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Future
Drought
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Department of
Primary Industries and
Regional Development

GOVERNMENT OF
WESTERN AUSTRALIA



Coastal Great Southern Regional Drought Resilience Plan

Great Southern
Development Commission

2024

 **GREAT SOUTHERN**
Development Commission

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This document has been prepared using best available information and expert analyses to provide an evidence base for the Plan.

All information is provided to the best of our ability, and within the limits of our knowledge and resources. It is anticipated that elements of this Plan will require review and updating, as new information and research become available. The interventions identified in this Plan are conceptual and not endorsed by the State.

The implementation of these resilience building interventions and the proposed actions is subject to further development, feasibility studies and endorsement with consortia stakeholders and lead delivery agencies. The Chief Executive Officer of the Department of Primary Industries and Regional Development, and the State of Western Australia accept no liability whatsoever by reason of negligence or otherwise, arising from the use or release of this information or any part of it.

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Acknowledgement of Country

Ngala kattidj nidja Noongar moort boodja wer gora
h-gorah wer yy-i wer mila. Ngala koort-
kwab nidja boodja-k wer kattidj netingar wer bee-
dee-eer wer gorah-gorah wer yy-i wer mila.

We acknowledge this is Noongar people's country
from long, long ago to now to the future. We are
happy to be on this country and acknowledge
ancestors and elders from long, long ago to now to
the future.

Welcome to the Coastal Great Southern Region Drought Resilience Plan.

This plan has been made possible with funding from the Australian Government's Future Drought Fund (FDF), with funding and delivery support from the WA State Government.

It builds upon the work and learnings from the Inland Great Southern Drought Resilience Plan, which was delivered as part of the pilot FDF Regional Drought Resilience Program. This subsequent plan is for coastal areas (coastal subregion) of the Great Southern region.

We are grateful to the many people who gave this project their time and expertise and shared their experiences. These workshops, interviews and surveys held over the course of the project provided valuable grassroots insights and context, which directly informs the focus areas and actions put forward in this plan to build drought resilience in the region.

In particular, our Project Advisory Group, which included representatives from the four local government areas that make up the coastal subregion – the City of Albany and Shires of Plantagenet, Denmark and Cranbrook – Wagyl Kaip Southern Noongar Aboriginal Corporation, South Coast Natural Resource Management and DPIRD, provided valuable guidance in shaping the plan.

Preface

Australia is a country with a history of drought. First Nations people have been Caring for Country for thousands of years, preserving natural resources and environmental systems which were essential for survival on a continent covered by 70% desert and semi-arid land.

“A key value of Noongar life is kalip, the amassing and preservation of knowledge about people, their environment and its systems....As a practical knowledge, it informs when various activities such as hunting, fishing and burning should be undertaken. As a spiritual knowledge, it holds the story of bigger natural cycles, such as the annual rain cycles and the longer climatic cycles”¹

Farmers and regional communities are all too familiar with the significant social, economic and environmental impacts of drought. However it is clear that climate change is increasing the frequency and intensity of drought at a rate that exceeds the bounds of historical norms².

Current climate forecasts predict that with extreme weather conditions, concurrent climate hazards are likely to compound the overall climate risk for sectors and regions³. This means that in coming decades the impact of more frequent and intense droughts, and the increased likelihood of natural disasters that are a part of the bigger picture of a warming climate – for example extreme heatwaves, severe bushfires, more intense cyclones and flooding – will put agricultural industries and regional communities under unprecedented pressure.

The Future Drought Fund (FDF) is a long term \$5 billion investment by the Australian Government to build drought resilience in Australia’s agricultural sector, landscapes and communities. The FDF has three interconnected strategic priorities:

- Economic resilience for an innovative and profitable agricultural sector.
- Environmental resilience for sustainable and improved functioning of farming landscapes.
- Social resilience for resourceful and adaptable communities.

To deliver on its strategic priorities, the FDF funds drought resilience programs across four themes, which aim to help Australian farmers and communities become more prepared for, and resilient to, the impacts of drought.

¹ Robertson et al. in press, Valuing Noongar People and Practices in Drought Resilience, Noongar Land Enterprise Group.

² CSIRO, Our Future World, p.9.

³ CSIRO, Our Future World, p.9.

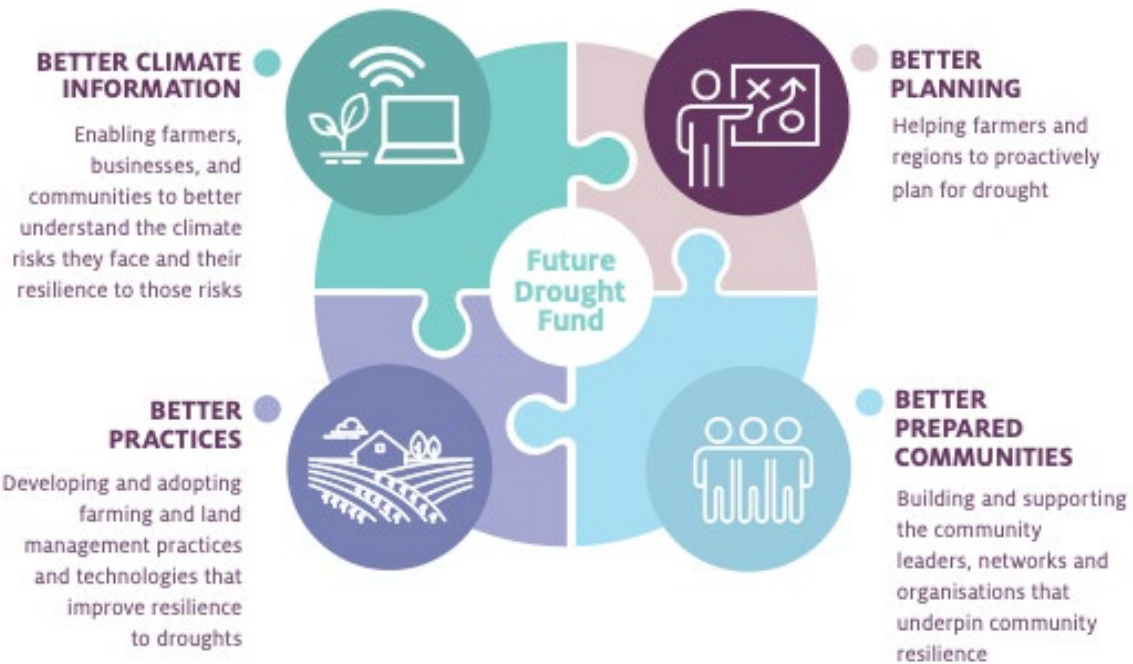


Figure 1. Future Drought Fund Investment Themes

The Regional Drought Resilience Planning Program (the RDRP Program) is one of the eight foundational programs under the FDF Theme ‘**Better Planning**’.

