel is the nearest region to the Perth Metropolitan Area and it has the second largest regional population. The main population centre in the region is Mandurah, which accounts for over 60 per cent of the region's population and is the State's largest regional centre. The region is known for its natural assets and has vast areas of State Forest, waterways, and diverse ecosystems which together contribute to the region's liveability and tourism industry.

The region and its key regional centres and infrastructure assets are presented in **Figure 10.1** above.

10.2 Economy

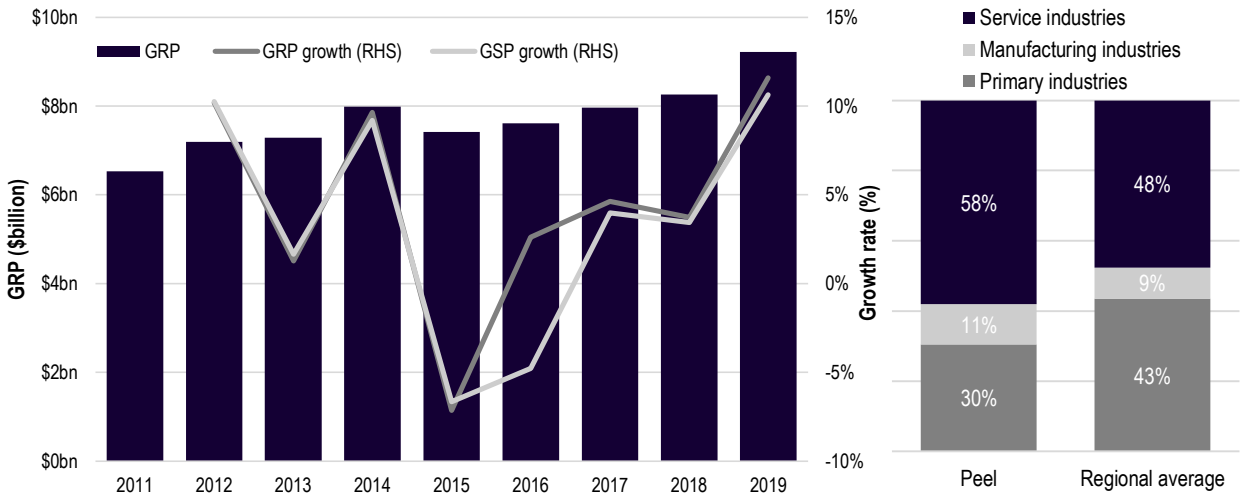
The Peel region has a diversified economy with a GRP of $9.2 billion in 2019 which is three per cent of GSP. The primary industries sector including the mining and the agriculture industries, contributes 30 per cent of the region's GRP, while the services sectors provides 58 per cent. The region is also home to a large manufacturing sector, primarily through the production of alumina. The region has experienced long term economic growth of 4.6 per cent per annum which is above the rate for the State and for regional Western Australia (**Figure 10.2**).

The structure of the economy is based on the region's abundance of mineral reserves and agricultural land, and its role as the major population centre outside of the Perth Metropolitan Area. Mining is the region's most dominant industry, contributing 28 per cent of GRP, with activity associated with the construction industry the next highest contributor at 10 per cent.

There is a large business sector in the region which is made up of 5,950 employing businesses – making the region the third largest in terms of the number of businesses in the State. Of this number, there are 12 large businesses that employ more than 200 people and 350 medium sized businesses that employ between 20 and 200 people. An estimated 14 businesses are Aboriginal owned. The region has the second highest rate of insolvency in the State.

Future economic growth in the region will be led by the private sector with $2.4 billion of projects under consideration in the region, the value of which is around one quarter of the current GRP of the region. This includes expansions to the Wagerup alumina refinery and the Boddington gold mine as well as the potential development of a solar farm at Waroona.

Figure 10.2 Gross Regional Product and Industry structure – Peel region



Source: ABS, ACIL Allen

10.3 Industry

The industry profile of the Peel region reflects its proximity to Perth, agricultural land, mineral resources, natural attractions, and access to water.

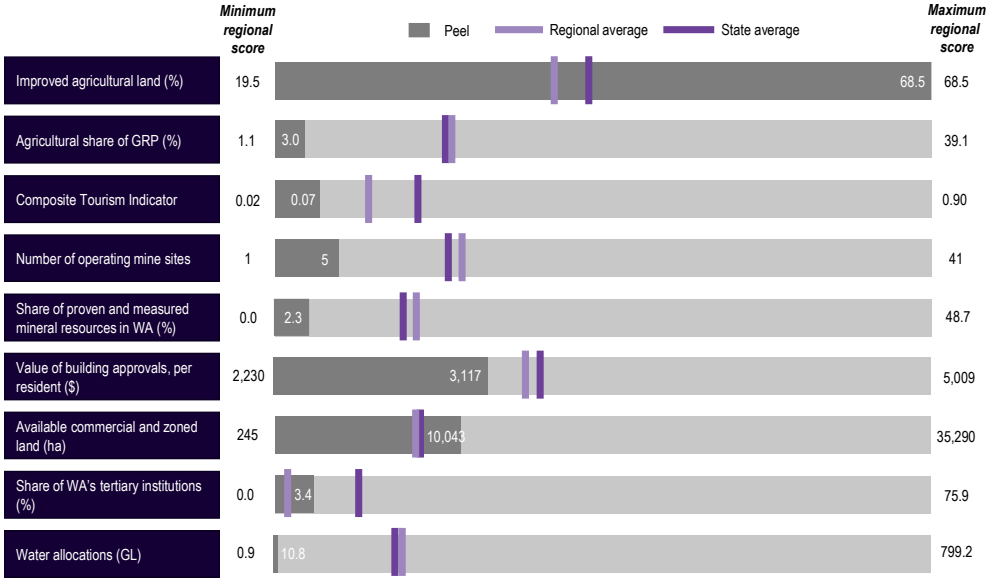
The agriculture sector provides a small contribution to the economy of the region with the majority of the contribution from the livestock (including the equine industry) industry and the horticulture industry. The region ranks below the State average for all agricultural indicators.

The region is an important destination for visitors with around 659,000 overnight visitors to the region each year. While the majority of these are WA residents, the region also attracts 45,000 interstate and 36,000 international visitors a year. The region is also a popular destination for day trippers, with an estimated 2.8 million day visitors attracted to the region's coastline, waterways, the Darling Ranges, and civic amenities. The region has some tourist attractions but overall scores below average across tourism indicators which places it below the regional average in terms of tourism potential (see Composite Tourism Indicator below).

The region's mining and mineral processing industries are the key drivers of the region's economy. There are five operating mines in the region, including the world's largest bauxite mine and Australia's largest gold mine, as well as two further bauxite mines and a mineral sands mine. Mineral processing facilities include Alcoa's Pinjarra Alumina refinery. The region produces one per cent of WA's total mineral production and accounts for 2.3 per cent of the State's value of proven and measured resources.

The agriculture industry in the Peel region is diverse with the region renowned for its equine, dairy, horticulture, and livestock industries. Two thirds of the land in the region is comprised of improved agriculture, the largest allocation of any region, and there is 10.8GL of water allocations in the region which can further support the mining and agricultural industries. In addition, Harvey Water is licensed to draw 137GL of non-potable water from nearby dams to feed into the South West Irrigation System that supplies water to irrigators in the Waroona, Harvey and Collie River Irrigation Districts.

Figure 10.3 Industry indicator performance – Peel region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

The Peel region is well placed for future development, with the region supporting the largest share of planned or existing industrial or commercial land as a share of the region (or the second highest allocation in the State). Despite this, there is a below average share of new commercial building approvals. In keeping with its role as a major population centre, Murdoch University hosts a campus in Mandurah specialising in health courses.

The performance of the region against the key Industry indicators is presented in **Figure 10.3** above. Overall, the region performs well in terms of agricultural and commercial land availability and below the State and regional averages for all other indicators.

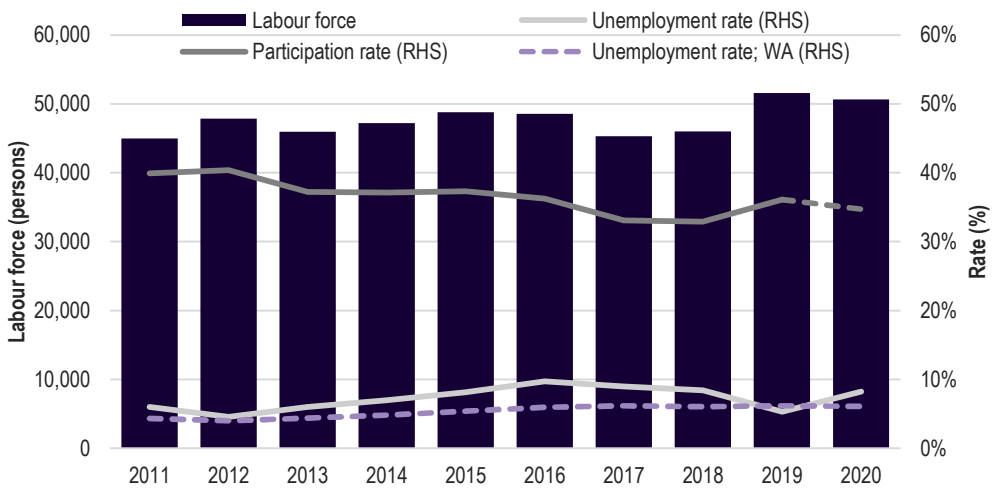
10.4 Human Capital

The Peel region has the second largest regional population after the South West region, with around 143,000 people accounting for around 5.5 per cent of WA's population. Around 60 per cent of the region's population reside in the Mandurah area, however, the other notable population centres include Serpentine and Murray. The region has the fastest growing population in the State, growing by an average of 3.2 per cent per annum since 2011 (compared to the State average of 1.5 per cent).

The region has an Aboriginal population of 2,803 people which is a relatively low share of its total population (2.2 per cent compared to State average of three per cent and regional average of 7.1 per cent). The diversity of the region is highlighted by the 49 per cent of its residents who have at least one parent born overseas (the highest regional share). Further adding to the region's diversity is the arrival of 362 overseas arrivals each year which represents the second highest regional volume of arrivals behind the South West region.

In 2018-19, the region's labour force peaked at above 51,000 people which represented around 3.5 per cent of the State's labour force (compared to 5.5 per cent share of WA's population). The region's labour force has increased steadily between 2011 and 2020, growing by an average of 1.5 per cent per annum (the second highest in the State). In 2020, the region's unemployment rate was 8.2 per cent, which compares unfavourably to an average long term rate of 7.2 per cent and a long term State unemployment rate of 5.3 per cent (**Figure 10.4**).

Figure 10.4 Labour force – Peel region



Note: Participation for the *Peel* region has been estimated for 2020 using the region's three year average population growth rate.
Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

The region has one of the highest rates of dependency in the State, with around 40 per cent of its population being of non working age. In terms of welfare dependency, the region performs

stronger, with only 4.6 per cent of its population on Newstart or Jobseeker compared to a State-wide average of 4.0 per cent. The region has a SEIFA index of 969 compared to a State average of 971 making it about average in terms of the level of socio-economic disadvantage in the region.

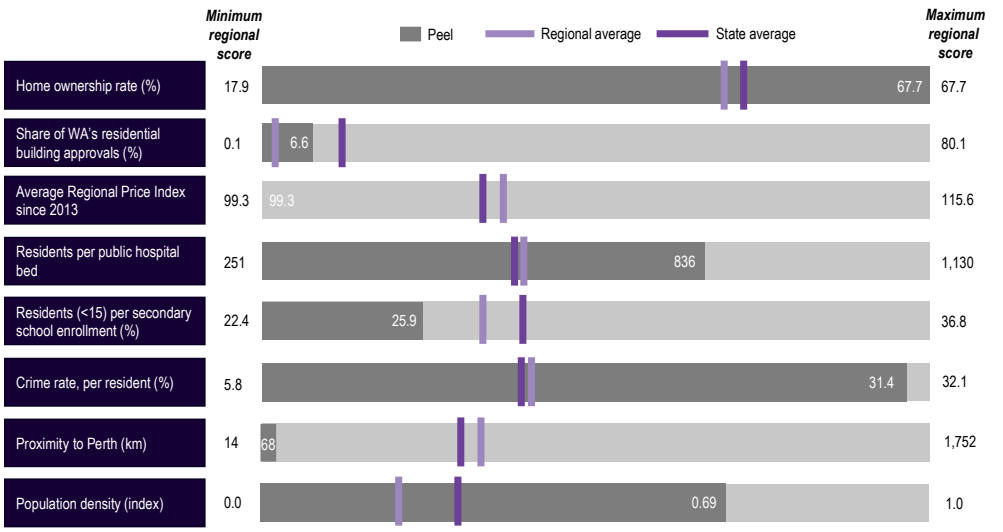
10.5 Liveability

The Peel region has a high level of liveability which is reflected in the region's strong population growth rate, the highest rate of home ownership in the State, and a large share of WA's residential building approvals. Driving these factors are the region's very low cost of living, access to services, proximity to the Perth Metropolitan Area and population density. The region's natural environment including its beaches, waterways and state forests, and its comfortable climate enhance its liveability further.

The region's high level of liveability means that it is expected to become the most populated region outside of the Perth Metropolitan Area by 2050. The *Perth and Peel @3.5million by 2050* framework guides the future growth of Perth and Peel to accommodate a population of 3.5 million by 2050. The framework focuses on maintaining and enhancing the Peel region's connectivity, water resources, environmental assets, quality of life, affordable housing and economic opportunities. [13]

The performance of the Peel region against the key liveability indicators is presented in **Figure 10.5** below.

Figure 10.5 Liveability indicator performance – Peel region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

10.6 Infrastructure

The Peel region's proximity to the Perth Metropolitan Area means it is well served by cargo port and RPT airport infrastructure. The region's closest cargo port is the Fremantle Port which is within 200 kilometres of the regional area, and it is also proximal to the Bunbury Port. The region is within easy distance of RPT airports including Jandakot Airport, Perth International Airport, and Busselton

[13] DPLH (2018). Perth and Peel@3.5million

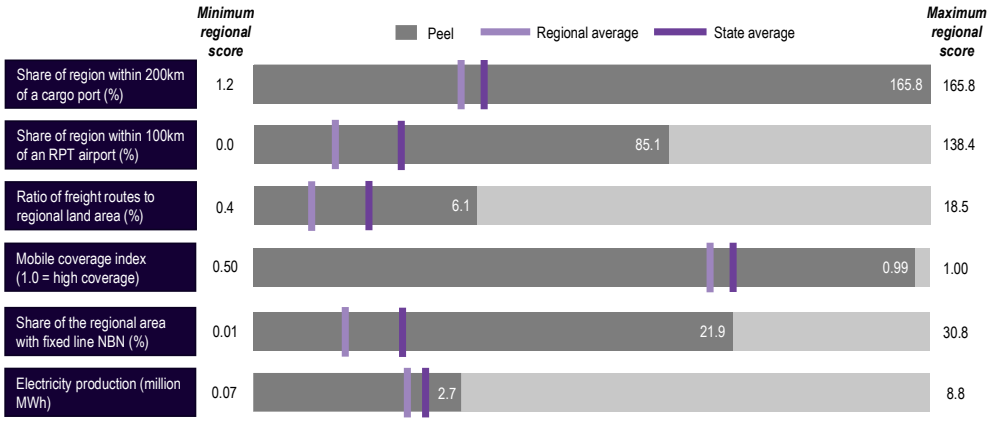
Airport. Peel's high level of access to transport infrastructure provides opportunity to grow key industries such as tourism, and to become an increasingly liveable and connected place.

The region a high level of freight infrastructure which connects the region to the Perth Metropolitan Area and surrounding South West and Wheatbelt regions. Key freight routes include the South Western and Forrest highways.

The region ranks highly in terms of its telecommunications, with a high level of mobile coverage and share of the region with fixed line NBN. This enhances the connectivity of the region, making it highly liveable for residents, and conducive for businesses.

The performance of the Peel region against the key infrastructure indicators is presented in **Figure 10.6** below.

Figure 10.6 Infrastructure indicator performance – Peel region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

10.7 Climate

The Peel region has a Mediterranean climate with hot and dry summers, and cool and damp winters. The region's climate is influenced by the southern subtropical ridge and the warm southerly flows of the Leeuwin current resulting in consistent seasonal rainfall.[14]

The region supports below average solar exposure but a higher than average wind speed making it a potential location for renewable energy. The region is currently being considered for a 180MW solar farm at Waroona and a 100MW generator at Benger.

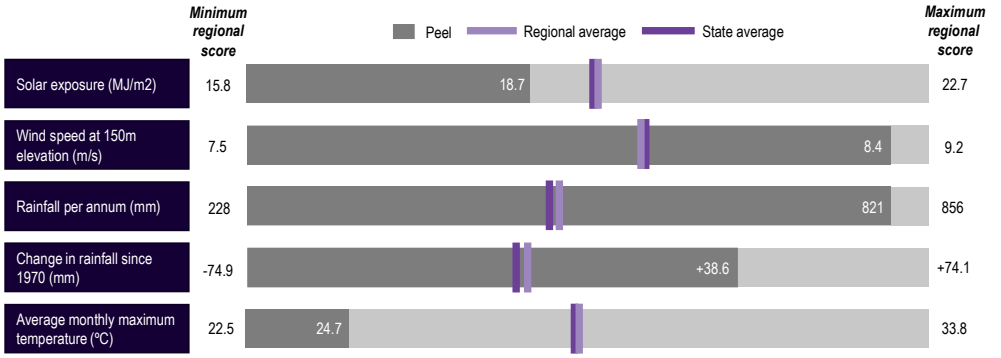
The Peel region supports a comfortable temperature with average monthly maximum temperatures ranging between 17 and 32ºC and averaging 24.7ºC. Eight months of the year fall into the ideal temperature range of 18 and 30^{0}C making it one of the State's most ideal temperature ranges for lifestyle and providing ideal growing conditions for agriculture.

The region receives a high level of rainfall in comparison to the State with around 821 millimetres of rain falling each year, the second highest rainfall of any region in the State. This classifies the region as a high rainfall area (ie. >600mm per annum) which may support the growth of agriculture and food production in the region.

[14] Peel-Harvey Catchment Council (2012). Adapting to climate change in the Peel region

The performance of the Peel region against the key climate indicators is presented in **Figure 10.7** below.

Figure 10.7 Climate indicator performance – Peel region



Source: ACIL Allen; AREMI; BoM

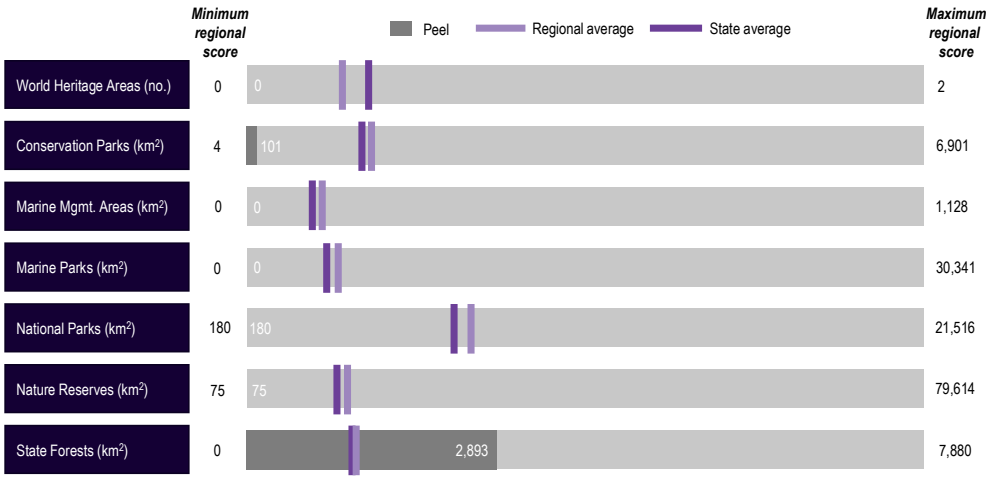
10.8 Natural Environment

The Peel region's natural environment is largely comprised of State Forest, which covers around 0.3 million hectares of the region. The most significant forests in the region include the Dwellingup and Youraling State Forests which are known for their unique ecosystems and waterways. These natural attractions support experience and environmental tourism and add to the region's liveability.