It involves the Australian Government working with all state and territory governments to support regions in developing **Regional Drought Resilience (RDR) Plans** to prepare for and manage future drought risks.

By working in this way, the RDRP Program provides a national framework for regional drought resilience planning that contributes to the FDF’s strategic priorities, while also providing flexibility for jurisdictions to deliver a program that builds on existing regional-specific expertise and delivery mechanisms.

The RDR Plans are:

- community-owned and led involving local governments, regional organisations, the agricultural sector and local Drought Hubs;
- identify actions to prepare for future droughts based on evidence;
- build on existing planning; and
- draw out regional needs and priorities to inform future investment.

They support regional communities to:

- build their economic, environmental and social resilience to future droughts;
- be in a stronger position to adapt to climate change;
- form stronger connections and networks within and beyond regions; and
- apply best practice data and information to make better decisions.

The foundational year saw 23 regions across Australia announced as the first to develop plans. In 2022, the program was extended to 2025 with an additional \$31 million investment, so more regions could participate. Small grants will now also help regions take forward priority actions identified in the RDR Plans.

This Coastal Great Southern RDR Plan is the second RDR Plan to be delivered in the Great Southern region.

The Inland Great Southern Regional Drought Resilience RDR Plan was one of three RDR Plans delivered in the foundational year of the RDRP Program in Western Australia (RDR Plans were also delivered in the Southern Wheatbelt and Mid-West).

The Great Southern Development Commission (GSDC) partnered with the Department of Primary Industries and Regional Development (DPIRD) to support delivery across the Shires of Jerramungup, Kent, Gnowangerup, Katanning, Kojonup, Cranbrook, Woodanilling and Broomehill-Tambellup.

The Inland Great Southern RDRP was released in late 2023. The FDF and DPIRD have allocated \$300,000 to develop priority projects identified in the action plan for investment through FDF and other funding streams.

This plan for the coastal areas of the Great Southern has benefited from leveraging the substantial knowledge base and learnings gained from delivery of the plan for the Inland Great Southern region, providing opportunities to refine and improve processes and approaches.

Consideration has been given to the broader context of climate change, and the influence of megatrends, and how this could impact and support regional communities seeking to build drought resilience in coming decades.

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CEO Foreword

TBC for final plan

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Executive Summary

At first glance, it is perhaps surprising that our coastal subregion which enjoys a cooler, more temperate climate in comparison to drier and hotter inland areas, should have a need for a drought resilience plan.

The coastal subregion is part of a globally recognised biodiversity hotspot, with pristine waterways, fertile soils and reliable rainfall. This is echoed in the traditional Menang name for boodja in Albany and surrounding coastal areas – “Kinjarling” meaning “place of plenty” and often interpreted as a place of plentiful rain.

The coastal subregion’s environmental systems underpin a thriving agricultural sector with an international reputation for premium wines, seafood, horticulture and meats.

Yet despite historically reliable rainfall, the coastal subregion – as is the case across regional Australia – is becoming increasingly vulnerable to the environmental, social and economic impacts of a drying climate.

“This summer has already produced large areas of dying bushland which we are noticing everywhere along the coast, which increases the fire risk and reduces habitat” (stakeholder survey response)

This comes into sharp focus in both climatic data and the lived experiences of local farmers, grower groups, natural resources organisations and community members which are captured in this plan.

The evidence base for this plan – culminating in a Drought Vulnerability Assessment – indicates that across the coastal subregion, annual rainfall is decreasing, rainfall patterns are changing, temperatures are rising, and soils are drying. This presents new and unprecedented challenges for agriculture and ecosystem sustainability.

Importantly, the plan recognises that the impacts of drier seasons and drought stretch far beyond the agricultural sector, bringing uncertainty and strain to local communities and the broader economy.

Recognising that the impacts of drought are both wide ranging and deeply interconnected, the plan is structured under five key themes:

- Resilient Water
- Resilient Communities
- Resilient Agriculture
- Resilient Landscapes
- Resilient Regional Economy

The Drought Vulnerability Assessment – which is shaped around these five themes – applies a triple bottom line approach, drawing on environmental, social and economic factors sourced from data, technical reports and stakeholder engagement to provide an assessment of the drought vulnerability and adaptive capacity of the region.

The key findings highlight that there are opportunities to leverage the inherent strengths of the coastal subregion. For example, the coastal subregion has larger populations and more diverse economies than inland areas, which offers some protective factors against drought, and presents opportunities for diversification, value-add and new industries, particularly in the context of globalisation and trends in food production and increased demand for food provenance.

Conversely, the agricultural sector includes a high proportion of small landholders, and these smaller scale operators tend to be more vulnerable to the economic shocks of a bad season and have less resources to invest in planning and infrastructure to build drought resilience.

Infrastructure has a major influence on the capacity of a regional economy to grow, remain resilient and leverage opportunities. The infrastructure audit conducted as a part of this plan mapped transport links, including road, air, rail and sea, and energy and communication networks, and considered water demand and supply.

The audit highlights that investment in water infrastructure and management in the coastal subregion is critical. With existing use of groundwater and surface water sources already at sustainable limits, there are insufficient water resources available to support the projected growth of agriculture.

The key findings from the Drought Vulnerability Assessment and stakeholder engagement help inform an **Action Plan** with focus areas, outcomes and implementation approaches, to build drought resilience in the coastal subregion.

The Action Plan has a **strong focus on proactive engagement** with farmers and communities around climate risks and providing practical pathways to access finance, education and training to promote sustainable farming practices.

The Action Plan provides **pathways for increased local collaborations**, including First Nation's led initiatives to harness traditional ecological knowledge and land management practices to protect the regions natural resources and biodiversity.

It also seeks to **leverage the knowledge base and established networks** of local catchment groups and grower groups, and the South-West Drought Hub, and where relevant, to align with initiatives and funding programs being delivered across other regions and jurisdictions.

Community ownership of this plan is integral to its success. Strong participation in the development of this plan shows that there is clearly a collective will and drive from within our communities to put this plan into action. This community support, coupled with a strong evidence base means that the coastal subregion is well placed to respond to future drought risks and access opportunities to build drought resilience.

Key Findings

Climate Trends and Impact

Over the past century, the Coastal Great Southern region has experienced significant climate changes, including rising temperatures, and altered rainfall patterns. A 15% decline in April to October rainfall since 1970, particularly in the southwest, presents substantial challenges for agriculture and ecosystem sustainability.