The region also has some smaller areas classified as National and Conservation Parks including the Yalgorup National Park (to the south of Mandurah) which consist of various lakes and woodlands and plays an important role in supporting plant and animal species.[15]

The performance of the Peel region against the key natural environment indicators is presented in **Figure 10.8** below.

Figure 10.8 Natural environment indicator performance – Peel region



Source: ACIL Allen; DBCA

[15] DBCA. Yalgorup National Park

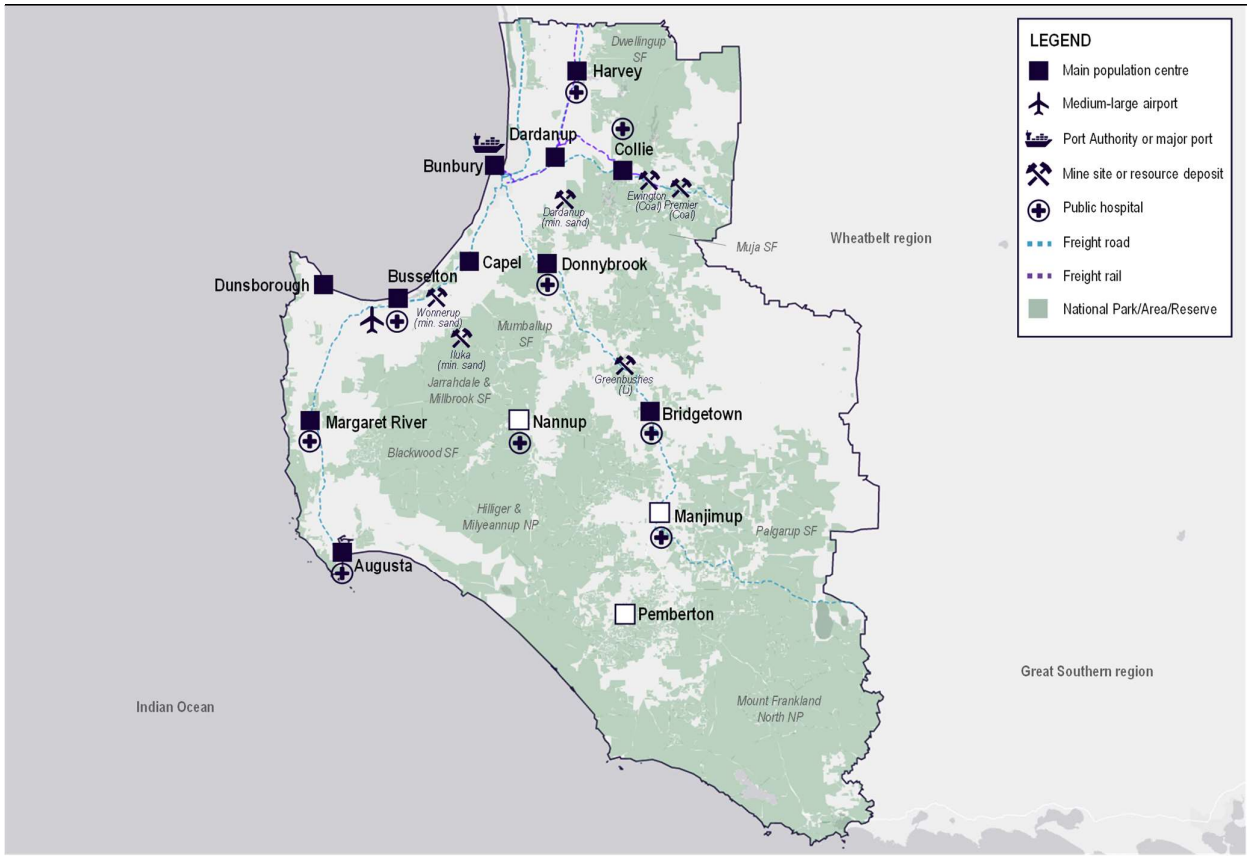
11 South West region

This section presents a profile of the South West region through the lens of the seven regional development categories presented in Section 3.

11.1 Overview of the South West region

The South West region is Western Australia's second smallest region geographically (2.4 million hectares or 23,970km^2). The region is made up of 12 Local Government Areas and borders the Peel region to the north, Wheatbelt region to the north-east, Great Southern region to the east, and the Indian Ocean to the west. The region is renowned for its unique natural environment which includes its beaches, national parks, forests, a unique biodiversity hotspot and its world class food and wine offerings, which are major tourism drawcards collectively.

Figure 11.1 South West region



Source: ACIL Allen

The South West region has the largest regional population in the State with over 60 per cent of the region's population residing in the coastal areas of Bunbury, Busselton and Augusta-Margaret River, and in several large inland towns including Collie, Capel, Dardanup and Harvey. The key regional population centre in the region is Bunbury, which is the commercial and administrative hub of the region. The region and its key regional centres and infrastructure assets is presented in **Figure 11.1** above.

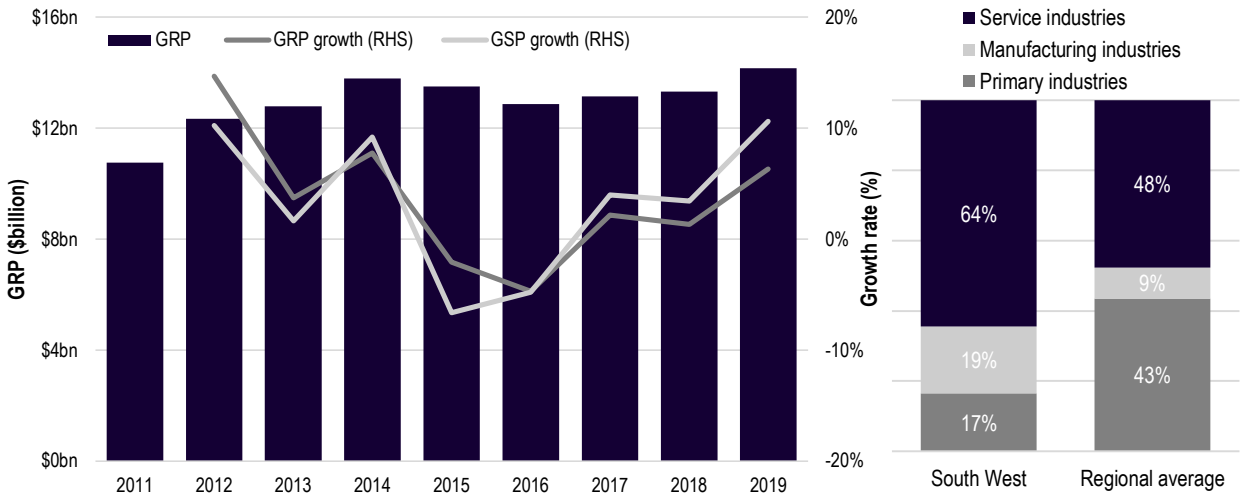
11.2 Economy

The South West region is the State's fourth largest economy with a GRP of $14.2 billion or five per cent of GSP. The region's economy has historically been built off agriculture, which has helped to support tourism and manufacturing industries. The region is also home to a large electricity generation sector, mining operations, and a significant services sector.

The services sector provides the key contribution to the economy accounting for 64 per cent of GRP, with the primary industries sector contributing 17 per cent and the manufacturing sector 19 per cent. The region supports the third largest manufacturing sector in the State driven by the electricity generation (2.1 per cent of GRP), minerals processing (9.3 per cent of GRP) and agricultural processing which includes the production of wine and beer (3.7 per cent of GRP).

The region has a stable economy with long term economic growth of 3.6 per cent per annum which is consistent with the State average of 3.5 per cent per annum (**Figure 11.2**). There was a slight contraction in the region's GRP in 2015 in line with a downturn in the mining industry, but this impact was not as pronounced as in other regions due to the region's economic diversity.

Figure 11.2 Gross Regional Product and Industry structure – South West region



Source: ABS; ACIL Allen

The State's largest regional business sector is located in the region which includes an estimated 11,500 employing businesses, including 874 businesses that employ between 20 and 200 people, and 22 businesses that employ more than 200 people. There are 30 businesses in the region which are Aboriginal owned, which is 3.9 per cent of all Aboriginal businesses in WA.

The economic potential of the region is highly prospective with $4.1 billion of planned or committed projects in the region representing nearly 30 per cent of the region's current GRP. This includes significant private developments in the resources sector as well as public projects such as the Bunbury Waterfront Development. A further $3.6 billion of possible projects are earmarked for the

region including solar power generation projects and the development of significant transport infrastructure.

11.3 Industry

The industry profile of the South West region is based on its unique an intact natural assets, attractive coastline, valuable agricultural land, forests, and its proximity to Perth.

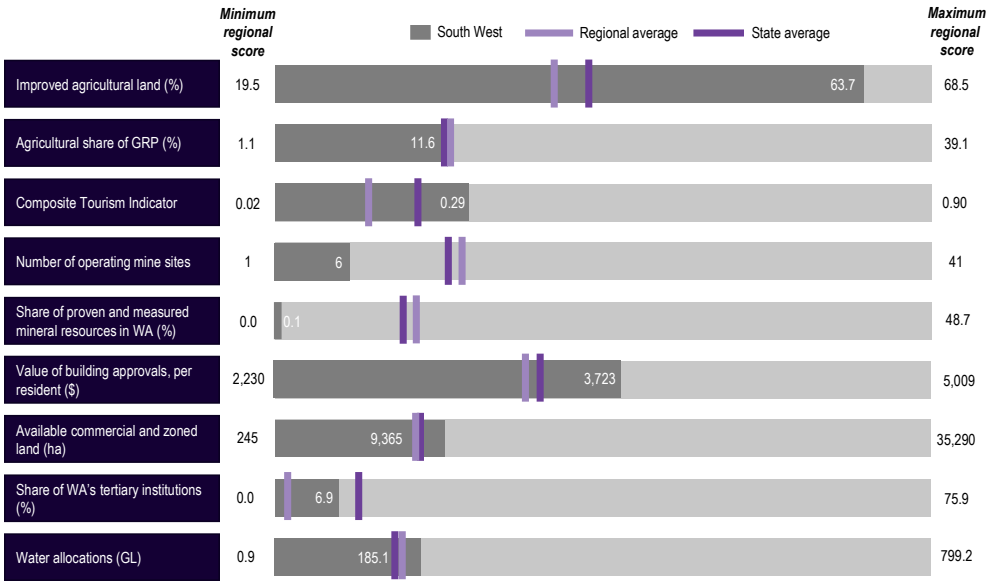
The agriculture industry in the region is diverse with strong contributions from the food and drink manufacturing, livestock, horticulture, and forestry industries. As a result, the region ranks the highest in the State in terms of the indicators for forestry and for horticulture, and third highest for the indicator for livestock. The strength of the wine industry is reflected in the region ranking second highest in the State for the indicator for food and beverage manufacturing.

The region is the most visited region of Western Australia with an estimated 2.5 million overnight visitors each year including 198,000 from interstate and 160,000 from overseas. This is the highest number of interstate and international visitors to regional WA, and together they stayed 8.6 million nights which is the third highest number of nights in the State. The region also attracts a large number of overnight visitors from within WA with visitor levels similar to those of the Perth Metropolitan Area. The region has relative strengths in tourist attractions, tourism spend per capita, access to RPT airports and hotel rooms placing it above the regional and State average in terms of tourism potential (see Composite Tourism Indicator below).

There are six operating mines in the region producing mineral sands and coal, and there is another potential mineral sands mine earmarked for the region. Together these mines generated $3.2 billion in production, accounting for 1.8 per cent of the State's resource production. In addition, the region is a major alumina producer with refineries at Worsley and Wagerup.

The region is renowned for its agricultural production and particularly the production of fine wines and other specialty food and drink products. However, the region also supports the production of traditional broadacre crops, livestock, and horticulture products. An estimated 64 per cent of the region's land area is improved agricultural land and the region supports a water allocation of 185 GL which has the potential to support additional activity in the agriculture and mining sectors.

Figure 11.3 Industry indicator performance – South West region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

There is a strong construction industry in the region fuelled by the largest value of residential construction approvals in regional WA and the second highest value of non residential approvals. Together they account for around $670 million of construction activity each year. Coupled with around 94 hectares of existing and planned commercial land, the region is well placed to grow its industrial base.

The tertiary education sector is well represented in the region with an Edith Cowan University campus at Bunbury and a campus of Curtin University at Margaret River.

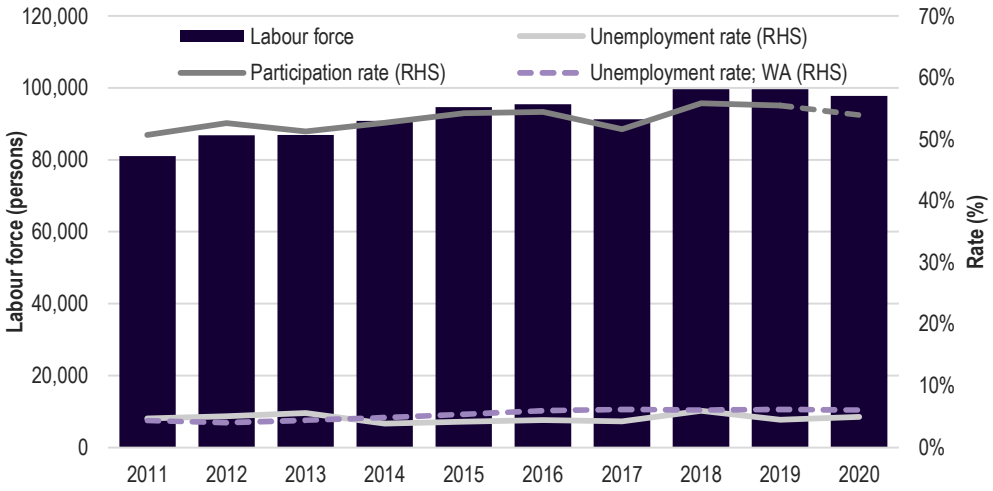
The performance of the region against the key Industry indicators is presented in **Figure 11.3** above. Overall, the region performs well compared to the State and regional average across all indicators with the exception of those associated with the resources industry.

11.4 Human Capital

The South West region has the largest regional population in the State with around 180,000 people, accounting for around seven per cent of WA's population. A majority of the population lives in the large regional centres located along the coast, including Bunbury, Busselton and Augusta-Margaret River. There are also several large inland regional centres including Capel, Dardanup and Harvey. The region's population has grown by 1.5 per cent per annum on average over the last decade, representing the second fastest rate of growth in the State (behind the Peel region).

The region is home to around 4,000 Aboriginal people representing 2.3 per cent of its population (compared to State average of three per cent and regional average of 7.1 per cent). The region is diverse with 41 per cent of the population having at least one parent born overseas and around 480 people arriving in the region each year from overseas. This represents the highest volume of overseas arrivals in regional WA and the third highest rate of overseas born parents.

Figure 11.4 Labour force – South West region



Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

The region has the largest workforce of any region, with the numbers peaking in 2018 and 2019 at above 97,800 people, representing around 5.8 per cent of the State's labour force. The labour force has increased steadily between 2011 and 2019, growing by an average of 2.2 per cent per annum which is the highest growth of all regions. In 2020, the unemployment rate was 5.0 per cent compared to an average long term rate of 4.7 per cent and a long term unemployment rate for the State of 5.3 per cent (**Figure 11.4**).

There is an average level of dependency in the region with 38 per cent of the population being non working age. In terms of welfare dependency, the region performs stronger, with only 4.4 per cent of its population on Newstart or Jobseeker compared to a State-wide average of 4.0 per cent. The region has a SEIFA index of 993 compared to a State average of 971 making it one of the more advantaged regions in the State. Despite this, there are some sections of the population that experience disadvantage.

11.5 Liveability

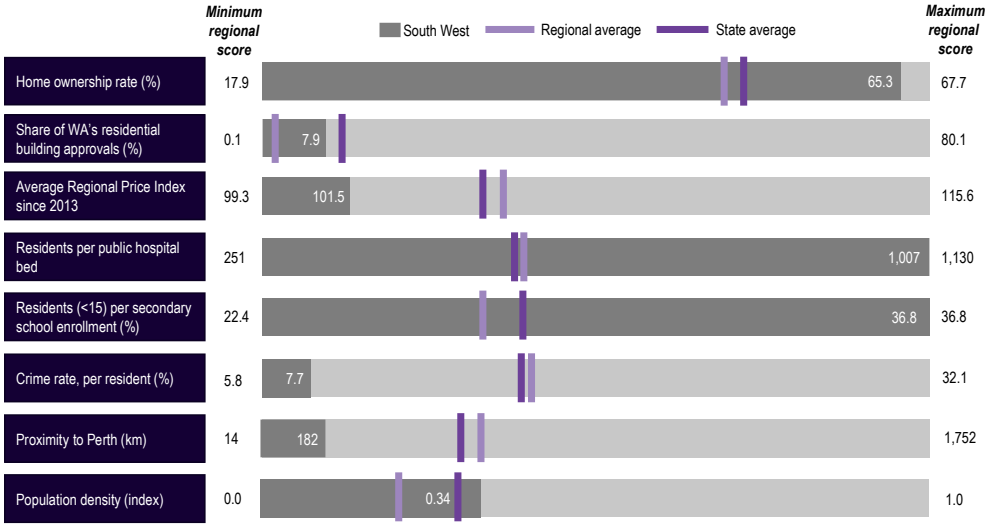
The South West region is the second most populated region outside of the Perth Metropolitan Area which reflects the region's high level of liveability. Some of the advantages of the region include its low cost of living, low crime rate, proximity to Perth and its population density, which typically affords a higher level and diversity of service offerings. The region's popularity is reflected in a high level of residential building activity and one of the highest rates of home ownership in the State.

There is an opportunity to enhance the region's access to health and education services which is afforded by the region's large and growing population (second fastest regional growth rate over the last decade behind Peel). The region currently has a relatively high number of residents per public hospital bed (excluding private providers) and a relatively high level of young residents per secondary school enrolment. It is one of two regions that support a private hospital, and there are several private secondary schools in the region which alleviate the demand for public services. The region's proximity to the Perth Metropolitan Area may reduce this requirement further.

There is public transport system that connects Bunbury, Busselton and Dunsborough providing access to public and private hospitals, schooling, and jobs in other major centres.

Adding to the region's liveability is its abundance of natural assets, comfortable climate, beaches, and wine regions, amongst other attractions. The performance of the South West region against the key liveability indicators is presented in **Figure 11.5** below.

Figure 11.5 Liveability indicator performance – South West region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

11.6 Infrastructure

The South West region has a strong network of freight road infrastructure that connects many of its regional population centres to each other, and to surrounding WA regions. The region has an above average level of freight routes compared to other regions in WA and major routes include the South Western and Bussell Highways, Coalfields Road. The rail network connects the Port of Bunbury to the State rail network.

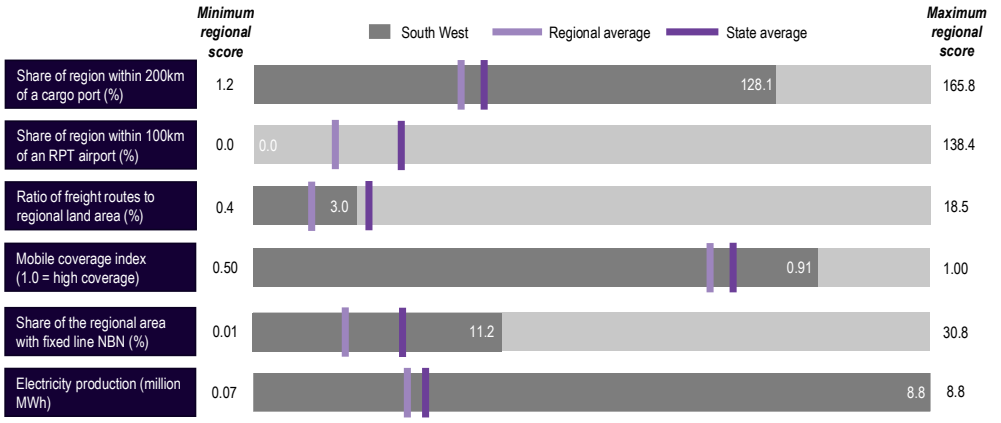
There is no RPT airport in the region. The Busselton Margaret River Regional Airport and the Bunbury Airport provide general aviation, pilot training and emergency services and Rio Tinto Iron Ore flies staff direct from Busselton to its sites in the Pilbara region. There are plans to offer RPT flights from the Busselton Margaret River Regional Airport including direct flights from Melbourne to Busselton.[16]

There is a cargo port at Bunbury which has the largest land holding of any port in Australia. The region also has freight road and rail connections to the Port of Fremantle. As a result, the region has one of the State's most comprehensive accessibility to port infrastructure.

The region is well serviced with telecommunications including having an above average level of fixed line NBN and mobile telephone coverage. The State's major power stations are located at Collie and the region produces an estimated 8.8 million MWh of electricity, primarily from natural gas and coal, which is 37 per cent of all electricity generated in WA.

The performance of the South West region against the key infrastructure indicators is presented in **Figure 11.6** below.

Figure 11.6 Infrastructure indicator performance – South West region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

11.7 Climate

The South West region has a Mediterranean style climate with distinctive dry summers and wet winters. The region receives the most rainfall in the State with an average of 856 millimetres falling in the region each year, however, the level of rainfall in the region has declined since the 1970s. A recent report by BCEC described the changing climate in the region: "*WA's South West and Wheatbelt regions will be among the top 10 per cent of places on earth where rainfall decline will*

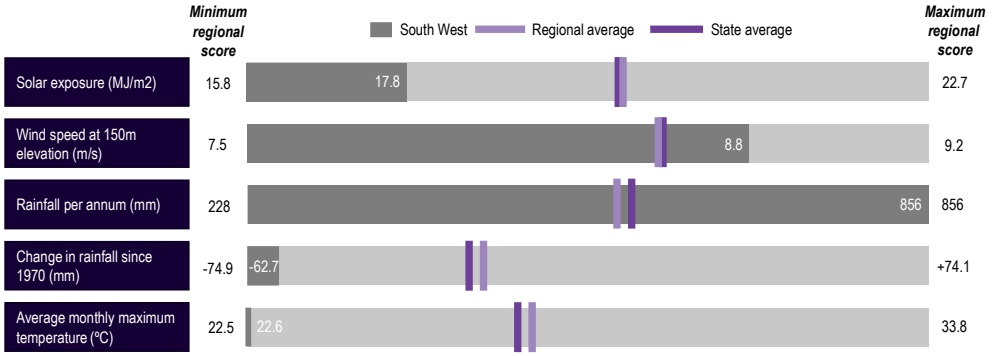
[16] WA Government (2019). Media Statements: Jetstar direct flights to Busselton to take off

be the most severe, driven by climate change."[17] This has the potential to impact the region's natural environment, agricultural production, and other human systems that it supports.[18]

The region has a below average level of solar exposure and an above average wind speed of 8.8m/s. The average temperature in the region is 22.6ºC with the average for all months of the year falling below 30ºC making it one of the most comfortable regions in which to live.

The performance of the South West region against the key climate indicators is presented in **Figure 11.7** below. Overall, the region ranks high in terms rainfall and lower in terms of solar exposure and has cooler average temperatures.

Figure 11.7 Climate indicator performance – South West region



Source: ACIL Allen; AREMI; BoM

11.8 Natural Environment

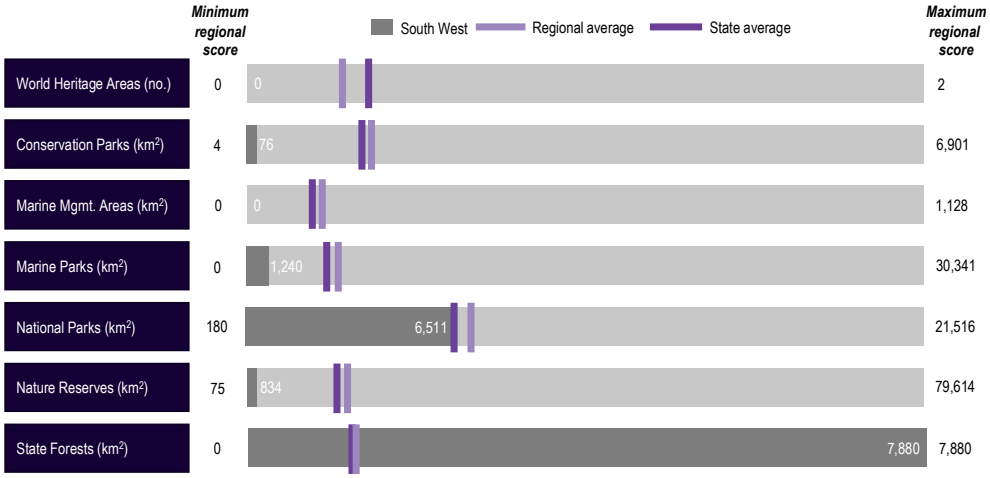
The South West region is renowned for its national parks, old-growth forests, beaches, bays, rivers and caves, which collectively make the region the most popular regional tourist destinations in WA. The region is recognised as a biodiversity hotspot referred to as the 'Southwest Australia Ecoregion', meaning that it has a high concentration of rare and endangered species.

The region has 0.8 million hectares of state forest (almost half of all state forest in WA) which includes the Blackwood, Palgarup, Mumballup and Dwellingup forests. In addition to tourism and liveability benefits, the region's forests also support plantation and forest regrowth timber production. The region also has several national parks which cover around 0.7 million hectares of land (10 per cent of WA's total) and include the Hilliger, Milyeannup and Mount Frankland North parks.

The performance of the South West region against the key natural environment indicators is presented in **Figure 11.8** below.

[17] Wheatbelt NRM (2021). Climate Change is here – What will a sustainable Wheatbelt look like?
[18] DPIRD (2020). Climate trends in Western Australia

Figure 11.8 Natural environment indicator performance – South West region



Source: ACIL Allen; DBCA

12 Great Southern region

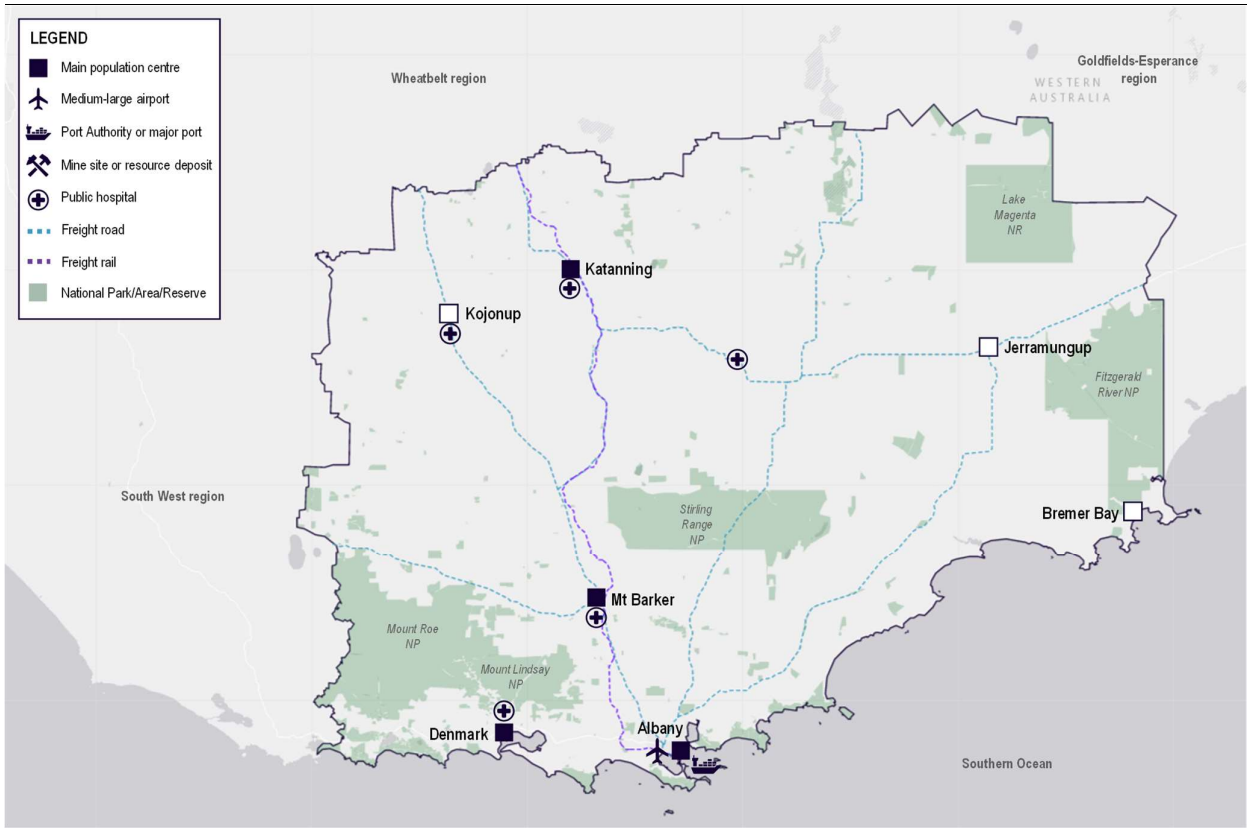
This section presents a profile of the Great Southern region through the lens of the seven regional development categories presented in Section 3.

12.1 Overview of the Great Southern region

The Great Southern region is WA's third smallest region geographically (3.9 million hectares or 39,007km^2). The region consists of 11 Local Government Areas and borders the South West region to the west, Wheatbelt region to the north, Goldfields-Esperance region to the west and the Southern Ocean to the south.

The region and its key regional centres and infrastructure assets are presented in **Figure 12.1**.

Figure 12.1 Great Southern region



Source: ACIL Allen

Over 62 per cent of the region's population lives in the Albany area, where there is an airport and port infrastructure which intersects with a network of freight road and rail infrastructure. The region's economy is primarily supported by its primary industries which leverages productive farmland to support broadacre cropping, livestock production and winemaking. In combination with its wineries and food zones, the region also has large areas of national parks, forestry, and beaches which collectively support eco, experience and culinary tourism in the region.

12.2 Economy

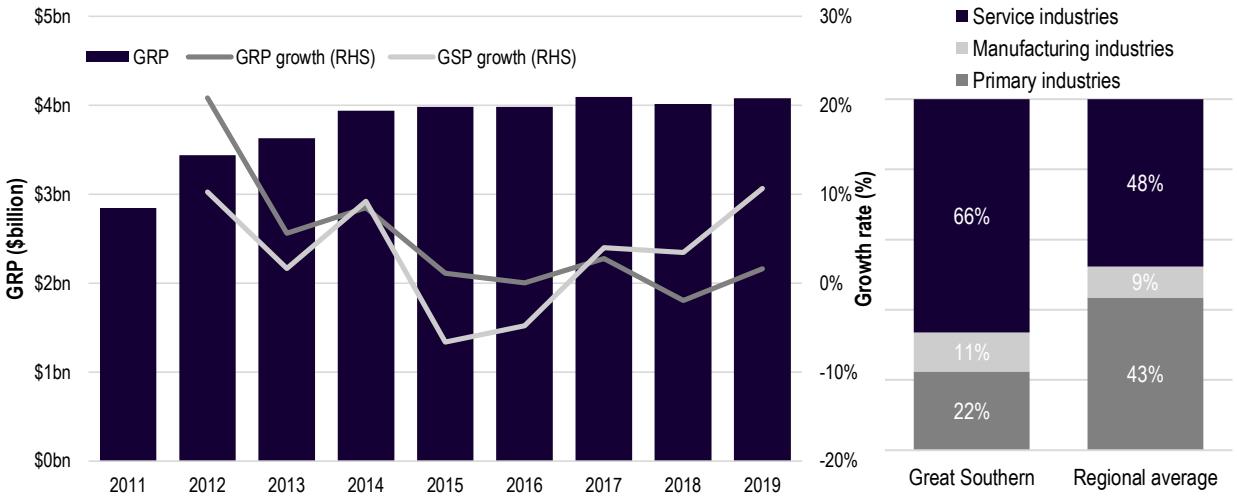
With a GRP of $4.1 billion, the Great Southern region has the third smallest economy in WA. The economy is built on its primary industries, with the region's agriculture sector the second most valuable of any region in the State. The region has produced above average economic growth over the past decade, with GRP growth of 4.8 per cent comparing favourably to the State's long term GSP growth of 3.5 per cent (**Figure 12.2**).

While the economy of the South West has historically been built off its agricultural base, it is the services sector that makes up the largest share of economic activity (66 per cent of GRP), supporting the population in the region. The primary industries contribute 22 per cent of the economy with nearly all of this value from agriculture. The processing of agricultural products into food and drink processing also contributes a further 2.9 per cent of GRP. The sector also plays a key role in the region's tourism sector.

Business activity in the region is stable, with the lowest rate of insolvencies in the State. In total, there are around 5,300 employing businesses of which 291 employ between 20 and 200 people and six employ more than 200 people. There are 13 Aboriginal owned businesses which represents 0.2 per cent of all businesses in the region.

The region's long term growth outlook is unlikely to be supported by major projects, with few potential major projects planned for the region. Possible projects include additional stages of the Albany Ring Road and the privately funded Flat Rock Wind Farm near Kojonup. Short term future economic development will rely on the agricultural sector and the role this plays in other industries.

Figure 12.2 Gross Regional Product and Industry structure – Great Southern region



Source: ABS; ACIL Allen

12.3 Industry

The industry profile of the Great Southern region reflects its agricultural base, pristine environment, and its unique and intact natural assets.

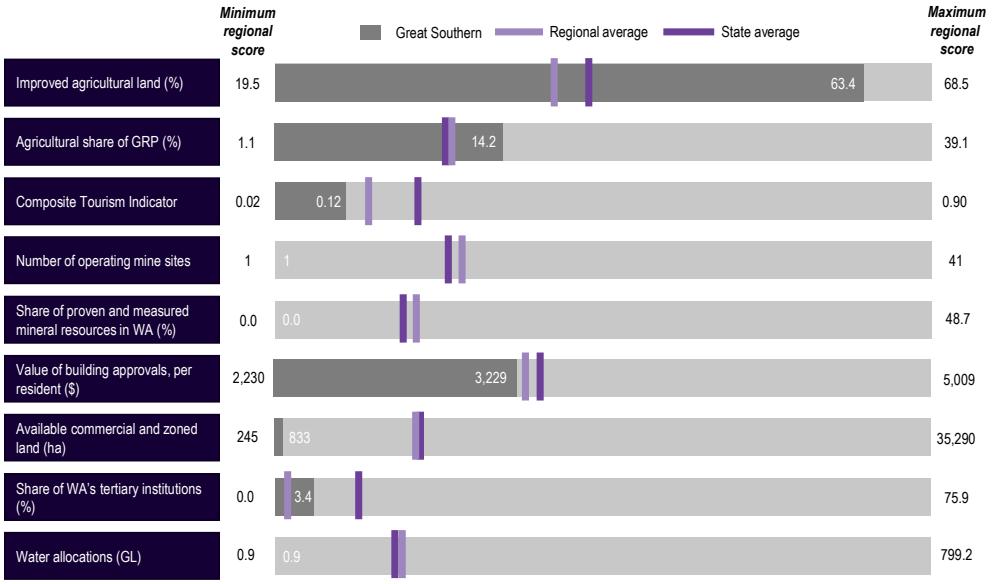
The agriculture sector in the region is focussed on the forestry, grains, and livestock industries. The region ranks second highest in the State for the indicator for livestock and for forestry, while it ranks fourth highest for the indicator for grains.

The tourism sector provides a key component of the economy with the region's coastline. The region is the fifth most visited region in the State, attracting around 744,000 overnight visitors each year. This includes 67,000 interstate visitors and 61,000 international visitors that together stay an average of 2.7 million nights each year. The region has some strengths in access to RPT airports, tourism spend per capita and cruise ship visitors meaning that it is competitive in tourism potential, although it ranks below the regional average (see Composite Tourism Indicator below).

The region supports a small mining industry with one operating mine that produces silica sands and the potential Southdown magnetite iron ore mine earmarked for the region. There are no proven or measured resources in the region.

The Great Southern has a small industrial base with an estimated 8.3 hectares of planned or existing commercial land. However, it has a comparatively large value of construction activity with around $200 million per annum of building approvals including over $128 million per annum of residential approvals. This is the fourth highest value of residential approvals in the State, highlighting the region's positive population prospects.

Figure 12.3 Industry indicator performance – Great Southern region



Source: ABS; ACIL Allen; DPIRD; DMP; DWER; Tourism WA

The performance of the region against the key Industry indicators is presented in **Figure 12.3** above. Overall, the region performs well compared to the State and regional average in terms of the agricultural industries and tertiary education, but below average in all other indicators. This includes ranking the lowest in the State for the tourism, mining industry, and water allocation indicators.

12.4 Human Capital

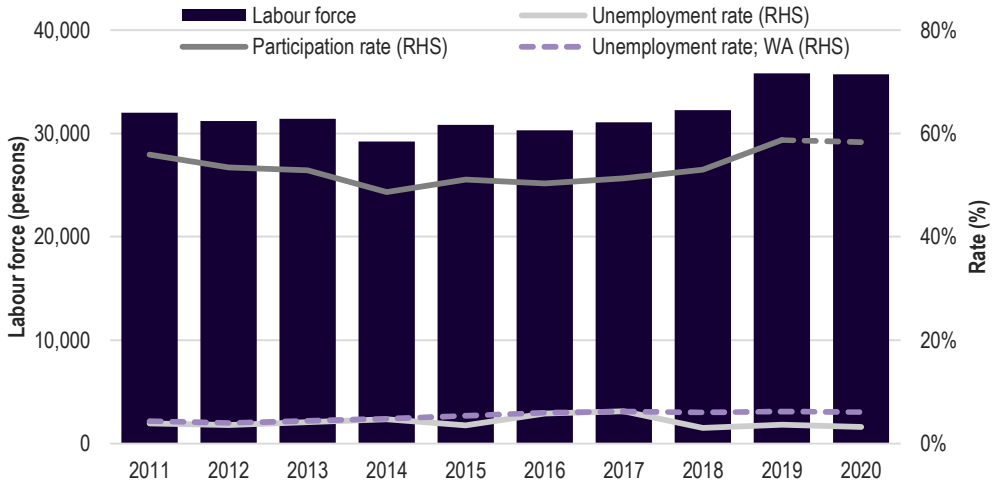
The Great Southern region has the fifth largest regional population in the State with around 61,000 people, or 2.3 per cent of WA's population. Around 62 per cent of the region's population reside in the Albany area, with other notable population centres including Denmark, Katanning and Plantagenet. The region has the third fastest growing regional population, with an average annual growth rate of 0.8 per cent since 2011.