Environmental Health Indicators

The environmental condition score for Western Australia in 2023 was 5.5, down from 5.9 in 2022. Indicators such as exposed soil, soil moisture, leaf area, and plant growth are critical for understanding drought's environmental impact.

Agricultural Vulnerability

Key vulnerabilities include inadequate water infrastructure, reliance on rain-fed pasture production, and a high prevalence of small businesses with low turnover. Addressing future rainfall patterns and investing in water harvesting infrastructure is essential.

Effects of Climate Variability

Climate variability is anticipated to reduce water availability for crops and livestock, potentially diminishing yields so challenging farming operations. This report underscores the need for adaptive management strategies to mitigate these effects and enhance water use efficiency.

Farming Systems and Agricultural Value

The Coastal Great Southern Region's farming systems are generally livestock dominant, although broadacre cropping is significant in some parts of the region. The agriculture sector, including the eastern side of the Shire of Cranbrook, is valued at \$571.1 million. Livestock sales and broadacre cropping are major contributors, with livestock alone valued at almost \$300 million in 2021.

Diversification

The Coastal Great Southern Region has a significant level of economic and agricultural diversification. This diversification plays a critical role in enhancing the resilience of the region's communities and industries against drought and other climate-related challenges.

Economic impact

Can create severe financial hardship for farm businesses dependent on rainfall for productivity. Planning, preparedness and financial resources provide a buffer although ongoing dry conditions with declining terms of trade and high interest rates can impact severely on the financial viability of farm businesses.

Community Priorities

The Strategic Community Plans for each Local Government Authority in the Coastal Great Southern region reveal that residents highly value the peaceful lifestyle, the natural environment, community spirit, safety and supportive neighbours. These values are integral to this vulnerability assessment and resilience planning.

Social Impact

Drought's social impacts are extensive, affecting employment, education, family relationships, and community resources. These impacts lead to declines in health and well-being, highlighting the necessity for mental health support and community engagement strategies.

Adaptive Capacity and Social Capital

Enhancing adaptive capacity and social capital is crucial for resilience. Indicators such as education, gender inequality, mental health, and access to water resources are vital for assessing vulnerability and formulating effective mitigation strategies.

The Plan

This plan provides a roadmap for building drought preparedness and resilience in the coastal subregion. It highlights a pressing need for comprehensive, multi-faceted strategies to address the unique, region-specific challenges posed by drought.

The three key elements are:

- Regional Context
- Drought Vulnerability Assessment
- Building Drought Resilience Action Plan

The plan is community-led and owned. It has been shaped by an extensive, grassroots stakeholder engagement process which was held across the coastal subregion and includes innovative solutions to build regional drought resilience across the agricultural sector, allied industries and communities.

The Drought Vulnerability Assessment provides the evidence base which incorporates economic, social and environmental resilience factors within the coastal subregion.

From this evidence base, the Building Drought Resilience Action Plan (the Action Plan) puts forward focus areas and implementation approaches to address the needs and priorities of the coastal subregion, which can be used to target public and private sector investment to build drought resilience. Implementing these adaptive management strategies and investing in critical infrastructure will be vital in securing the long-term viability and prosperity for the coastal subregion's agricultural sector and communities.

Importantly, the plan recognises that future climate and drought uncertainty is at the heart of drought resilience. With this in mind, monitoring and evaluation, governance and implementation processes for this plan have the in-built flexibility to respond (and adapt) to this uncertainty.

Project Governance

The governance framework has developed in line with the parameters set by the DAFF, the agency responsible for delivery of the FDF and the RDRP Program.

It includes State-level reporting mechanisms to the DAFF via DPIRD, during the development of the plan and subsequent monitoring and evaluation reporting requirements during implementation of the Action Plan.

At a local level, the GSDC supported delivery of the plan. This included establishment of the Project Advisory Group (PAG) which provided guidance and strategic direction.

The PAG included representatives from the local government authorities, together with the GSDC and other key stakeholders. Member organisations were:

- City of Albany
- Shire of Denmark
- Shire of Plantagenet
- Shire of Cranbrook

- South Coast Natural Resource Management
- Wagl Kaip Southern Noongar Aboriginal Corporation
- DPIRD

Early engagement with the PAG was instrumental in the development of the context, definitions and critical assumptions for the project. As development of the plan progressed, the PAG also proved a valuable resource for “ground-truthing” data and assumptions.

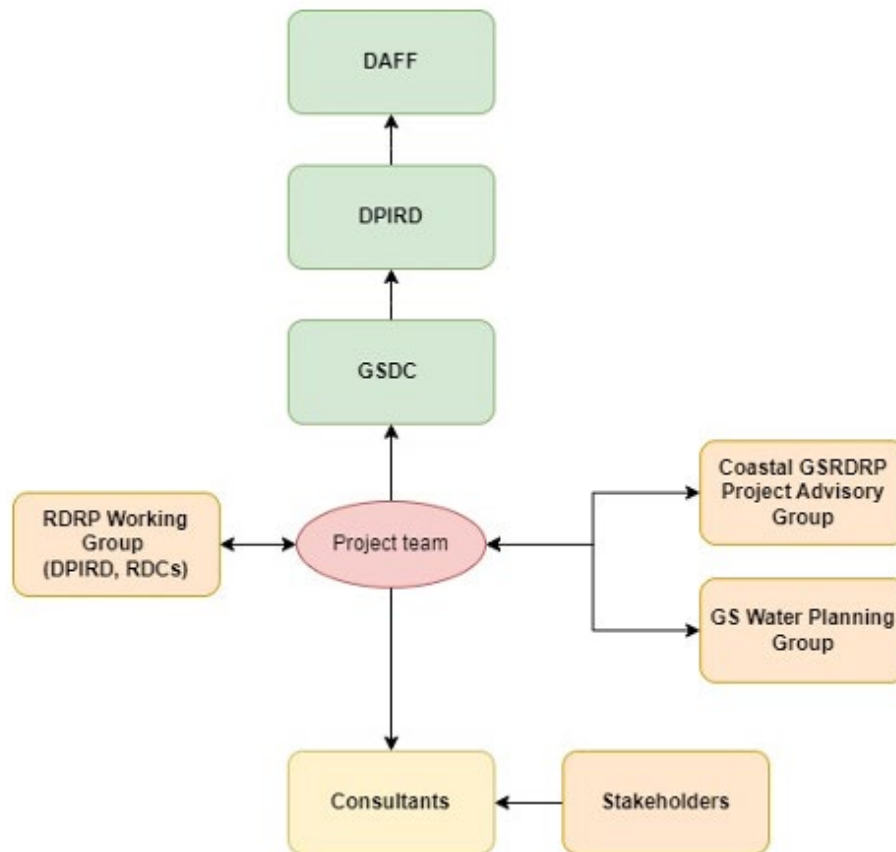


Figure 2. Governance Structure

The Coastal Great Southern Region (Coastal Subregion)

“The coastal subregion – which forms the project boundary area for this plan – is defined as the City of Albany and the Shires of Denmark and Plantagenet, as well as the Frankland River subdivision of the Shire of Cranbrook”

Early engagement with the Project Advisory Group (PAG) helped to set the parameters for this plan. A key part of this was the inclusion of the Frankland River subdivision (which sits in the inland Shire of Cranbrook) within the coastal subregion boundary, recognising the synergies between Frankland River and coastal agricultural areas in terms of land use (viticulture) and rainfall zones.