The region has an Aboriginal population of 2,136 people which represents 3.6 per cent of its total population (above the State average of 3.0 per cent but below the region average of 7.1 per cent). Across the region's population, 41 per cent of its residents have at least one parent born overseas (which is about average across all regions), with 125 overseas arrivals settling in the region each year.

In 2019 and 2020, the region's labour force peaked at around 35,500 people which represented around 2.5 per cent of the State's labour force. The region's labour force declined between 2011 and 2014 but has since recovered between 2014 and 2020, growing by an average of 3.5 per cent per annum. The region has typically had a low rate of unemployment, and in 2020 it was 3.2 per cent, compared to an average long term rate of 4.2 per cent and a long term State unemployment rate of 5.3 per cent (**Figure 12.4**).

The region has the highest rate of dependency in the State, with around 40 per cent of its population being non working age. In terms of welfare dependency, 4.3 per cent of its population is on Newstart or Jobseeker compared to a State-wide average of 4 per cent. The region has a SEIFA index of 983 compared to a State average of 971, ranking slightly above average in terms of its level of socio-economic outcomes.

Figure 12.4 Labour force – Great Southern region



Note: Participation for the *Great Southern* region has been estimated for 2020 using the region's three year average population growth rate.

Source: ABS; ACIL Allen; Labour Market Information Portal: Small Area Labour Markets

12.5 Liveability

Residents of the Great Southern region enjoy a high level of liveability due to the region's cooler climate, and natural environment including national parks, forests, and long coastlines. The region has the advantage of a relatively low cost of living, low crime rate and proximity to the Perth

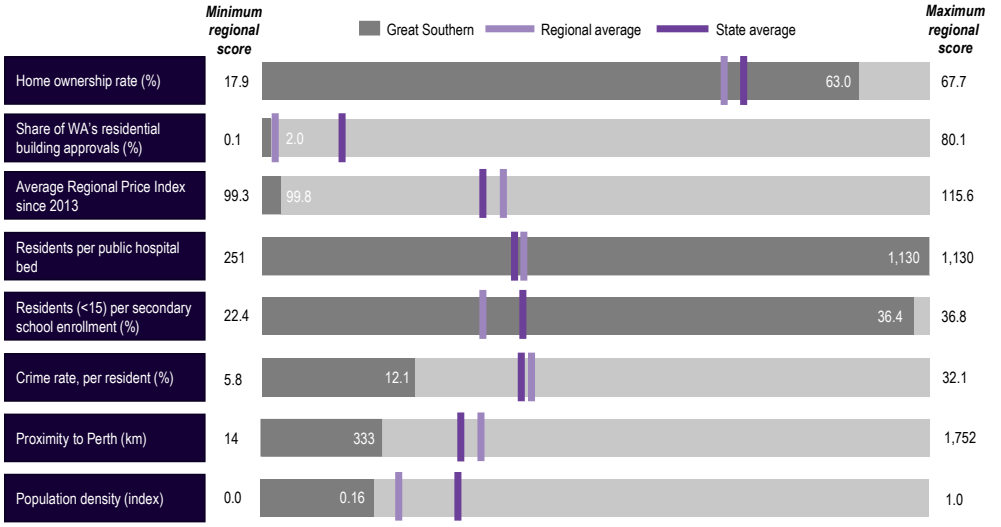
Metropolitan Area. These factors are evident in the region supporting one of the highest rates of home ownership and residential building approvals in the State.

The region performs less well in terms of its level of health and education services. There are five small public hospitals in the region and 10 secondary schools which ranks the region below average in terms of the number of young residents per secondary school enrolment and residents per public hospital bed (excluding private medical facilities).

Albany, as the main population centre in the region, supports a large retail, commerce and administrative sector. It is also home to a number of key regional attractions including the National ANZAC Centre, and the Albany Entertainment Centre.

The performance of the Great Southern region against the key liveability indicators is presented in **Figure 12.5** below.

Figure 12.5 Liveability indicator performance – Great Southern region



Source: ABS Census; ACIL Allen; DOE; DPIRD; PTA; WA Department of Health; WA Police

12.6 Infrastructure

The Great Southern region has a high level of access to cargo port infrastructure (97 per cent of the region is within 200 kilometres of a cargo port) and also an average level of access to an RPT airport (29 per cent of its population is within 100 kilometres of a RPT airport). The sole cargo port in the region is the Port of Albany which facilitates the trade of bulk items such as grain, woodchips and silica sands, and some imports of fertiliser and fuel and has direct rail access from the Mirambeena Strategic Industrial Area.[19] Similarly, the Albany Regional Airport is the only RPT airport in the region and is strategically positioned (just 11 kilometres form the Albany CBD) to service business and leisure travellers, and has the potential to support future growth in its tourism industry.

The region has an above average level of freight road and rail infrastructure (as a share of its land area) in comparison to the rest of regional WA. Major regional population centres in the region are strategically connected by freight road and rail routes and all connect to the regional centre of Albany and its infrastructure. This strategic network of freight road and rail has the potential to

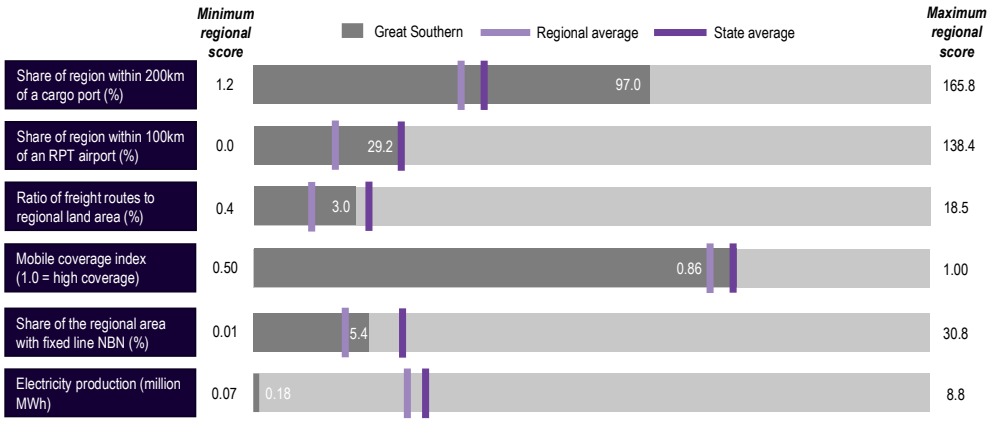
[19] Sothern Ports Authority (2021)

support any future expansion to the production and trade of bulk commodities, agricultural and agri-food exports.

Due to the size and sparseness of the population in the region, only 5.4 per cent of the region has access to fixed line NBN (about average for the State) and the level of mobile coverage is on par with the rest of the State. The region produces a low share of the State's electricity production but is serviced by the SWIS network which extends from Kalbarri in the north to Albany in the south.

The performance of the Great Southern region against the key infrastructure indicators is presented in **Figure 12.6** below.

Figure 12.6 Infrastructure indicator performance – Great Southern region



Source: ACIL Allen; DEE; DITRDC; DOT; PTA

12.7 Climate

The Great Southern region typically has a milder climate compared to the rest of the State, characterised by cool winters and, warm and dry summers. The region's climate is described as Mediterranean along the coast and semi-arid in the north-east areas.[20] Average monthly temperatures in the region range from 15.9 to 29.3ºC which makes the region highly liveable.

In comparison to the rest of the State, rainfall in the region is high with around 775 millimetres in annual rainfall. There has been a slight decline in rainfall between the 1970s and 2010s, however, this decline is less severe than observed in some of the other regions of the State.

The performance of the Great Southern region against the key climate indicators is presented in **Figure 12.7** below. Overall, the region performs highly in wind speed and rainfall, and has cooler average monthly temperatures.

[20] Rural Health West (2020). The Great Southern

Figure 12.7 Climate indicator performance – Great Southern region

Source: ACIL Allen; AREMI; BoM

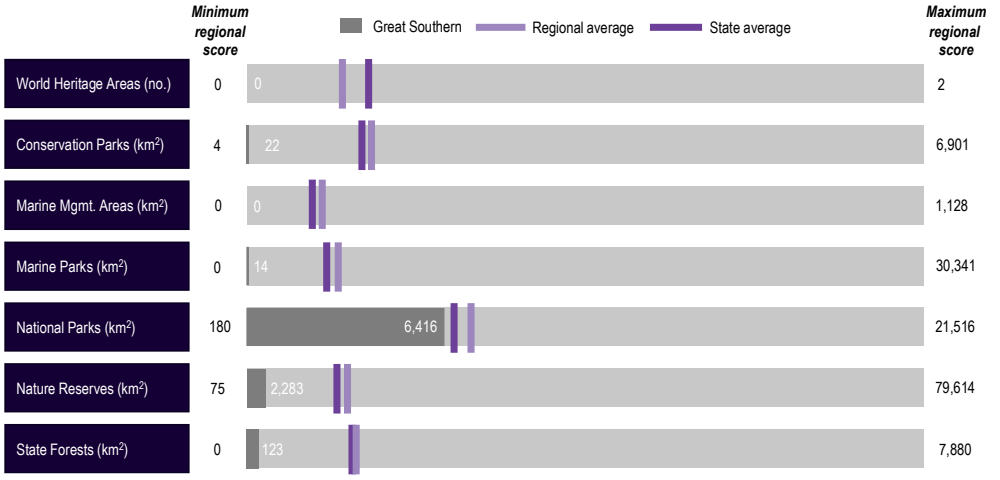
12.8 Natural Environment

The Great Southern region is a large and diverse area and includes long unspoilt coastlines, mountain ranges and several national parks. The region's natural environment makes an important contribution to the local economy through tourism and timber production. The region's land and natural environment is also highly significant to Noongar Aboriginal people who have a strong spiritual connection to Country.

Major National Parks in the region include the Lake Magenta, Stirling Range, Fitzgerald River, Mount Roe and Mount Lindsay parks, which collectively cover around 0.6 million hectares of the region (10 per cent of WA's land classified as a national park). These national parks feature various forests, wetlands, rivers, granite outcrops and, unique flora and fauna.

The performance of the Great Southern region against the key natural environment indicators is presented in **Figure 12.8**.

Figure 12.8 Natural environment indicator performance – Great Southern region



Source: ACIL Allen; DBCA

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Regional strengths and opportunities assessment

III

Multicriteria assessment framework 13

This section provides an overview of the Multicriteria Assessment framework that ACIL Allen has developed to assist in understanding a region's comparative strengths, and a region's capacity to realise the opportunities that underpin the State Infrastructure Strategy Vision.

13.1 Overall approach

Western Australia's ten regions all have unique competitive and comparative advantages, centred on their natural assets, access to human capital, and existing built infrastructure. These unique strengths mean not all regions are alike when it comes to their suitability for particular industries and economic development opportunities. With this in mind, Infrastructure WA requested ACIL Allen develop and implement an approach to assessing regional strengths in the context of the State Infrastructure Strategy Vision, and in particular the six economic development opportunities.

ACIL Allen's approach to undertaking this comparative assessment of each of the State's nine Development Regions and the Perth Metropolitan Area is centred on a Multicriteria Assessment (MCA) tool. This tool allows ACIL Allen to assess each region against a number of economic and non-economic indicators which together provide a holistic view of its economic and social potential in relation to the opportunities identified in the State Infrastructure Strategy Vision.

An MCA is a logical framework which compares items across a series of data points, both qualitative and quantitative, on a consistent basis in order to score and/or rank them against each other. MCA is typically used to compare options against one another in a logical manner as part of the formation of a business case. Infrastructure WA itself is utilising an MCA framework to assist in the prioritisation of investment proposals to develop its inaugural State Infrastructure Priority List.

In this case, ACIL Allen's MCA is designed to assess:

— the relative strengths of each of Western Australia's regions, and

— how the relative strengths come together to indicate which regions are best suited to hosting each of the six economic development opportunities identified in the State Infrastructure Strategy Vision.

ACIL Allen's MCA design allows for an objective assessment of each region utilising the economic, social and environmental indicators developed and discussed Section 3.

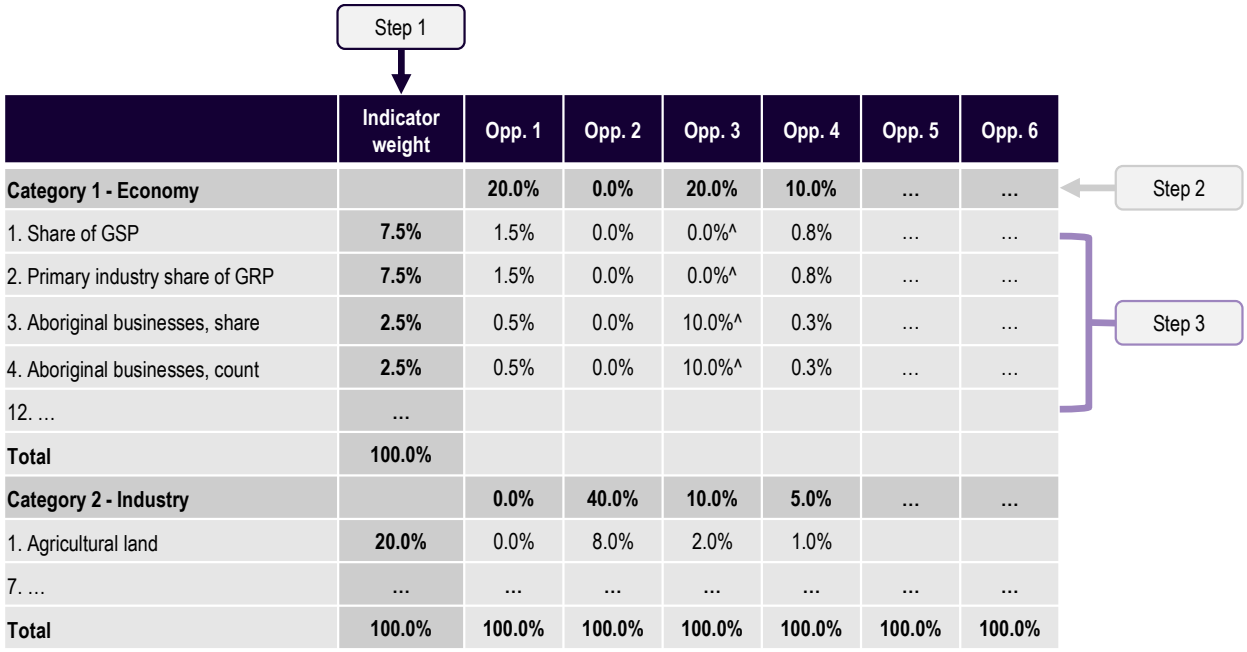
The individual indicators are assigned to each of the seven categories on an unequal basis, with relative weightings developed and applied to the indicators within each category to demonstrate how the indicator contributes to its assigned strength. The seven strengths are then weighted to reflect their relative importance to assessing the relative capacity and suitability of a region to play host to one of the six economic development opportunities.

Further details of the approach are presented below.

13.1.1 Development of MCA framework

A stylised version of ACIL Allen's MCA framework is presented below (**Figure 13.1**).

Figure 13.1 Multicriteria Assessment: Determination of indicator weightings



	Indicator weight	Opp. 1	Opp. 2	Opp. 3	Opp. 4	Opp. 5	Opp. 6
Category 1 - Economy		**20.0%**	**0.0%**	**20.0%**	**10.0%**	…	…
1. Share of GSP	**7.5%**	1.5%	0.0%	0.0%^	0.8%	…	…
2. Primary industry share of GRP	**7.5%**	1.5%	0.0%	0.0%^	0.8%	…	…
3. Aboriginal businesses, share	**2.5%**	0.5%	0.0%	10.0%^	0.3%	…	…
4. Aboriginal businesses, count	**2.5%**	0.5%	0.0%	10.0%^	0.3%	…	…
12. …	…						
Total	**100.0%**						
Category 2 - Industry		**0.0%**	**40.0%**	**10.0%**	**5.0%**	…	…
1. Agricultural land	**20.0%**	0.0%	8.0%	2.0%	1.0%		
7. …	…	…	…	…	…	…	…
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

^Overridden indicator weightings.
Source: ACIL Allen

Each of the steps used to produce the ultimate MCA framework is described below. The application of the indicators, indicator weights and category weights are discussed later in this section of the report.

Step 1: Assign Indicators to Categories, and apply Indicator Weightings to each indicator under each Category

In this step, ACIL Allen assigned each of the 71 indicators used to assess a region's strength to one of seven categories. Each indicator within each category was then weighted to reflect the relative contribution of the indicator to the strengths assessment. Indicator weights sum to 100 per cent within each category.

The outputs of this initial categorisation and weighting are used to conduct the strengths assessment component of the MCA.

Step 2: Apply weightings to each category under each opportunity

In this step, ACIL Allen developed weightings for each category, based on its relevance to each opportunity. The intent of this step in the process is to identify which of the seven strengths are most relevant to assessing a region's relative capacity and suitability to host an opportunity. Each of the category-to-opportunity weightings is different, reflecting the fact the combination of strengths required differs across the opportunities. The sum of category weights under each opportunity is 100 per cent.

Step 3: Multiply indicator weightings by category weightings

In the final step, each of the individual indicator weightings were multiplied by the category weightings to produce the detailed MCA indicator weightings. This also involved some manual

overrides to weightings for specific purposes. The sum of all specific indicator weights under each opportunity sum to 100 per cent.

The weightings presented under 'Step 3' are the weightings that will be applied to each region's score under each indicator. For example, a weight of 1.5 per cent is assigned to 'Share of GSP' under Opportunity 1 however, under Opportunity 2, a zero per cent weight is applied as it less relevant for this opportunity.

In some instances, the specific indicator weightings under an opportunity has been overridden by ACIL Allen where necessary to reflect the specific importance of an indicator to a particular opportunity. For example, under Opportunity 3, the indicator 'share of Aboriginal businesses' has been overridden which avoids underweighting the indicator for this opportunity which concerns the promotion of Aboriginal heritage, culture and enterprise. The unadjusted indicator weight was less than one cent, however after the override it now reflects a weighting of 10 per cent.

13.2 Indicator weightings under each category

The indicator weightings across the seven assessment categories are presented in this section with a brief rationale for the allocated weighting. These weightings reflect Step 1 in **Figure 13.1** above.

Economic indicators

The 13 economic indicators aim to provide a data-driven assessment of the current economic structure, sophistication and long term trends for each regional economy. These indicators relate to economic activity or business conditions in a particular region.

The most important economic indicators were assessed to be 'growth in GRP' and 'share of GSP', which combined for a total weight of 17.5 per cent. Growth in GRP is important as it is a forward looking measure which highlights the performance of a regional economy and can indicate if a region can support labour force growth, new businesses and larger populations. A region's relative share of GSP measures the size of a region's economy, which can determine a region's ability to maintain and service its population, sustain employment (and incomes) and support a standard of living. It also reflect the region's relative importance to Western Australia's overall economic capacity.