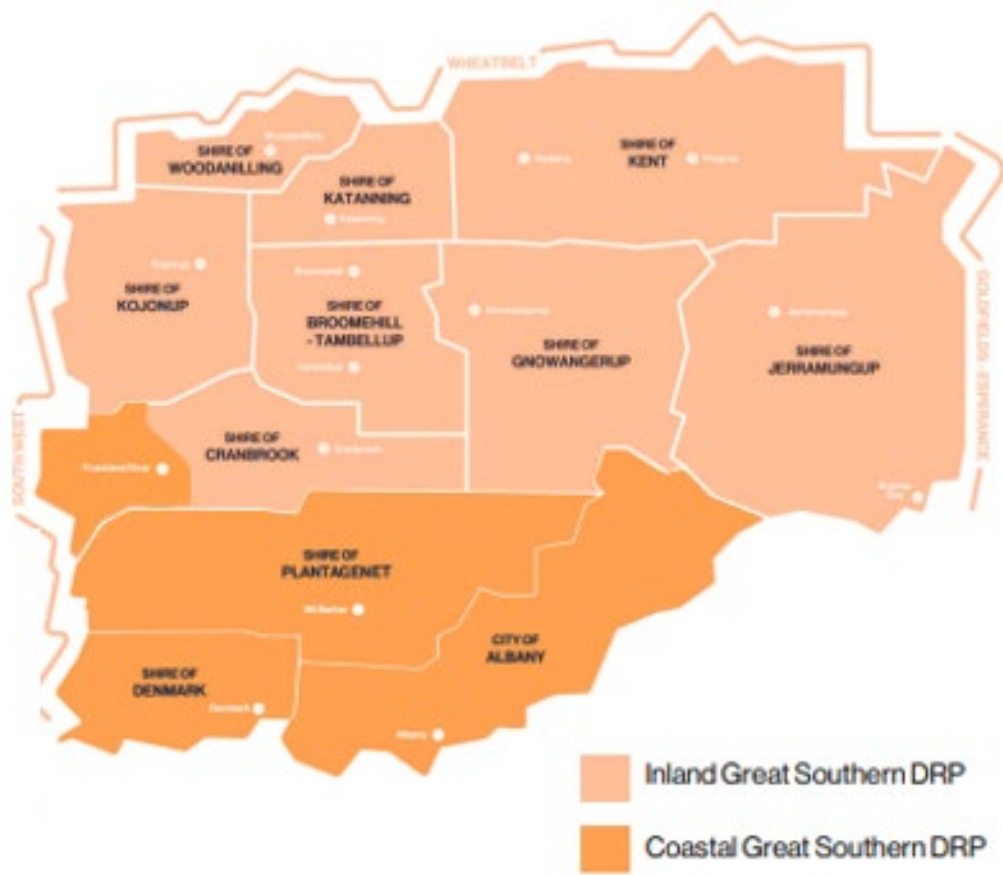


Figure 3. Consortia areas of the Great Southern for Regional Drought Resilience Planning

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Vision, Goals and Themes

Our vision reflects a strong desire to build robust and adaptable communities, that are capable of thriving despite the social, environmental and economic challenges posed by drought:

“To continually improve our ability to adapt to the impacts of drier seasons and climate variability within our region’s environment, communities, and economy”.

The plan’s conceptual framework aligns with the strategic priorities of the FDF, and the key themes developed for the Inland Great Southern plan. These key themes are:

- Resilient Water
- Resilient Communities
- Resilient Agriculture
- Resilient Landscapes
- Resilient Regional Economy



Figure 4: Coastal Great Southern drought resilient themes

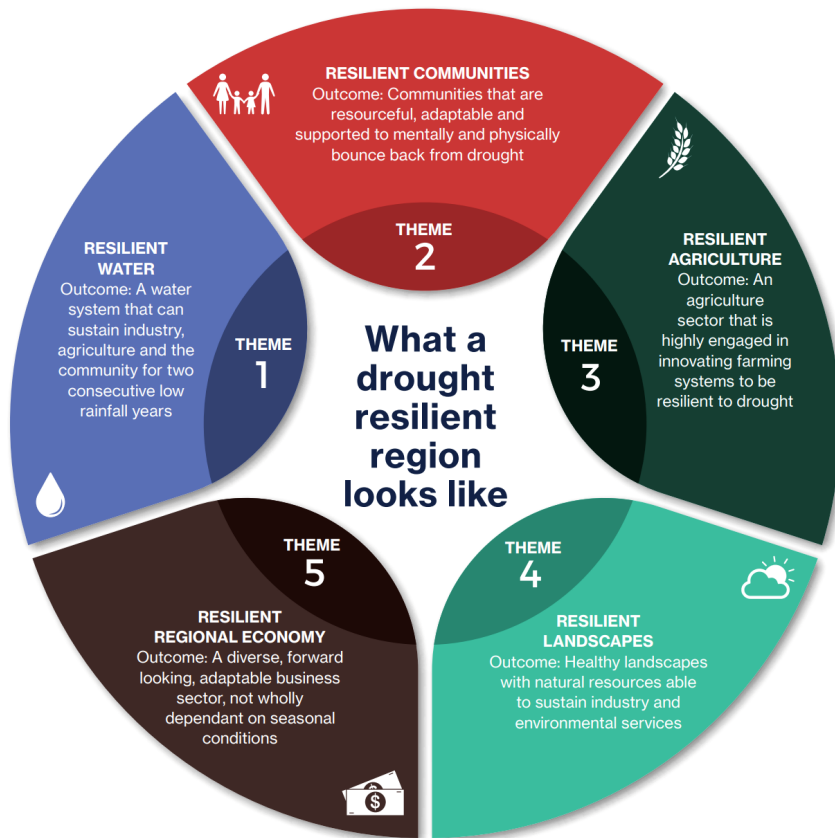


Figure 5: Coastal Great Southern drought resilient themes and desired outcomes

“Focus on improving and adapting what we already have and do” (stakeholder survey response)