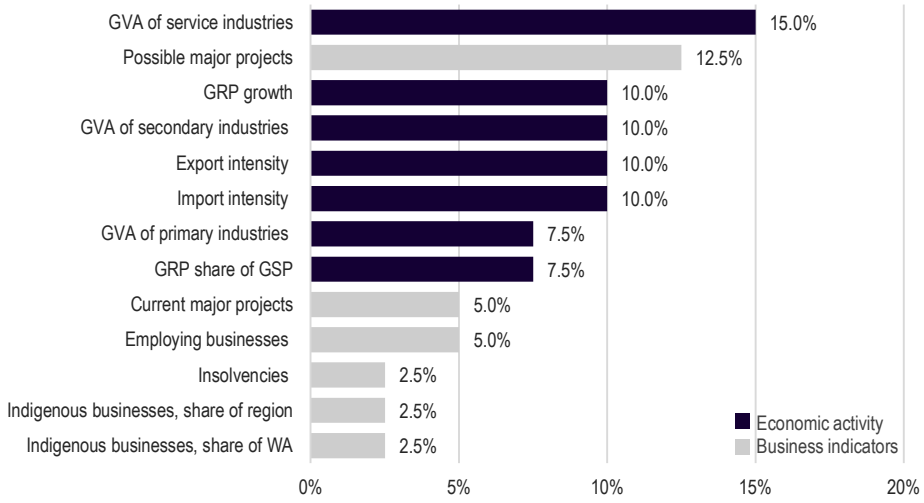
The size of a region's service sector was also seen to be important and received a 15 per cent weighting, measuring a region's relative ability to service its population (eg. through the provision of healthcare and education services). The share of a region's economy that is manufacturing based (10 per cent) and primary industry based (7.5 per cent) area also important for supporting existing and emerging industries, leveraging existing industry infrastructure, human capital expertise and existing comparative advantages.

The value of future major projects (12.5 per cent) and current major projects under construction (five per cent) were viewed as being important indicators of future public and private investment in a region which may impact a region's future economic growth and investment, liveability and connectivity. Similarly, the number of employing businesses (including Aboriginal employing businesses) in a region was seen to be important for liveability, community stability, diversity and the promotion of Aboriginal heritage and culture.

Export intensity (10 per cent) and import intensity (10 per cent) were assessed as being of equal importance across opportunities and is an indicator of a region's relative reliance on external markets as well as a region's ability to be self sufficient in the provision of goods and services to its residents.

The 13 indicators which make up the Economy category are presented below (**Figure 13.2**).

Figure 13.2 Indicator weightings: Economy category



Source: ACIL Allen

Industry indicators

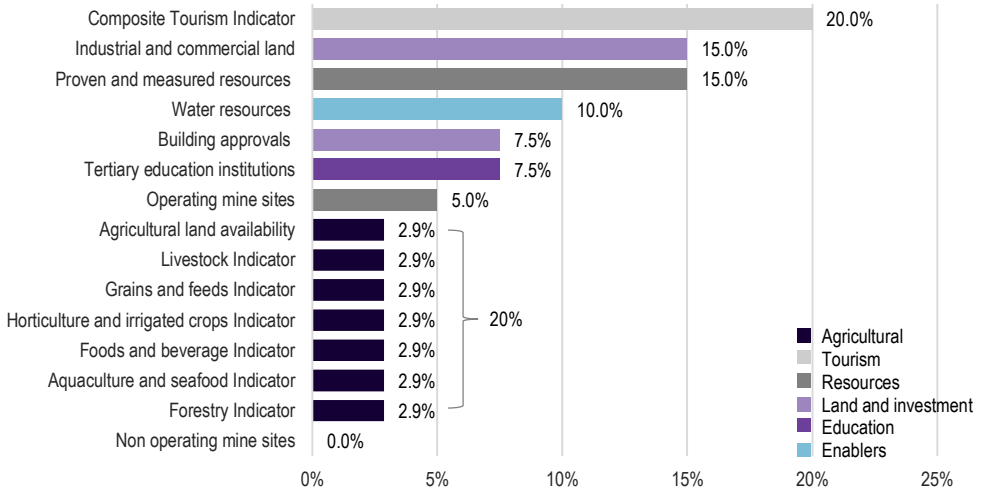
The 15 industry indicators are designed to provide a data-driven assessment of the current factors of production for critical industries and capture core industries including agriculture, tourism, mining and resources, land and private investment and education. Water was also included as a key industry enabler and is applicable across a variety of industries. The intent of the Industry category is to look beyond current economic aggregates such as GRP and gross value added to assess the availability and capacity of a region's critical industries.

ACIL Allen have allocated an equal weight to industries of agriculture, tourism and, mining and resources to ensure there was a 'non-discriminatory' approach across the indicators underlying these major industry groups. Each industry category was allocated a 20 per cent weighting, including a combined allocation of 20 per cent to the two mining and resource indicators (excluding non operating mine sites).

A weighting of 15 per cent has been assigned to the 'availability of industrial and commercial land' which is an important factor for future regional development and investment. The remaining 10 per cent weighting has been split between building approvals (residential and non-residential) and the availability of tertiary education institutions in a region.

The 15 indicators which make up the Industry category are presented below (**Figure 13.3**).

Figure 13.3 Indicator weightings: Industry category



Source: ACIL Allen

Human Capital indicators

The human capital indicators represent a data-driven assessment of each region's population, labour force, skills capacity, knowledge, education, diversity and disadvantage. These indicators are grouped together as they reflect the long term demographic trends for each region, and the availability of a skilled workforce to deliver on economic development opportunities.

It is important to note assessment of human capital strengths does not consider Fly In, Fly Out (FIFO) workforce as a specific indicator. This is because the supply of, or demand for, a FIFO workforce is a response to the deficiency of human capital of a region in the case of where FIFO is utilised or a surplus of labour where a FIFO workforce is based. FIFO is a response to the human capital situation in each region, as opposed to a driver of human capital itself.

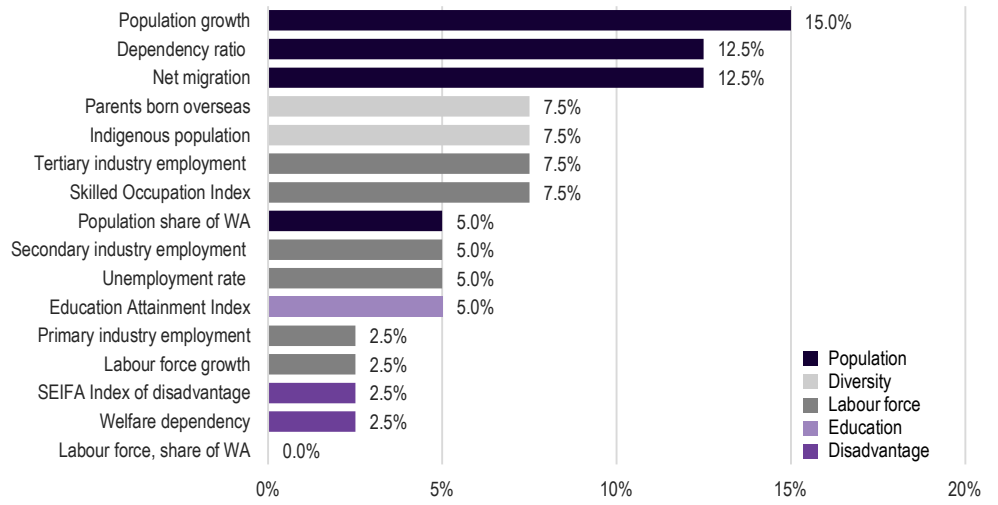
Population growth (15 per cent) and net migration (12.5 per cent) were assigned the highest weighting as they highlight the level of commitment to live and invest in a region which may be driven by employment opportunities, climate, natural attractions or service offerings, amongst other reasons. The rate of workforce dependency (measured by the Dependency Ratio – a concept which is used to assess the size of a jurisdiction's workforce relative to its non-working age population) in a region was used to assess population ageing.

The level of diversity in a region includes the share of a region's population with parents born overseas (7.5 per cent) and the share of the population that is Aboriginal (7.5 per cent). These indicators were seen to particularly applicable to Opportunity 3 (promoting and leveraging Aboriginal culture and heritage) but also important contributors to a region's liveability, inclusiveness and stability.

A range of other human capital indicators were also assigned a small, yet large combined weighting and included a region's access to skilled labour, tertiary education employment, secondary industry employment, unemployment, education, primary industry employment, labour force growth and disadvantage.

The 16 indicators which make up the Human Capital category are presented below (**Figure 13.4**).

Figure 13.4 Indicator weightings: Human capital category



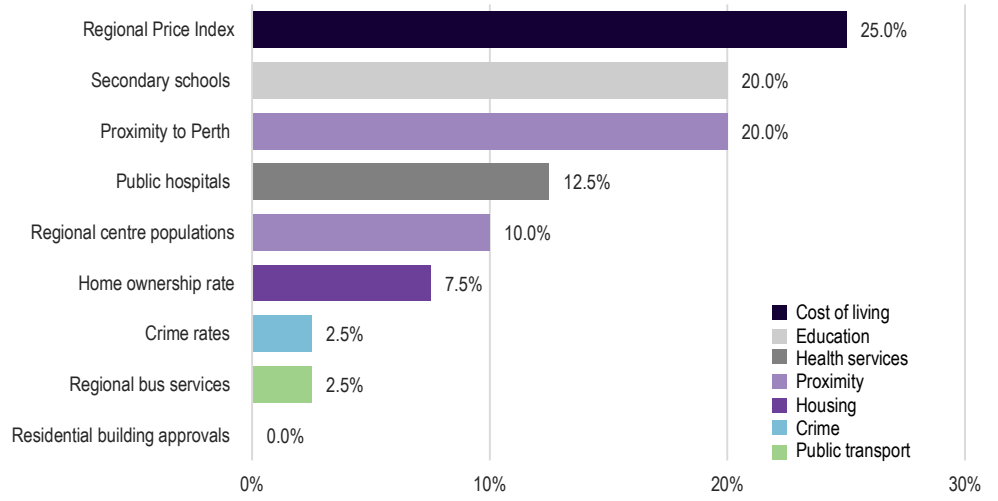
Source: ACIL Allen

Liveability indicators

The liveability indicators assess each region's underlying 'drivers' and 'outcomes' of regional liveability. The indicators include a region's relative cost of living, access to secondary education and health services, proximity to regional centres and the Perth CBD, home ownership, rate of crime and accessibility to public transport.

The nine indicators which make up the Liveability category are presented below (**Figure 13.5**).

Figure 13.5 Indicator weightings: Liveability category



Source: ACIL Allen

A region's cost of living (25 per cent) was assessed to be the most important driver of liveability and includes a basket of goods and services common to all regions. The supply of secondary education (20 per cent) and health services (12.5 per cent) were also viewed as being important aspects of liveability as they enable people (including families) to remain located in regional areas of the State.

The proximity to Perth was assigned a 20 per cent weight as large population bases typically afford a higher range and offering of services such as education and specialist medical care. Being

proximal to Perth can also lead to a range of other benefits such as: job opportunities, transportations systems and infrastructure (ie. airports, road and rail routes), access to people and networking and, entertainment options. Similarly, the proportion of a region's population living in a regional centre (10 per cent) typically determines a region's service offering which are typically afforded by larger population centres.

The rate of home ownership (7.5 per cent) has been included as an indicator of the level of commitment to live and invest in a region (which can also contribute to the stability and resilience of a community). The level of crime and regional bus services were assessed as being relatively less important, yet still impactful on liveability in a region.

Existing Infrastructure indicators

The Existing infrastructure category aims to assess the relative level of access to existing, major public infrastructure in a region and how well a region is connected to domestic and international markets. These indicators have been categorised as either 'transport' or 'telecommunication' related.

Large scale infrastructure items such as ports (25 per cent), freight road and rail (25 per cent) and airports (20 per cent) have been assessed as the most important and are applicable across most opportunities. These pieces of infrastructure are important for facilitating trade, delivering services and for connecting a region to domestic and international people and businesses.

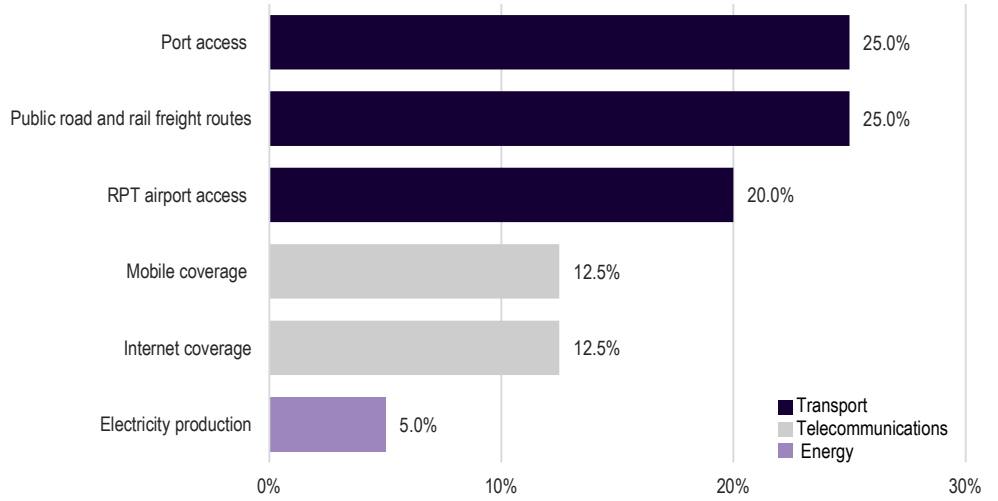
For ports, access to a general cargo facility, rather than bulk loading facilities, was used as the driver, as general cargo port capacity is a more broad-based industry enabler as opposed to a port's capacity to serve the requirements of bulk commodity exporters. It was decided freight roads and rail should be assessed together as these both represent the ability for the region to service freight requirements within a region albeit by different modes of transport. For airports, only Regular Public Transport (RPT) airports were considered as part of the assessment as these were the existing infrastructure which is available to all industries and persons, where private airstrips (such as those which are increasingly used to fly people and goods directly to mining sites) are not available for use by the public.

Telecommunication indicators were allocated a combined 25 per cent weighting to recognise the importance of communication and a high-quality internet to economic development opportunities, particularly in regional WA. The telecommunications indicators developed for the assessment are not ideal as they reflect either self-reporting of mobile blackspots (as a measure of connectivity) and the share of a region which is outside of the fixed line footprint of the National Broadband Network (as a measure of speed), rather than direct observations of the underlying telecommunications infrastructure supply in a region. This was due to data limitations.

Energy infrastructure was assessed as of minor importance to a region's existing infrastructure as economic development opportunities often build their own electricity generation capacity and network infrastructure, while renewable energy technologies are improving the economics of standalone power systems as a measure in remote areas. To reflect this, ACIL Allen determined a region's existing energy strength was best measured by the capacity of the grid-connected electricity generation infrastructure located in the region. This was given a relatively low weighting due to the factors outlined above.

The six indicators which make up the Existing infrastructure category are presented below (**Figure 13.6**).

Figure 13.6 Indicator weightings: Existing infrastructure category



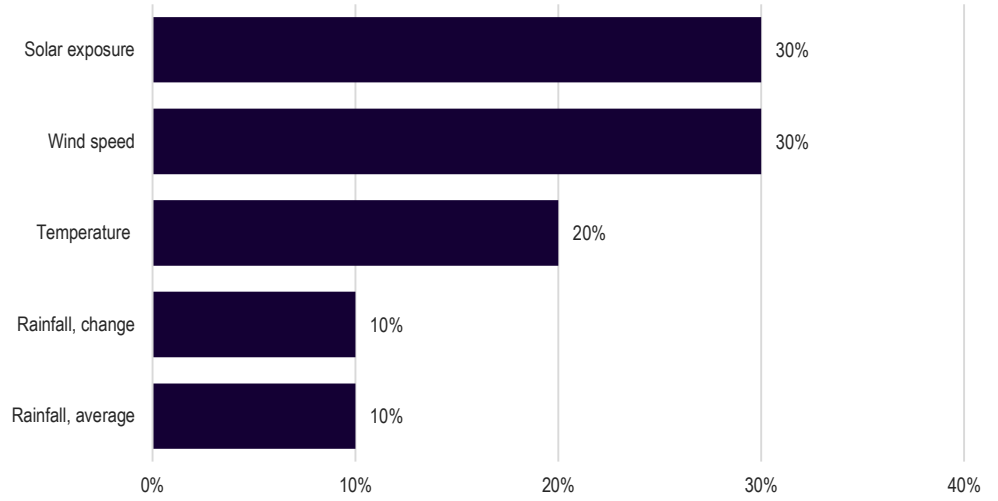
Source: ACIL Allen

Climate indicators

The climate indicators aim to assess the current and historic climate trends within a region. These indicators capture elements of liveability (ie. temperature comfortability), industry enablers (ie. wind and solar for renewable energy) and climate change (ie. the change in the level of rainfall over time) which may have future implications in agriculture and regional liveability.

The five indicators which make up the Climate category are presented below (**Figure 13.7**).

Figure 13.7 Indicator weightings: Climate category



Source: ACIL Allen

The relative level of solar exposure (30 per cent) and wind speed (30 per cent) received an equally high weighting and have predominantly been used as indicators of 'renewable energy potential'. A region's average monthly maximum temperature (20 per cent) has been used as a proxy for the relative level of liveability (ie. comfort) in a region whilst the level and change in rainfall (combined for a 20 per cent weight) is an important indicator as it has climate change and implications for future industries.

The climate indicators are subject to the most significant variations in weightings when applied to the six opportunities, reflecting the relative importance of rainfall to some opportunities and renewable energy potential to others.

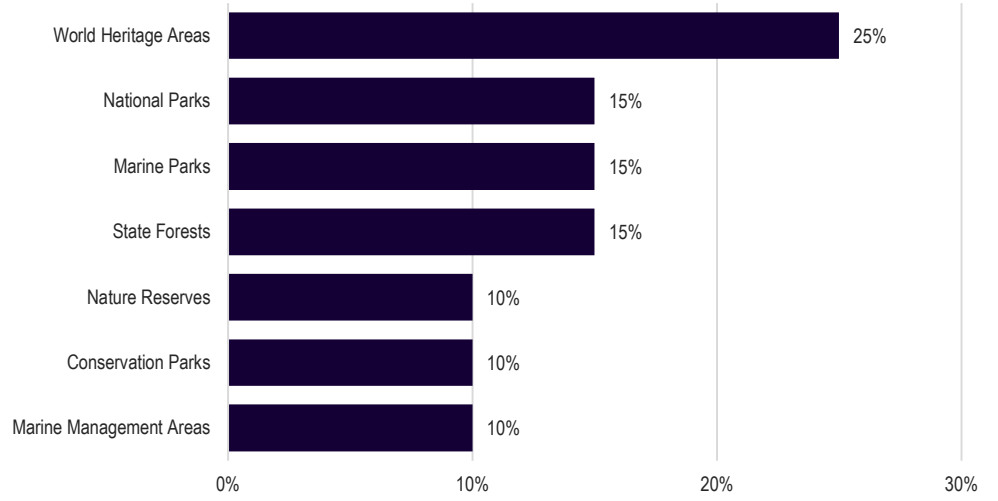
Natural Environment indicators

The natural environment indicators aim to determine the relative level of natural assets in a region which can determine a region's relative level of liveability and cultural and historical value in addition to some economic and industry impacts (eg. international tourism).

World Heritage Areas (25 per cent) were assessed as the most important natural environment indicator as they typically have a higher level of value and domestic and International recognition. A range of natural environment classifications including Parks, Forests, Nature Reserves and Areas were assigned a similar weighting as they contribute to a region's liveability and tourism potential in similar and varying ways.

The seven indicators which make up the Natural environment category are presented below (**Figure 13.8**).

Figure 13.8 Indicator weightings: Natural environment category



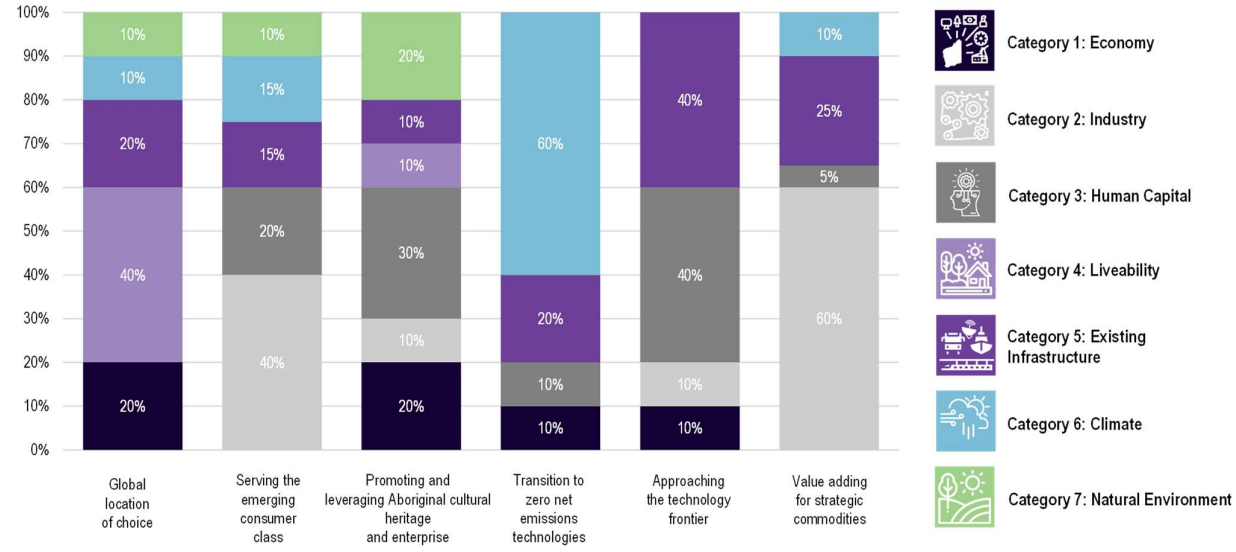
Source: ACIL Allen

13.3 Category weightings for each opportunity

This section discusses each of the Category weightings developed for the six economic development opportunities identified in the State Infrastructure Strategy Vision. The weightings applied to each Category within an Opportunity are then applied to the individual Indicators which make up the Category to give the final indicator level weightings for each Opportunity. In this way, the regional strengths assessment has a direct influence on the relative assessment of each region's capacity to host an economic development opportunity.

A summary of the Opportunity weightings (how each Category drives the assessment of a region's capacity to host an Opportunity) is presented below, with the rationale for the Opportunity weights discussed in the remainder of this section.

Figure 13.9 Opportunity weightings: Summary of Opportunity to Category weightings



Source: ACIL Allen

Opportunity 1: A Global location of choice

For this opportunity, the categories of liveability, economy and existing infrastructure were viewed as the most important drivers of a place to work, live and invest. The 'liveability' category was assigned the highest weighting (40 per cent) as it assesses indicators such as cost of living, secondary education offering, health care services, rate of home ownership, proximity to the Perth Metropolitan Area and the rate of crime.

The economy category was assigned a 20 per cent weighting and assesses the current economic structure and sophistication of an economy which are likely to determine employment and investment opportunities in a region. Similarly, the current factors of production under the industry category was allocated a 20 per cent weighting as it assesses a region's ability to support employment, offer services and sustain regional populations. The remaining 20 per cent was allocated across the categories of climate and natural environment as important, but not critical, drivers of a region's relative capacity to serve as a global location of choice for new residents.

Opportunity 2: Serving the emerging consumer class

This focus of this opportunity is on high-quality tourism, agrifood and education exports which has a high level of relevance to a region's current factors of production. The industry category was therefore allocated the highest weighting of 40 per cent. Human capital (25 per cent) was viewed as being an important component for 'serving the emerging consumer class' as the underlying indicators contribute to growing and sustaining industries.

A region's existing major public infrastructure (15 per cent) is important for supporting industry growth which contributes to a region's connectivity and access to key infrastructure such as cargo ports, RPT airports and fright routes. A region's climate (15 per cent) and natural environment (10 per cent) were also seen as being necessary to support growth in tourism, agriculture and education industries.

The economy category was assigned a zero weighting because ACIL Allen viewed a region's existing factors of production and the quality of its human capital as more applicable to serving new consumers classes through various industries.

It is important to note, **this opportunity has been defined as "serving the emerging consumer class" first and "through high quality tourism, agrifood and education exports" second.** This means the capacity of the region is a function of its ability to deliver products and services in a broad range of "consumer class" industries, rather than one in isolation. The implication of this definition is that a region's relative strength and capacity to serve as a host of this opportunity should be driven by its relative strength across industries, rather than in a single industry. This is further explored in the next section.

Opportunity 3: Promoting and leveraging Aboriginal cultural, heritage and enterprise

The two most important categories for this opportunity were determined to be the quality of a region's human capital resources (30 per cent), natural environment (20 per cent) and components of its economy (20 per cent) which focusses on the count and share of Aboriginal businesses in the region. The natural environment is important as it highlights a region's natural assets which typically have historical and cultural connections (and liveability implications) and human capital as it captures a region's Aboriginal population and diversity.

Three other categories including industry, liveability and existing infrastructure were allocated a 10 per cent weighting as they are all important (in different ways) to supporting Aboriginal culture, heritage and enterprise. Industry provides opportunities to Aboriginal businesses, liveability measures the quality of health and education services and existing infrastructure reflects connectivity, trade and communication critical to business growth and development.

To reflect the importance of Aboriginal and Diversity indicators to this opportunity, the indicator weightings for the Economy and Human Capital categories were overridden to prioritise each region's Aboriginal business vibrancy, Aboriginal population, and diversity of population over other indicators.

Opportunity 4: Transition to zero net emissions technologies

The most important category for this opportunity was determined to be a region's 'climate' which was allocated a 60 per cent weighting. The climate category captures a region's potential to adopt renewable energy technologies through solar and wind sources. The Climate category indicator weightings were overridden, to ensure this assessment was driven by the renewable energy generation potential of the region.

To support a region with a suitable climate, there needs to be access to existing infrastructure (25 per cent) to support the transition to renewable energy in the form of ports, airports and road and rail freight infrastructure. Telecommunications and access to energy are also measured in this category which are also important for the uptake of new technologies. Human capital (10 per cent) and economy (10 per cent) categories were also seen to be relevant to this opportunity which measure a region's economic structure and sophistication, and population, labour and skills capacity.

It is important to note **this opportunity has been defined in a way which can be interpreted as being a driver of other industries, as well as being an economic development opportunity in and of itself**. For example, the transition to renewable electricity generation may do little to promote new economic development in and of itself at a State-wide level, as it will result in a displacement of existing electricity generation and upstream energy production. It may also result in completely unrelated economic development opportunities as they relate to the export of Western Australia's renewable energy potential via hydrogen products (such as ammonia).

These two elements of the opportunity require very different infrastructure responses. However, a region's capacity to serve as a host of one or the other will be driven by similar underlying strengths. This is further explored in the next section.

Opportunity 5: Approaching the technology frontier

A region's access to human capital (40 per cent) and existing infrastructure (40 per cent) were viewed as the two most important categories for this opportunity. Human capital is critical because it captures a region's population, labour and skills capacity which are all important for driving new technologies and innovation. Major existing public infrastructure was seen to support various components of this opportunity including the accessibility to interstate and international visitors, trade, connectivity and telecommunications.

ACIL Allen determined that the quality and composition of a region's industry (10 per cent) and economy (10 per cent) were relevant to this opportunity, but less important relative to other categories. In relation to the economy category, it may be the size of a region's service sector (rather than its primary industry sector) and its relationship and experience with trading partners (export intensity) that may determine a region's ability to deliver on this opportunity. In relation to industry, a region's access to tertiary education and its sophistication in major industries (tourism, agriculture and resources) are likely to contribute to a region's alignment with this opportunity.

Opportunity 6: Value adding for strategic commodities

The most applicable category for this opportunity was viewed as 'industry' which was allocated a weighting of 60 per cent. The indicator weightings were overridden to reflect the intent of this opportunity as a measure of the economic development associated with downstream processing of primary products. As a result, a region's indicators of underlying potential for agriculture and minerals production were given equal weighting at 30 per cent each.

ACIL Allen also allocated a quarter of the opportunity's allocation to existing infrastructure (which indicates a region's access to ports, airports and freight infrastructure), as the majority of value added commodities are likely to enter export markets. Climate is also allocated 10 per cent weighting to identify region's with the most suitable cheap, reliable, renewable energy sources.

13.4 Finalisation and application of MCA

The final step of the development of the MCA is to score each of the indicators. The data used to develop the indicators is not standardised – some data is presented as percentage shares of a Statewide total, while others are whole numbers. This means standardisation of the inputs is required to allow them to be used in the MCA framework.

The 71 indicators for each of the regions are transformed into a standardised score of between zero and 100, based on where the region sits relative to the minimum and maximum score on the indicator. The region with the lowest output on the indicator receives a standardised score of zero, while the highest output receives a standardised score of 100. This means if a region was assessed as having the highest output across all indicators within a Category, the region would achieve a score of 100.

As it turns out, the scoring of each region's relative strength and therefore relative capacity to host an opportunity is abstract because scoring is on a standardised scale but in a non-standardised way from a statistical perspective. This means there are positive or negative skews to the scores on some indicators, where one region is an outlier on either the high side or the low side. As a simplified example, in an Indicator where there are three scores (a 250, a 36 and a 10), a standardisation of the scores against the maximum and minimum would yield outputs in ACIL Allen's MCA of 100, 15 and zero. In this way, the scoring system rewards regions which have a particularly strong advantage in one or more indicators which make up a Category, and conversely punish regions which have a particular weakness.

The mechanics of the scoring approach are presented below.

For **positive indicators** where a higher score is viewed as being advantageous (like a region's share of Aboriginal businesses), the indicator score is:

$$Indicator\ score_{region} = \left(\frac{score_{regio} - min}{max - min}\right)$$

where the,

$region = the\ region\ in\ focus$

$score = the\ data\ point\ linked\ to\ the\ region\ in\ focus$

$min = the\ minimum\ data\ point\ amongst\ all\ regions$

$max = maximum\ data\ point\ amongst\ all\ regions$

For **negative indicators** where a lower score is viewed as being advantageous (like a region's rate of crime), the Multicriteria Assessment score is:

$$Indicator\ score_{region} = \left(\frac{score_{region} - max}{max - min}\right)$$

where the,

$region = the\ region\ in\ focus$

$score = the\ data\ point\ linkned\ to\ the\ region\ in\ focus$

$min = the\ minimum\ data\ point\ amongst\ all\ regions$

$max = the\ maximum\ data\ point\ amongst\ all\ regions$

To calculate a score for each category (ie. regional strengths) and opportunity (ie. regional opportunities), the **indicator score** is then multiplied by the **indicator weight** under each category or opportunity. That is:

$$\sum Indicator\ score_{region} \times indicator\ weight$$

The next section presents the scoring of each region's relative strengths, and relative capacity to host each of the six opportunities identified in the State Infrastructure Strategy Vision.

Summary findings and directions 14

*This section provides a summary of the findings of the regional strengths and opportunities, and the application of these results for Infrastructure WA for the development of the State Infrastructure Strategy. Refer to **Section 3** for a complete list of indicators used in the strength's assessment and **Section 13** for the methodology (including indicator weightings) behind the Assessment.*

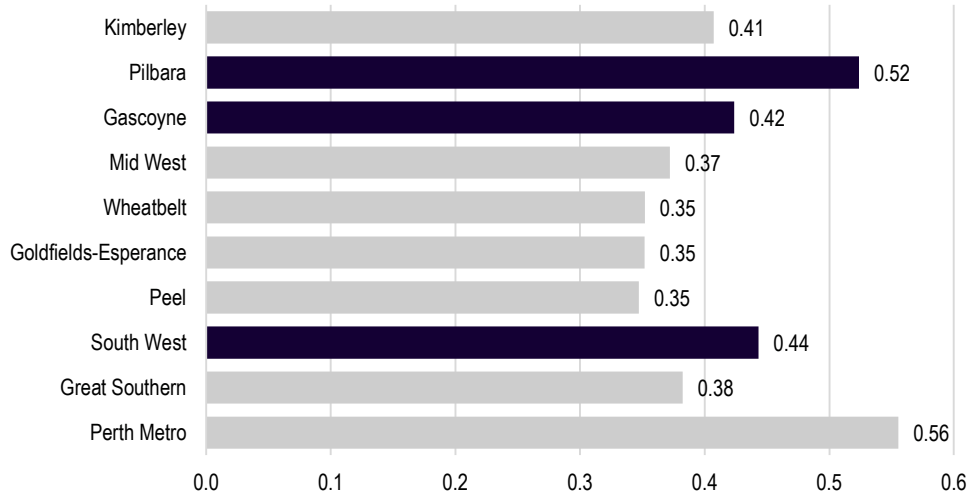
14.1 Regional strengths assessment

This section presents the MCA results across ACIL Allen's seven assessment categories. In each assessment, the top three scoring regions have been highlighted and discussed in addition to some reasons why some regions scored relatively poorly. Refer to **Part II** for a more detailed discussion of each region.

14.1.1 Economy

The **Perth Metropolitan Area** ranks high in the economy category due to its large, diversified and service based economy which has a significant number of employing businesses, including many Aboriginal businesses. As the State's primary business district, the Perth Metropolitan Area's economy makes up almost two thirds of GSP and has been growing steadily over the past decade. The Perth Metropolitan Area also is a successful place to conduct business, with a relatively low rate of business insolvency. The business community is also supported by a large share of the State's population which have cultural, commerce, education, retail and entertainment ties with the CBD.

Figure 14.1 Regional strengths analysis – Economy



Source: ACIL Allen

The **Pilbara region** ranks the second highest in regional WA due to its large contribution to the national economy which largely arises through its mineral and energy production. It also has a large primary industry sector, stable economic growth, a strong Aboriginal business representation and a significant level of investment earmarked for current and future major projects. The region is also heavily export oriented (high export to GRP ratio) and highly self sufficient (low import to GRP ratio) which makes it a large contributor to the State's wealth.

Thirdly, the **South West region** scores strongly due to its sustained level of economic growth, strong service sector, low rate of business insolvency and a modest level of investment earmarked for current and future major projects. The **Gascoyne region** ranks fourth in this category predominantly due to its economic growth, although this is from a relatively smaller economic base to most other regional areas (**Figure 14.1**).

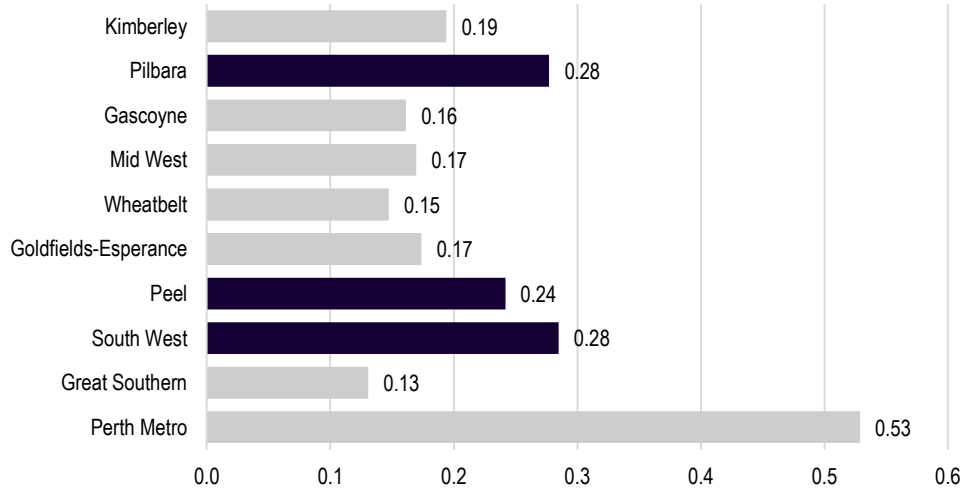
14.1.2 Industry

While the **Perth Metropolitan Area** does not have a major presence in mining or agriculture industries, it ranks high in this category due to its strength in tertiary education and tourism industries. The Metropolitan Area also has an above average level of residential and non-residential building activity (on a per resident basis) and a high availability of land for future industrial and commercial development.

The **Peel** and **South West** regions rank high due to their availability of industrial and commercially zoned land and, the availability of land suitable for agricultural production. The South West region also scores highly due to its above average level of building activity, water resources, interstate and international visitation and tertiary education offerings.

The **Pilbara region** is the third highest ranking region due to its large mining and resources sector and its large share of the State's proven and measured resource reserves and operating mine sites. The value of building approvals is also relatively strong in the region (on a per resident basis) and it has an above average level of interstate and international visitation in comparison to other regional areas in the State.

Figure 14.2 Regional strengths analysis – Industry



Source: ACIL Allen

14.1.3 Human Capital

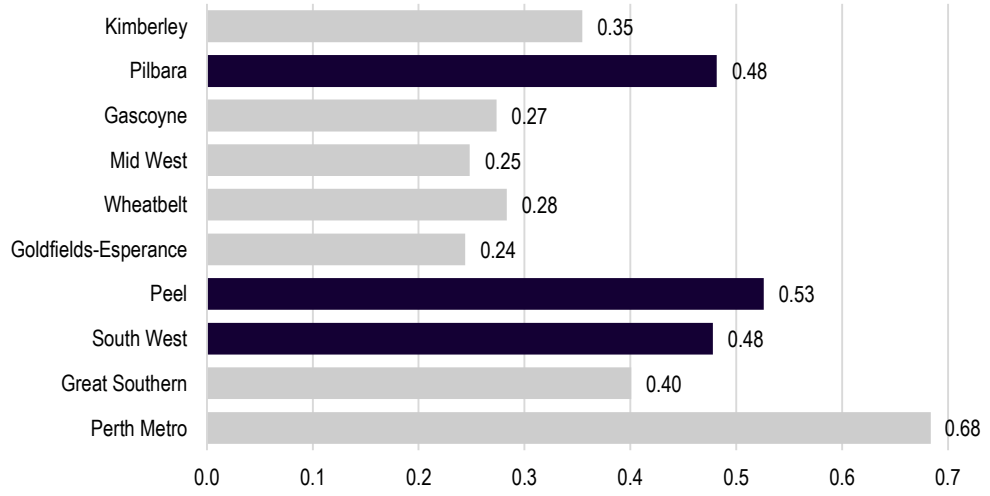
The **Perth Metropolitan Area** is home to around three quarters of the State's population and labour force and therefore ranks the highest in this category. Due to the high share of population

living in the Metropolitan Area, it also has the largest Aboriginal population, access to skilled and educated labour force. Adding to this is the high proportion of the labour force that is employed in the service sector (which services its relatively large and dense population) and relatively low rates of welfare dependency and disadvantage.

The **Peel** and the **South West** regions are the highest ranking regional areas. This is predominantly due to their relatively large population which is growing with the support of natural increases and a net inflow of migrants. These regions also have proportionately large manufacturing and service sectors and low levels of welfare dependency and disadvantage. Unique to the South West region is its relatively high rate of labour force growth, which is the highest in the State.

The **Pilbara** ranks as the third highest region due to its relatively strong labour market and corresponding low rates of unemployment. The Pilbara also has a relatively young population in the context of regional Western Australia, with the lowest level of Commonwealth Government welfare recipients as a share of the region's population. All of these attributes combine to suggest human capital is a source of strength and opportunity for the Pilbara region.