Definitions

Defining Drought

The problem with drought is that we don’t know when it starts or ends, it often evolves slowly, and measuring or quantifying the impact is difficult, until after the event. It can be highly localized or widespread and the impact can be very farm specific

The Project Advisory Group (PAG) defined drought for the Coastal Great Southern RDRP as follows:

“Drought: A prolonged period of abnormally dry conditions that impact negatively on water availability and diverse agricultural production in a region, and consequently impacts negatively on the economy and environment of the region and the health and wellbeing of its residents”

There was extensive discussion around the definition of drought within community surveys and stakeholder workshops. For example, stakeholders variously defined drought as:

“Drought is unpredictable, local, below average rainfall over multiple seasons causing financial, social and environmental hardship on a region”

“Dry season, a period of dry conditions, seasonal or multi-year within a drying climate scenario”

In the Inland Great Southern RDRP, community groups defined drought as “consecutive dry seasons where there is inadequate growing season rainfall over two or more seasons”. The definition of drought used in this plan for the coastal subregion, which has more reliance on summer rainfall and livestock-dominant farming systems using perennial pastures, reflects that drought is different in the coastal subregion in comparison to inland areas.

“Going back 100 years, we have experienced significant shortages and a lot of variation in the seasons: intermittent wet and dry. We don’t have zero rain years as experienced in Eastern States (we tend to have green droughts)” (stakeholder survey response)

Defining Resilience

“Resilience: The capacity of a system to absorb a disturbance and reorganise so as to keep functioning in the same kind of way. Rather than just ‘bouncing back,’ resilience is all about changing and adapting to circumstances, rather than having them change you”

The definition of resilience used in this plan, is defined in terms of the ability of a system to absorb shocks, to avoid crossing a threshold into an alternate and possibly irreversible new state, and to regenerate after disturbance⁴.

The building of resilience is defined by the Department of Agriculture Fisheries and Forestry as ‘increasing human capacity for anticipation and learning to minimise environmental, financial and social costs through enhanced adaptive capacity’⁵.

Inherent to the definition of resilience applied, is recognition that building resilience can involve incremental, transitional and transformative changes. This is reflected in the focus areas and actions put forward for Building Drought Resilience.

Defining Agriculture

“Agriculture refers to both the growing and cultivation of horticultural and other crops and the controlled breeding, raising or farming of animals (excluding aquaculture) and allied industries (e.g. related supply chains)”

⁴ Resilience Alliance, 2009.

⁵ DAFF. (2006). National Agriculture and Climate Change Action Plan 2006-2009. Department of Agriculture, Fisheries and Forestry, Canberra.

Early engagement with the PAG also shaped the definition of 'agriculture', which reflects the key subregional industries of broadacre farming, horticulture, viticulture, meat/poultry, dairy, forestry and specialty products (honey, eggs, flour).

Aquaculture is not included within the definition of agriculture and actions specific to this sector are not captured in this plan. However, the economic significance of aquaculture is captured as part of the broader regional economic analysis.

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Our Region

Overview

The following section provides the regional context for this plan. It considers socio-economic indicators and trends, as well as the future impact of global megatrends, including climate change, on the coastal subregion.

It also includes the results of an infrastructure audit, which maps existing transport, water, energy and communications links, systems and resources across the coastal subregion, and assesses the capacity of infrastructure to respond to future demand and a changing climate.

Summary tables of the subregion's geographic, demographic and economic challenges and opportunities, and more detailed insights from the infrastructure audit are included at **Appendix 1 and Appendix 2** to this plan.

The analysis in this section has guided the development of stakeholder consultation tools, the drought vulnerability assessment and the action plan for building resilience across the coastal subregion.

Further supporting evidence is provided in the ***Coastal Great Regional Context Report*** which is available on the Great Southern Development Commission website: www.gsdsc.wa.gov.au.

The Coastal Great Southern Region (the coastal subregion)

The Great Southern region is located on the south coast of WA. It comprises eleven coastal and inland local government areas, which cover a combined 39,000 km². Over 80% of the region's population is concentrated along the coast.

The coastal subregion – which forms the project boundary area for this plan – is defined as the City of Albany and the Shires of Denmark and Plantagenet, as well as the Frankland River subdivision of the Shire of Cranbrook.

The Shire of Cranbrook was also included in the Inland Great Southern Drought Resilience Plan; however, the western part of the Shire is in a high rainfall zone and has similar growing conditions, industry and produce to the coastal areas of the region.

The coastal subregion is a part of the First Nations Wagyl Kaip Southern Noongar region and falls within the Menang and Ganeang dialectal boundaries.

The coastal subregion has a cooler more temperate climate than inland areas of the Great Southern.

The subregion is part of an internationally recognised biodiversity hotspot, with many plant and animal species that are endemic to the region. It encompasses rugged coastline and the highest mountain peaks in Southern WA, jarrah, marri, karri and mallee woodlands, salt lakes and an ancient sandplain to the south.

The subregion is within productive agricultural climate zones, and around two-thirds of the vegetation has been cleared over much of the agricultural region, with some areas having less than 5-10% of original bushland.

Outside of relatively high-cost flights between Albany and Perth, populations are largely connected and serviced by road networks.



Figure 6. The Coastal Subregion and Wagyl Kaip Southern Noongar Region

Demographic Profile

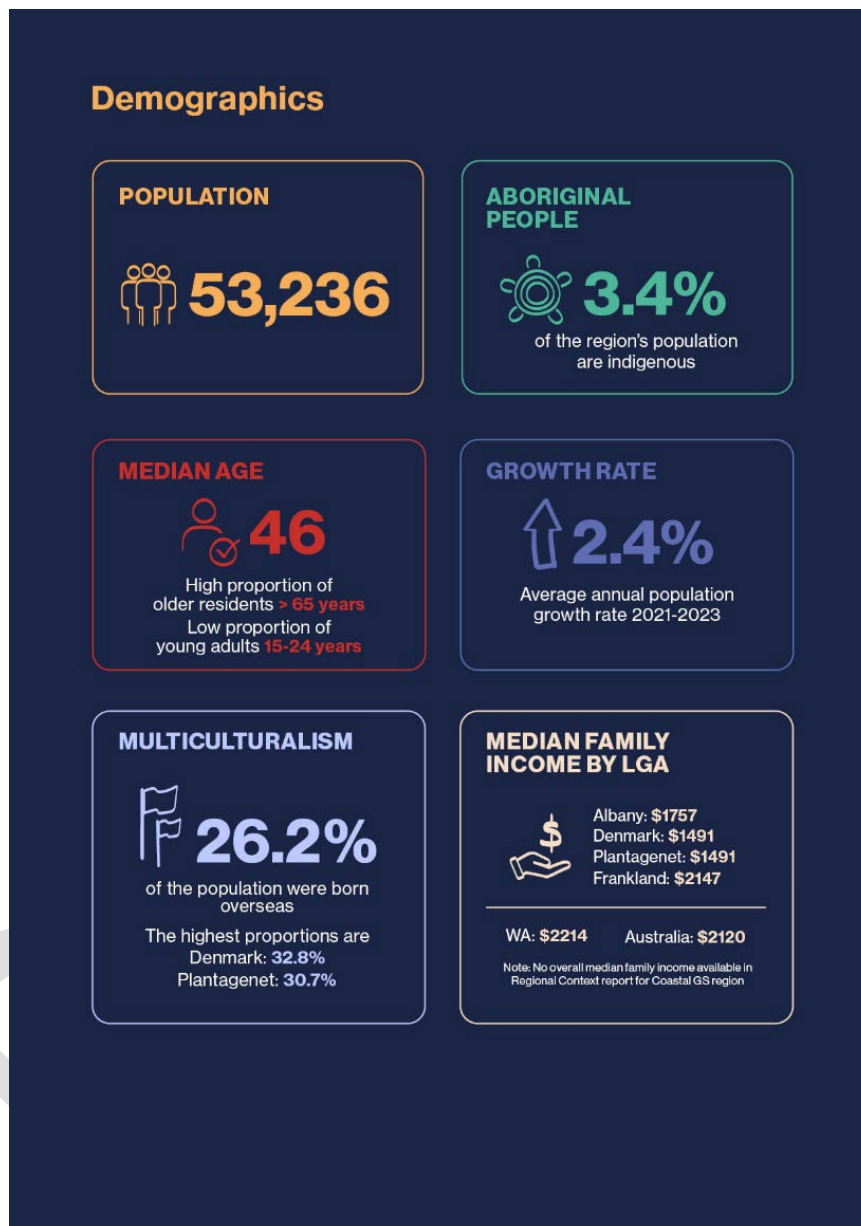


Figure 7. Coastal Subregion Demographic Profile

Albany is the main regional centre for the entire Great Southern region, with a population of 38,763. The Shire of Denmark has a population of 6,310, the Shire of Plantagenet has a population of 5,388 and Cranbrook Shire 1,100.⁶

Despite only having 2.3% of the total state population at the time of the 2021 census, net migration in the Great Southern represented 9.6% of all net regional migration in the state between 2022 and 2023, with 8.3% attributed to coastal areas.

⁶ Keston Economics (2024), Regional Context Coastal Great Southern Regional Drought Resilience Plan. Great Southern Western Australia.

Population growth along the coast represents in-migration from lifestyle retirees and 'sea-changers', as well as people moving from inland Great Southern communities to coastal areas. Population declines in some smaller inland communities in the region are likely a part of a broader trend around shifting agricultural practices, farm consolidation and advances in technology; moving away from the requirement for large population bases.

Continued growth is projected in the coastal subregion, suggesting a population of 58,220 by 2031⁷.

Whilst predicted population growth in the coastal subregion will create new opportunities for regional economic growth, it will also place additional pressure on existing infrastructure and services, particularly from the rapidly ageing population.

Balancing this growth with the sustainability of smaller inland communities represents a challenge for the Great Southern region more broadly.

⁷ <https://www.wa.gov.au/government/document-collections/western-australia-tomorrow-population-forecasts> - 2019

Economic Profile⁸

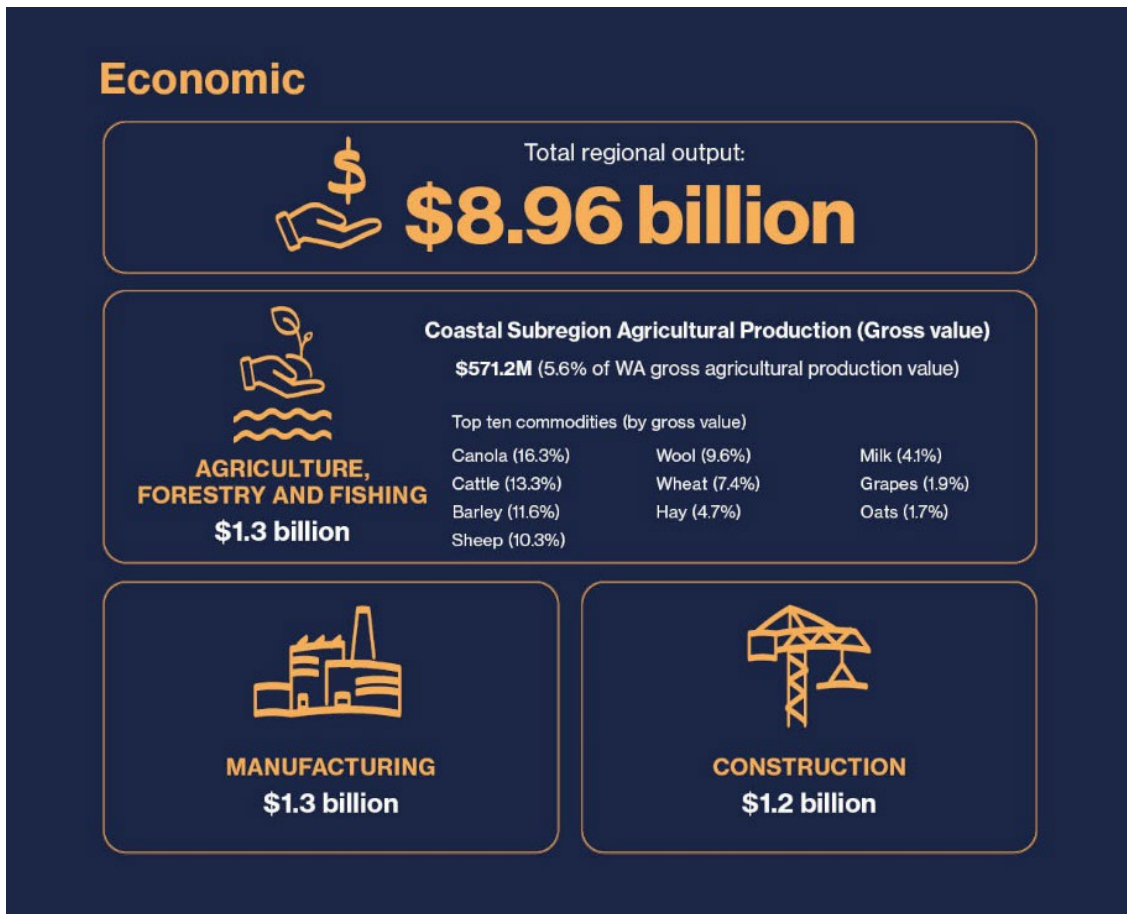


Figure 8: Coastal Subregion Key Sectors by Economic Output

The coastal subregion has a relatively strong and diverse economy, with steady population growth and investment across key sectors. The estimate of Gross Regional Product (GRP) for the coastal subregion was \$4.6 billion in 2023⁹. This represents 80% of the broader Great Southern GRP and 1% of Gross State Product (GSP).