Figure 14.3 Regional strengths analysis – Human Capital



Source: ACIL Allen

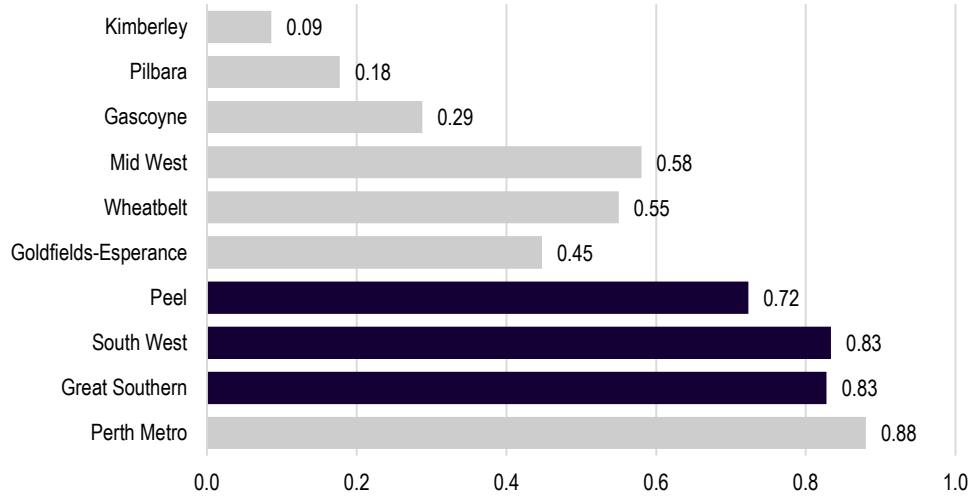
14.1.4 Liveabiltiy

When assessing Liveability as a source of regional strength, the assessment suggests regions in the south and west of the State perform significantly stronger than regions to the north and east. This is seen in the results for the top three scoring regions, being the South West, Great Southern and Peel regions.

The Perth Metropolitan Area ranks the highest in terms of liveability, with a score in the top three on all but two of the indicators used to define liveability. The two areas where Perth scored less favourably than regional areas were public hospital beds (noting the supply of primary healthcare infrastructure in the Perth Metropolitan Area region is supplemented by private hospitals and allied health services provision) and crime rates.

The Peel, South West and Great Southern regions also score highly due to their proximity to Perth, relatively large regional centres with adequate levels of service and infrastructure, and their relative affordability compared to regions in the north and east.

Figure 14.4 Regional strengths analysis – Liveability



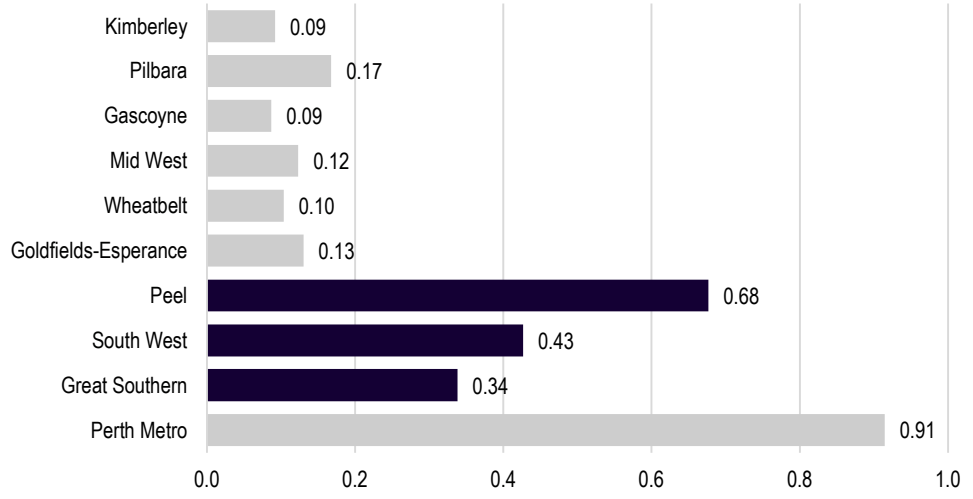
Source: ACIL Allen

14.1.5 Existing infrastructure

The existing infrastructure strengths assessment assesses how well supplied a region is with economic and transport infrastructure today, as opposed to assessing its capacity to provide infrastructure in the future. Given this, the Perth Metropolitan Area is assessed as having the highest rating, due to access to ports, freight road and rail, airports and telecommunications infrastructure. Other regions in the south west of the State also perform well, due to existing ports infrastructure in particular.

A general lack of population density in all other regions means access to ports, airports, freight routes and telecommunications is more limited. This is particularly true for telecommunications infrastructure, where regions in the north and west are scored very poorly compared to the Perth Metropolitan Area in particular.

Figure 14.5 Regional strengths analysis – Existing infrastructure



Source: ACIL Allen

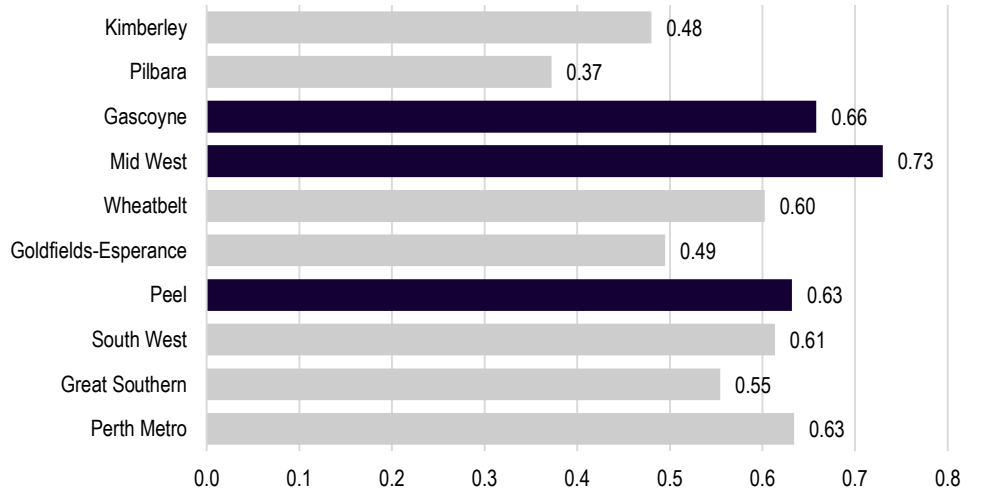
It should be noted that the Pilbara's score reflects its vast geographic space and relatively limited coverage of key public infrastructure. The Pilbara region hosts significant private sector infrastructure across ports, airports, roads, rail and electricity networks in particular, however a significant portion of this is for the use of the private sector owners or users only.

14.1.6 Climate

The regional strengths assessment suggests climate is a source of strength for the Mid West, Gascoyne and Peel regions. The performance of these regions reflects their balanced scores across the climate indicators included in the MCA, in that they perform well in both solar and wind renewable energy generation potential and temperature. The scores for these regions are offset in part by poorer scores on rainfall indicators.

The next best scoring region is the Peel region, which scores well on temperature, rainfall and rainfall change, and around average on renewable energy generation potential indicators.

Figure 14.6 Regional strengths analysis – Climate



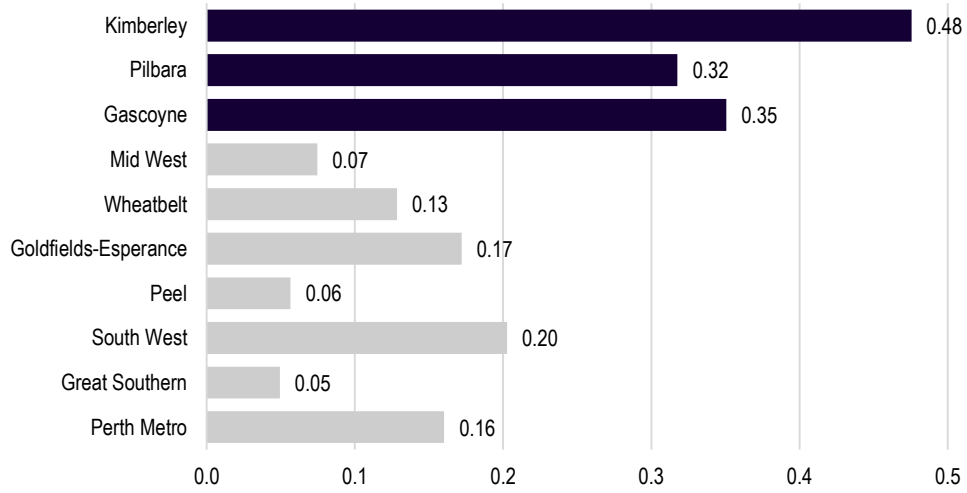
Source: ACIL Allen

The Pilbara region is assessed as scoring relatively poorly on the climate strength due to its poor score on temperature, rainfall and average wind speed for the purposes of generating renewable energy. It performs the strongest of all ten regions in the solar radiance capacity assessment, although it is not substantially stronger on this measure than other regions in the north of the State (Gascoyne and Kimberley).

14.1.7 Natural Environment

The Kimberley region ranks highly in this category due to its large share of Nature Reserves and environmental assets. The Gascoyne region also ranks highly due to its two World Heritage Sites. Notwithstanding its large mining base, the Pilbara region also ranks well due to its National Parks and Marine Areas.

Figure 14.7 Regional strengths analysis – Natural Environment



Source: ACIL Allen

14.2 Regional opportunities assessment

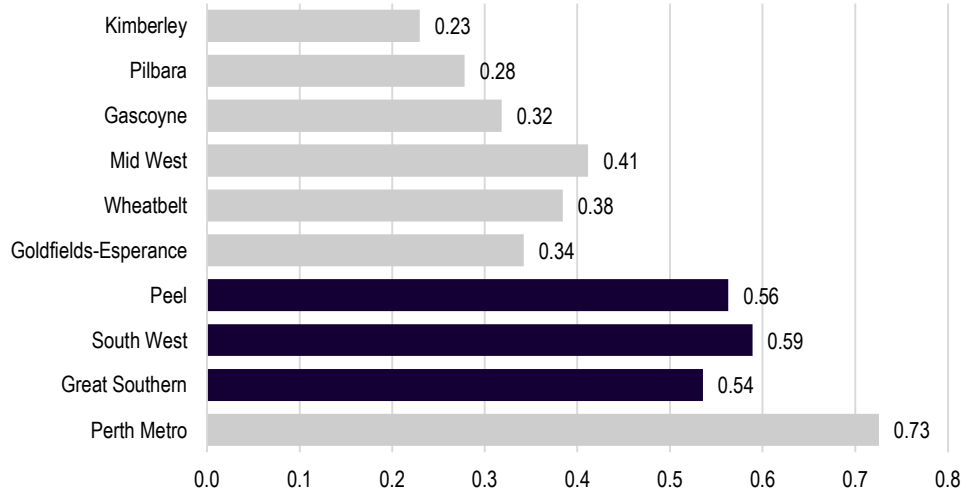
This section presents the MCA results from the perspective of each of the six opportunities.

14.2.1 Opportunity 1: A global location of choice

20%	0%	0%	40%	20%	10%	10%
Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

The Perth Metropolitan Area scores highest on this opportunity because of its high degree of liveability, access to existing infrastructure and strong economic base. Regions in the south of the State perform well due to their liveability and infrastructure, which is a relative weakness of regions in the north of the State.

Figure 14.8 Regional analysis – Opportunity 1



Source: ACIL Allen

14.2.2 Opportunity 2: Serving the emerging consumer class

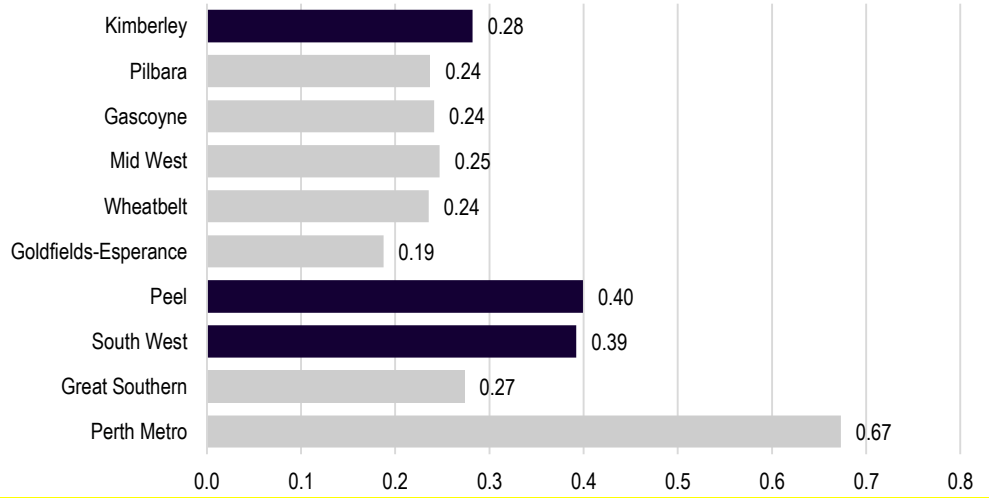
0%	40%	20%	0%	15%	15%	10%
Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

The **Perth Metropolitan Area** scores highly due to its strength across multiple industry categories and in particular tourism and education which are defined in the opportunity. The **Peel** and **South West** regions score relatively well because of their strengths in individual industries.

As noted in Section 13, the framing of this opportunity within the State Infrastructure Strategy Vision is primarily centred on the opportunity to "serve the emerging consumer class" first, with the specific industries where this could be achieved (tourism, agrifood and education) a secondary consideration. Given this, a region's comparative strength is driven by its ability to serve multiple industries, as opposed to an individual industry. With this in mind, ACIL Allen has recast its MCA to assess each region's comparative strength on the three industries discussed as secondary considerations within this opportunity.

It is important to note the sub-opportunity strengths assessment for Industry strengths is compiled for each region on the basis of a small subset of indicators (or in the case of education, a single indicator). Agriculture and tourism however, are based on nine and six indicators respectively which provides a stronger evidence base for the results they provide. The results should be used as a guide only as opposed to a definitive assessment at this sub-opportunity level.

Figure 14.9 Regional analysis – Opportunity 2



Source: ACIL Allen

14.2.3 Opportunity 2: Serving the emerging consumer class – sector analysis

Tourism	0%	70%	7.5%	0%	10%	7.5%	5%
Agri-food	0%	70%	10%	0%	10%	10%	0%
Education	0%	50%	25%	7.5%	10%	7.5%	0%
	Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

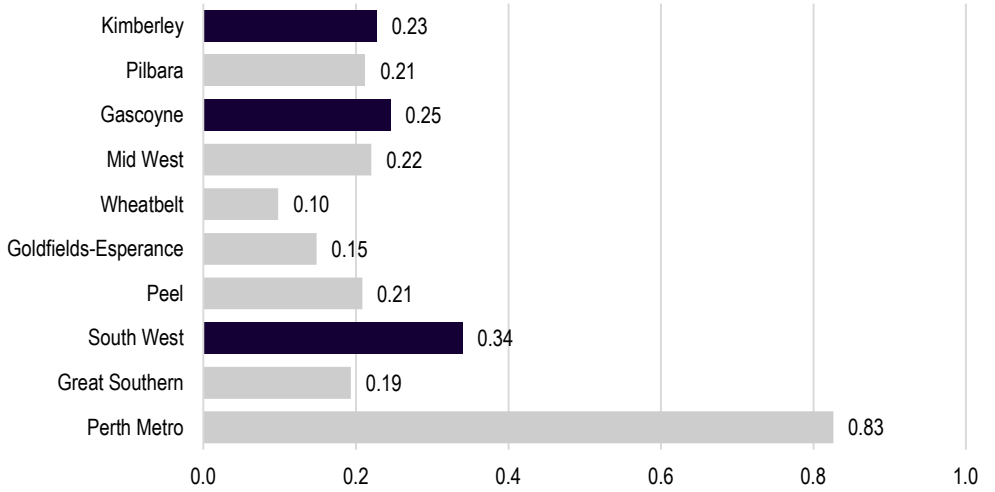
High quality tourism exports

The Perth Metropolitan Area scores highly due to its strength in tourism, as measured by ACIL Allen's Tourism Composite Indicator which captures the Perth Metro region's relative dominance in terms of visitor nights, visitor spend, access to RPT airports, cruise ship visitors, and tourist attractions.

The South West region is the second highest ranked region in relation to the tourism opportunity, reflecting the region's relative position with respect to hotel rooms, visitor nights and tourist attractions.

The Gascoyne and Kimberley regions score next best as they have some relative strengths in tourism, as measured by ACIL Allen's Tourism Composite Indicator. The Gascoyne's tourism comparative advantages include its tourism spend per capita, access to RPT airports and its tourist attractions. The Kimberley has relative strengths in terms of its tourism spend per capita, number of cruise visitors, airports and also attractions. The Kimberley region also scores relatively highly in infrastructure and climate categories and the Gascoyne and scores highly in natural environment (e.g. the Shark Bay World Heritage Area).

Figure 14.10 Regional analysis – Opportunity 2, tourism focus



Source: ACIL Allen

High quality agrifood exports

The comparative assessment of high quality agrifood exports comprised an analysis of six sub sectors. The results of each sub sector are presented in **Figure 14.11** below.

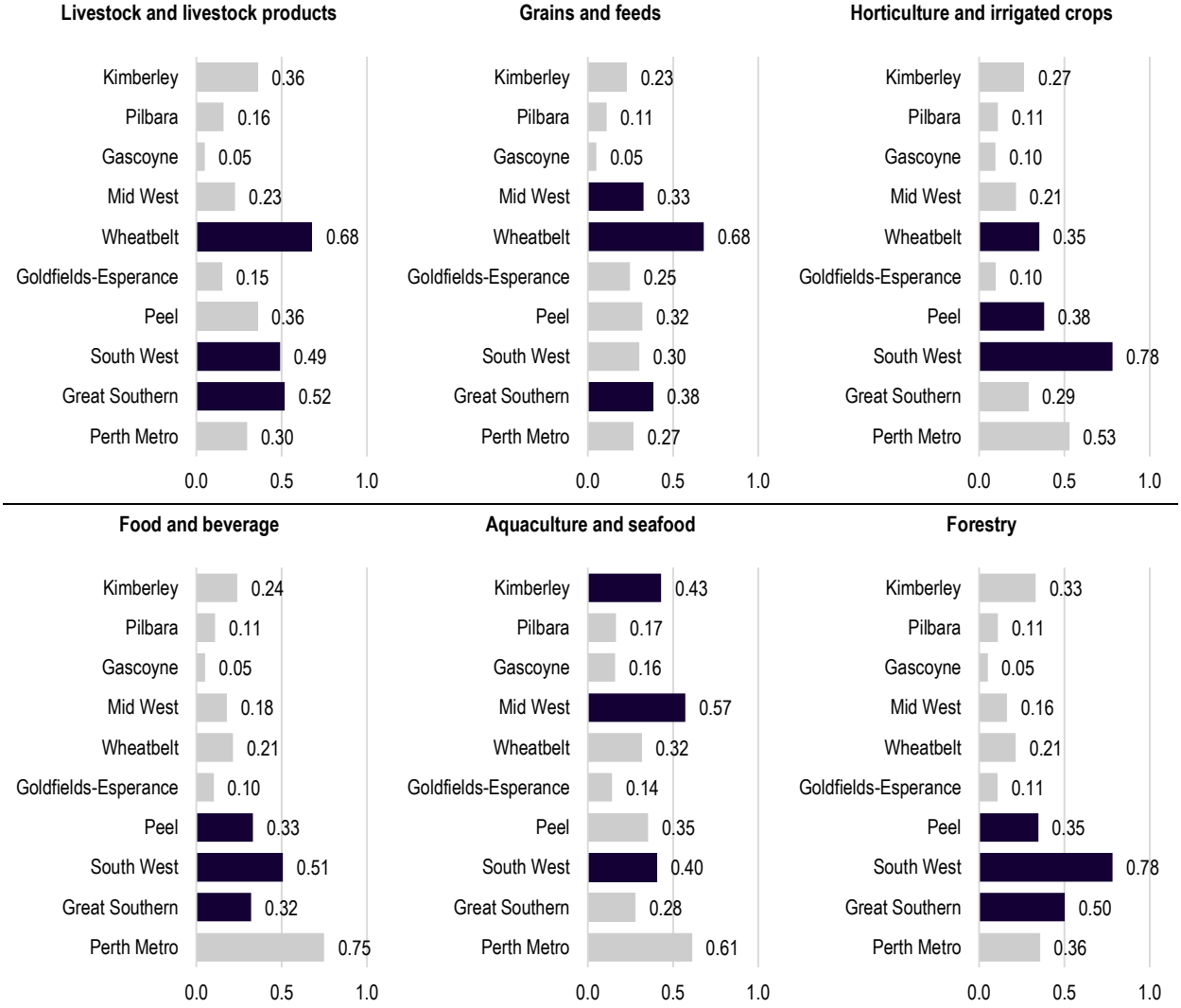
Livestock and livestock products

The Wheatbelt, Great Southern and South West regions score highly due to their strength in existing production of livestock and livestock products. The South West and Great Southern region's scores are also supported by their existing infrastructure.