⁸ Core economic data sourced from REMPLAN. No economic data is available at the Frankland River subdivision level; therefore economic context is for the broader Shire of Cranbrook.

⁹ GRP is the net measure of wealth generated by the region - all forms of final expenditure, including consumption by households, consumption by governments, additions or increases to assets (minus disposals) and exports (minus imports) are added together.

Table 1: LGA Contributions to GRP in the Great Southern region

| Great Southern LGAs | GRP | Per Capita GRP | Per Worker GRP | % Total Coastal Great Southern |
|-------------------------------------|------------------------|-----------------|------------------|--------------------------------|
| Albany | \$3,501,072,165 | \$90,320 | \$202,831 | 76.7% |
| Cranbrook | \$142,762,531 | \$129,784 | \$260,516 | 3.1% |
| Denmark | \$436,571,222 | \$69,187 | \$210,904 | 9.6% |
| Plantagenet | \$483,428,932 | \$89,723 | \$218,845 | 10.6% |
| Total Coastal Great Southern | \$4,563,834,850 | \$88,513 | \$206,621 | 80.0% (total GRP) |
| Total Great Southern | \$5,703,524,195 | \$92,172 | \$212,114 | - |

A detailed location quotient analysis undertaken for this plan demonstrates subregional industry strengths in agriculture, forestry and fishing across employment, output and value add. It also highlights some variation in terms of industry focus and value between LGAs in coastal subregion.

A more diverse industry profile and higher value output in the City of Albany is in line with the City's role as a regional centre, with organisations and businesses servicing residents living in Albany and those travelling from elsewhere in the region to access services. Albany is also the largest employer in the subregion, driving employment across key sectors including agriculture, retail, healthcare and hospitality.

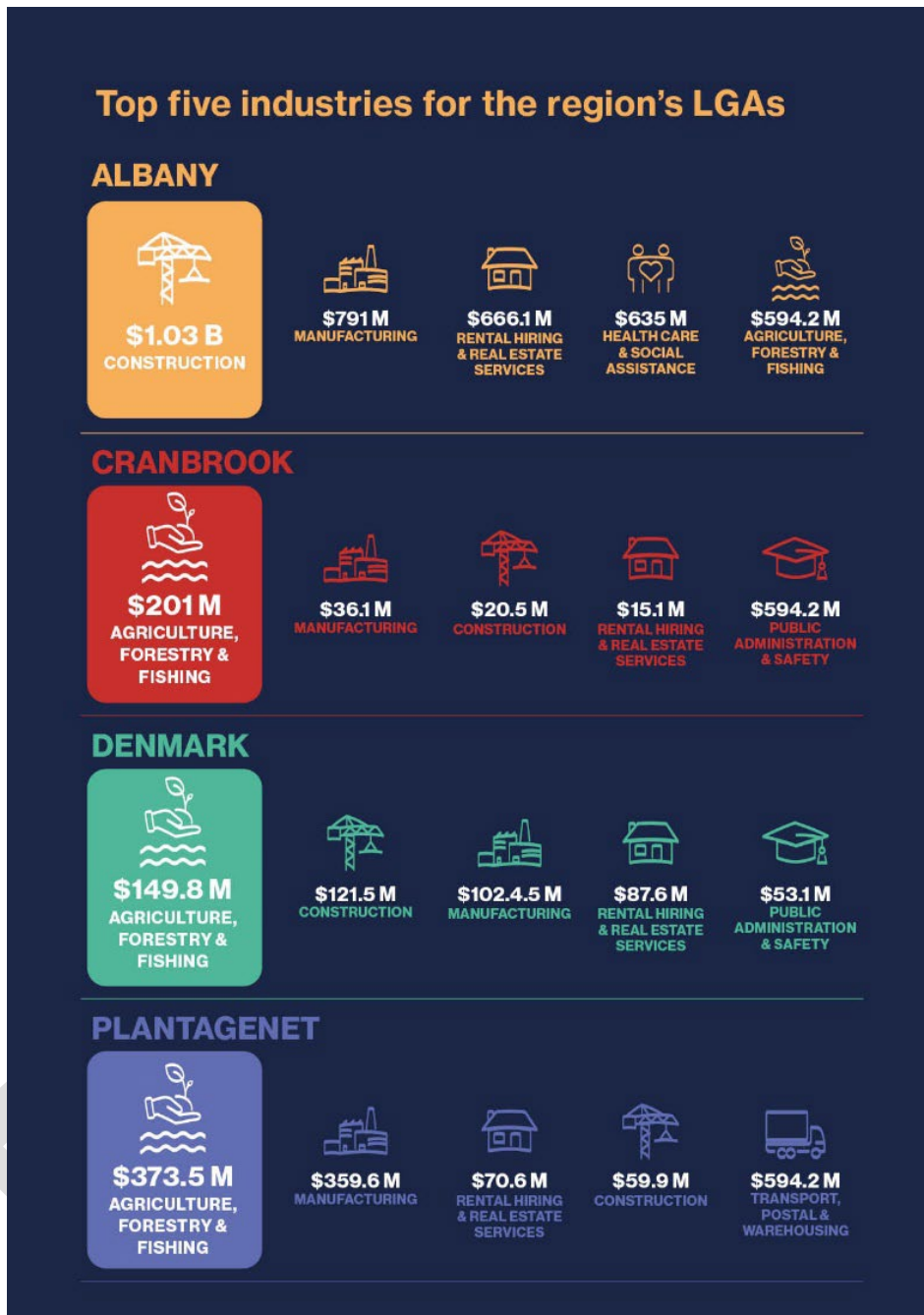


Figure 9: Top five industries (by LGA)

All LGAs within the coastal subregion are net exporters, with total subregional net exports of \$620.2M. Agriculture, forestry and fishing is the highest net export industry for Albany, Cranbrook, and Denmark. However, Plantagenet's highest net export industry is manufacturing (with agriculture forestry and fishing still contributing strongly).