Grains and feeds

The Wheatbelt region performs strongly in this sub sector due to its high production of grain and feed. The Mid West and Great Southern score next highest due to their modest production levels of grains and feeds and access to existing infrastructure.

Figure 14.11 Regional analysis – Opportunity 2, agriculture and agri-food focus



Source: ACIL Allen

Horticulture and irrigated crops

The South West region performs strongly in this sub sector due to its high production of horticulture but also its strengths in human capital and existing infrastructure. The Wheatbelt and Peel regions score next highest due to their modest production of horticultural products, existing infrastructure and productive growing climates.

Food and beverage

The Perth Metro region performs strongly in this sub sector due to its food and manufacturing processing capabilities as well as its access to existing infrastructure and human capital. The South West and Great Southern regions score next highest due to their modest production of food and beverage products and existing infrastructure.

Aquaculture and seafood

The Perth Metro, Mid West, South West and Kimberley regions performs strongly in this sub sector due to their existing production value of aquaculture and seafood products but also their relatively

high level of aquatic area under an existing licence. The South West and Perth Metro regions also perform strongly due to their existing infrastructure and access to human capital resources.

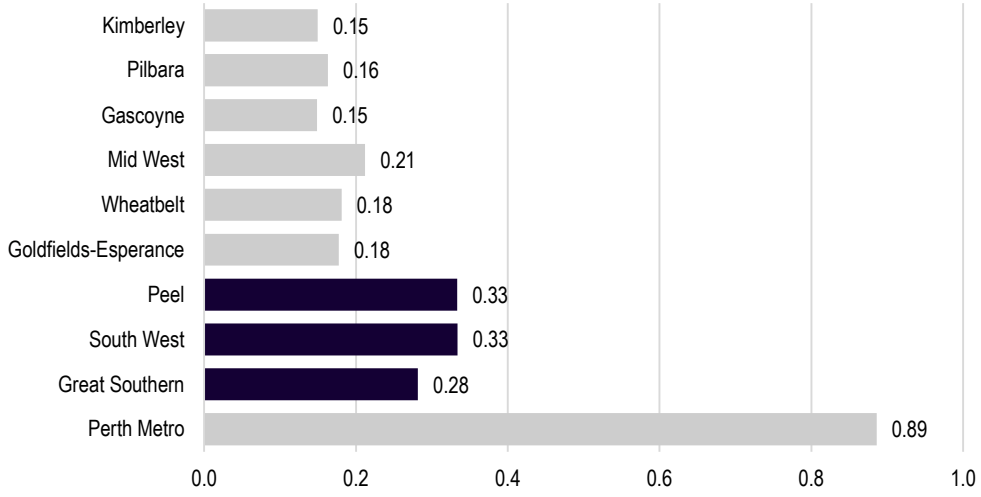
Forestry

The South West region performs strongly in this sub sector due to its high value of forestry and logging production as well as its access to existing infrastructure and human capital. The Great Southern region score next highest due to its moderately high value of forestry and logging production and its existing infrastructure.

High quality education exports

The Perth Metropolitan Area scores strongly due to its offering of tertiary education in addition to having strong human capital, existing infrastructure and climate. The Peel and South West score next best due to their strength in human capital, existing infrastructure and climate. These regions also have some satellite universities (**Figure 14.2**).

Figure 14.12 Regional analysis – Opportunity 2, education focus



Source: ACIL Allen

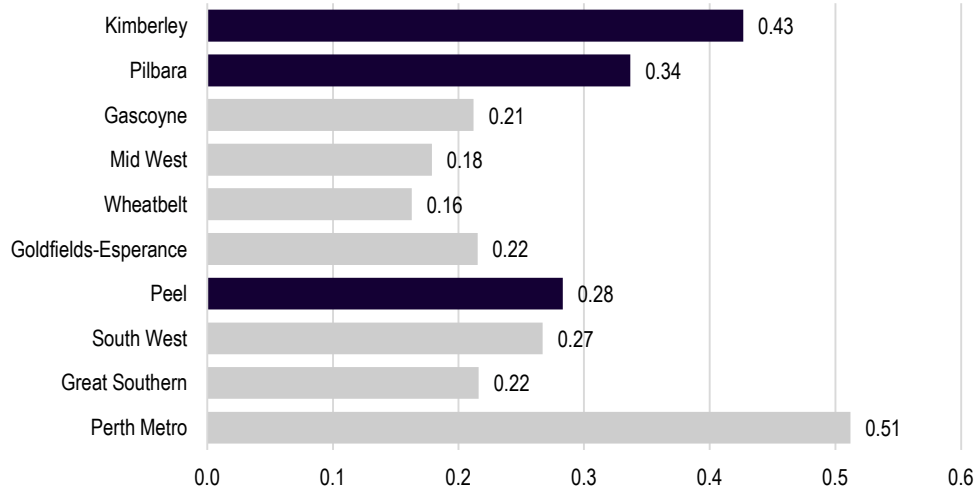
14.2.4 Opportunity 3: Promoting and leveraging Aboriginal heritage and enterprise

20%	10%	30%	10%	10%	0%	20%
Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

In this opportunity assessment, the indicators for Economy and Human Capital were overridden to better reflect the importance of the most relevant data sets centred on diversity and Aboriginal Australians (share of businesses which are Aboriginal Businesses, share of the region's population which are of Aboriginal descent, and the share of the region's population with one or more parents born overseas).

The Perth Metropolitan Area ranks highly due to its population diversity, high share of Aboriginal businesses and generally supportive business environment. The Kimberley and Pilbara regions also rank highly due to their high share of the State's Aboriginal population, the share of operating Aboriginal business and strong scores on natural environment indicators (which reflects the findings of the State Infrastructure Strategy Vision that Aboriginal economic development opportunities are strongly linked to culture and country).

Figure 14.13 Regional analysis – Opportunity 3



Source: ACIL Allen

14.2.5 Opportunity 4: Transition to zero net emissions technology

10%	0%	10%	0%	20%	60%	0%
Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

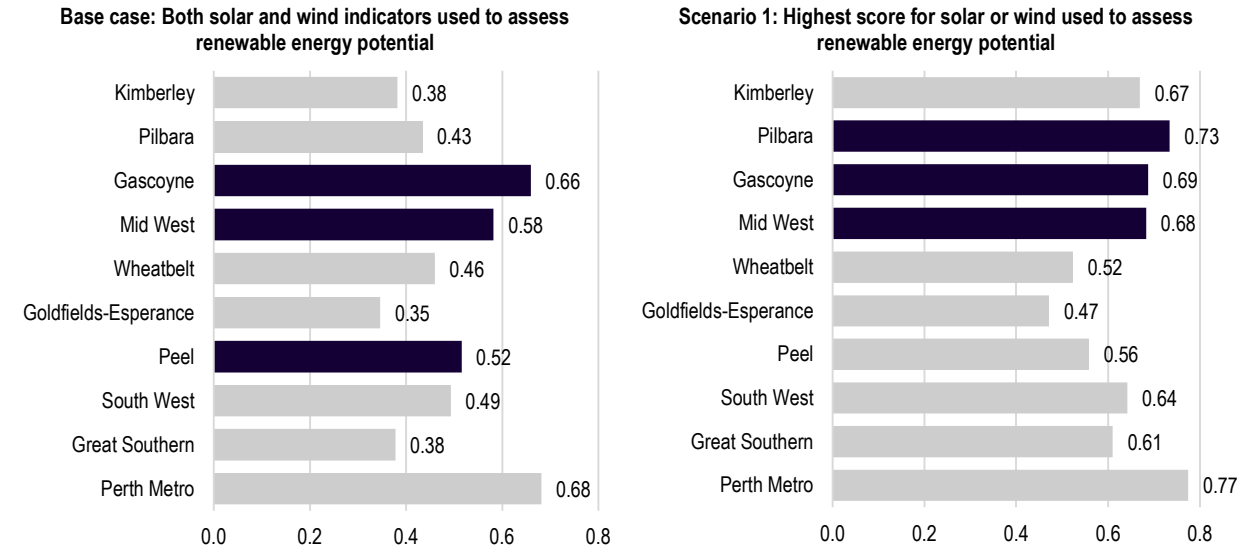
In this opportunity assessment, the indicators for Climate were overridden to restrict the strength assessment to underlying renewable energy generation capacity. Regions with capacity to provide both high quality wind and solar resources were scored more favourably than those with one resource, and those with limited resources scored poorly.

The Perth Metropolitan Area ranks highly due to its existing infrastructure and prospective renewable energy capacity from a wind perspective. The Gascoyne and Mid West regions score highly due to their favourable climate that can support renewable energy generation, however, they are weighed down by weaker scores in terms of infrastructure provision.

The Pilbara region scores relatively poorly on this initial assessment, because of its relatively poor scores on existing public infrastructure and relatively poor performance on the wind resources indicator. It was noted this initial scoring was contrary to private sector investment activity, and in particular the prospective Asian Renewable Energy Hub development.

To address this concern, ACIL Allen conducted a further analysis of the MCA to eliminate the penalties associated with a poor score in one of the two renewable energy generation capacity indicators, by adopting the maximum score across the two categories as the driver of the Climate strength. This is reflected in Scenario 1. The change results in scores increasing across all regions but notably in the Pilbara, Kimberley and Great Southern regions due to their strength in either wind speed or solar exposure.

Figure 14.14 Regional analysis – Opportunity 4 (including renewable energy adjustment)



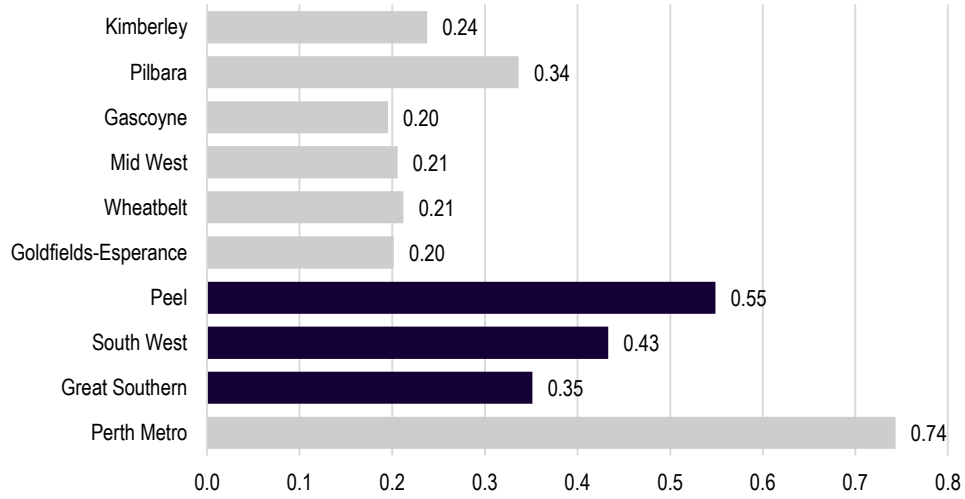
Source: ACIL Allen

14.2.6 Opportunity 5: Approaching the technology frontier

10%	10%	40%	0%	40%	0%	0%
Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

Opportunity Five was a challenging opportunity to assess within the MCA framework, as there was a lack of definition about the factors which would drive a region's competitive and comparative advantages in technology outside of access to telecommunications infrastructure. This is reflected in the weightings which apply to this opportunity, which are primarily centred on general human capital and access to existing infrastructure.

Figure 14.15 Regional analysis – Opportunity 5



Source: ACIL Allen

The Perth Metropolitan and Peel regions score high due to their strength in human capital resources and telecommunication infrastructure. Other regions score poorly because of their lack of capability in the important factors that underpin this opportunity, in particular existing infrastructure.

14.2.7 Opportunity 6: Value adding strategic commodities

0%	60%	5%	0%	25%	10%	0%
Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

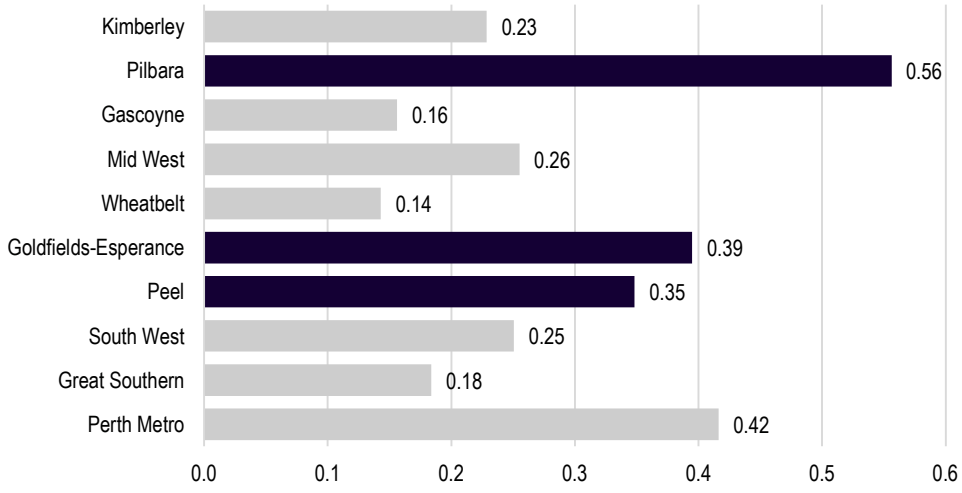
In this opportunity assessment, the indicators for Industry were overridden to restrict the strength assessment to underlying primary industry production capacity, being the factors of production associated with agriculture and mining. Regions with capacity to provide both agriculture and resources factors of production were scored relatively stronger than those with capacity to support one of the two.

The Pilbara region ranks highest on this opportunity due to its significant measured and proven mineral resources, the number of operating mines in the region, and its reasonably strong performance in renewable energy potential. The Goldfields-Esperance region also performs strongly due to its proven mineral resources and its number of operating mines.

As noted in Section 13, the framing of this opportunity within the State Infrastructure Strategy Vision is primarily centred on the opportunity to "value add to strategic commodities" first, with the specific industries where this could be achieved (minerals and agriculture) a secondary consideration. Agriculture and mining have very different factors of production and therefore underlying strengths. To better reflect this in the MCA, ACIL Allen conducted secondary analysis which isolated each region's underlying strengths in agriculture and mining separately.

It is important to note the sub-opportunity strengths assessment for Industry strengths is compiled for each region on the basis of a small subset of indicators. The results should be used as a guide only as opposed to a definitive assessment at this sub-opportunity level

Figure 14.16 Regional analysis – Opportunity 6



Source: ACIL Allen

14.2.8 Opportunity 6: Value adding strategic commodities – sector analysis

Strategic minerals commodities	0%	60% [21]	5%	0%	25%	10%	0%
Strategic agriculture commodities	0%	60% [22]	5%	0%	25%	10%	0%
	Economy	Industry	Human capital	Liveability	Infrastructure	Climate	Environment

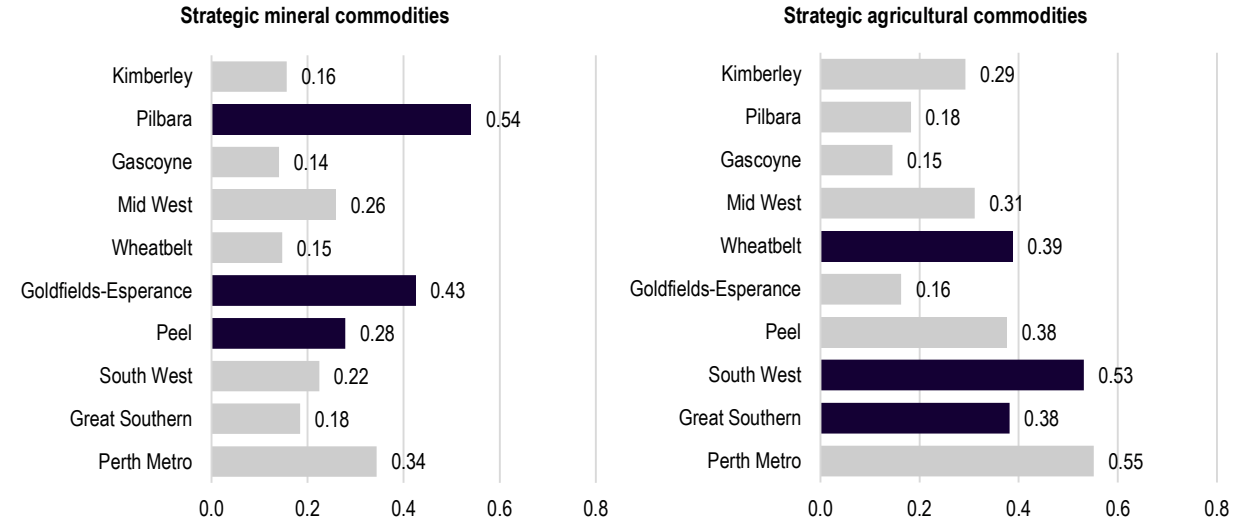
Strategic mineral commodities focus

The Pilbara region once again ranks ~~even~~ higher under this scenario due to the heavy weight placed on proven mineral resources and the share of operating mine sites. The adjustment to the climate indicator weights strengthens the Pilbara's score as it has a high solar exposure rating. The Goldfields-Esperance's score improves due to their share of existing mine sites. The Mid West region scores reasonably high due to its strength in renewable energy potential and its share of operating mine sites (**Figure 14.17).**

Strategic agricultural commodities focus

The South West and Wheatbelt regions scores the highest due to their availability of agricultural land, existing level of agricultural production, level of rainfall, existing infrastructure and moderately suitable climate for renewable energy. The Great Southern regions also score highly due to their availability of agricultural land, moderate level of agricultural production, existing infrastructure and climate (**Figure 14.17).**

Figure 14.17 Regional analysis – Opportunity 6 (industry focus)



Source: ACIL Allen

[21] The underlying industry indicators for the strategic minerals commodities have been overridden in the Multi-Criteria Assessment to only include 1) **operating mine sites** and 2) **proven and measured resources**.

[22] The underlying industry indicators for the strategic agricultural commodities have been overridden in the Multi-Criteria Assessment to only include 1) **agricultural land** 2) all six **agricultural sector value add** indicators and 3) **water resources.**

Melbourne
Level 9, 60 Collins Street
Melbourne VIC 3000 Australia
+61 3 8650 6000

Sydney
Level 9, 50 Pitt Street
Sydney NSW 2000 Australia
+61 2 8272 5100

Brisbane
Level 15, 127 Creek Street
Brisbane QLD 4000 Australia
+61 7 3009 8700

Canberra
Level 6, 54 Marcus Clarke Street
Canberra ACT 2601 Australia
+61 2 6103 8200

Perth
Level 12, 28 The Esplanade
Perth WA 6000 Australia
+61 8 9449 9600

Adelaide
167 Flinders Street
Adelaide SA 5000 Australia
+61 8 8122 4965

ACIL Allen Pty Ltd
ABN 68 102 652 148

acilallen.com.au