In contrast to WA as a whole, which is heavily reliant on mining for net export performance, the coastal subregion is largely reliant on primary production.

Primary production is the dominant industry, across the entire Great Southern region. **In contrast to inland areas of the Great Southern, which tend to have smaller**

rural communities and a strong focus on grain and livestock production, the coastal subregion has a cooler more temperate climate, stronger population growth and an economy based more on horticulture, poultry, seafood, timber and tourism.

In 2020-21 the coastal subregion contributed approximately \$571.2M of WA's total agricultural production gross value (5.6%)¹⁰. Broadacre crops and livestock are the main commodities produced and represent comparative advantages for the subregion.

Horticulture (nursery, turf, fruit and nut, and vegetable commodities) has emerged as a significant contributor to food production. Future expansion will depend on sufficient rainfall and access to groundwater supplies for irrigation.

In 2020-21, livestock disposals and products were respectively valued at \$220M and \$78.7M. The subregion's sheep flock is continuing to grow (approximately 1.23M head), and cattle numbers are estimated to be approximately 182,700 head¹¹.

The Shire of Plantagenet has a growing reputation for free range chicken, and chicken consumption is one of the fastest growing meat markets in Australia¹².

Major livestock management infrastructure in the broader Great Southern region includes the Katanning Regional Saleyards and abattoir, and within the subregion the Mount Barker Regional Saleyards, together with an abattoir in Narrikup.

The Great Southern is the state's largest wine region by total area, with wine product receiving international recognition. All primary grape growing subregions sit within the coastal subregion, with Frankland River and Mount Barker accounting for the majority of current production¹³.

¹⁰ Australian Bureau of Statistics. Value of Agricultural Commodities Produced, Australia, 2020-21. Released July 2022.

¹¹ Australian Government Department of Agriculture, Fisheries and Forestry. Australian Agricultural Census 2020-21 visualisations – LGA.

¹² Meat & Livestock Australia, Know the numbers: State of the Industry Report 2018, 19 September 2018.

¹³ ¹³ <https://www.wineaustralia.com/market-insights/regions-and-varieties>

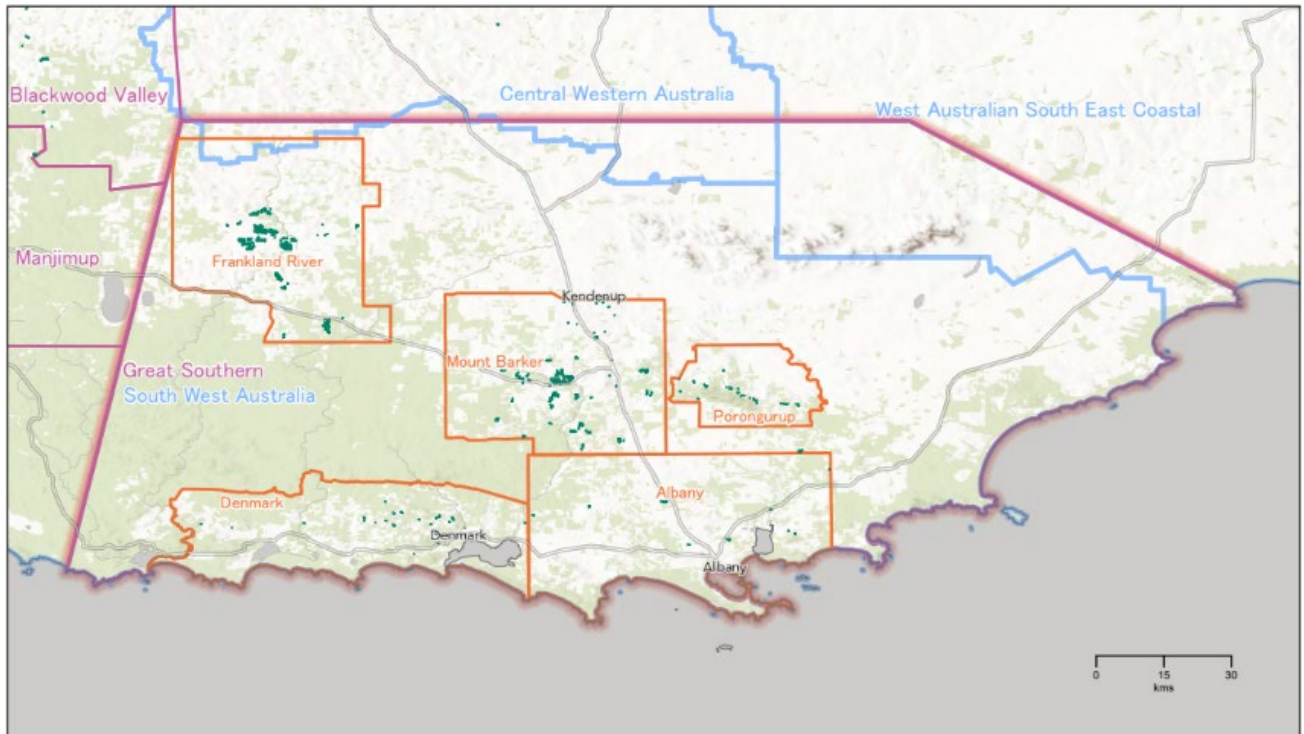


Figure 10. Primary Great Southern wine grape growing areas

Plantation forestry in the Great Southern is estimated to cover more than 90,000 hectares and be worth \$162 million. Woodchips for biofuel are gaining momentum, with several local governments powering community amenities such as heated swimming pools. The majority of the output is exported as woodchips to the fine paper industry in Japan and China and the sector produced some 1 million tonnes of woodchip exports in 2023 (down from a peak of 1.75 million tonnes in 2017)¹⁴.

The commercial fishing industry on the south coast is an important contributor to the socioeconomic health of the region. There is a wide diversity of products including pilchards, salmon, crabs, herring, estuarine species, deep sea table fish, sharks, rock lobster and aquaculture species such as oysters and mussels. The products are keenly sought by tourists visiting the region¹⁵.

Mining currently contributes a relatively small proportion of total coastal subregion industry output at \$133.8 million (1.5%). The region has a small mining sector producing silica sand and lime sand. However, the value of mining to the region has the potential for growth, with two mineral deposits awaiting investment decisions, including Grange Resources' Southdown magnetite mine located in the coastal subregion, north-east of Albany.

The manufacturing industry makes a valuable contribution to the region's economy, with the majority of business establishments based in Albany. The sector employs about 5.7% of workers in the coastal subregion. **The manufacturing industry is**

¹⁴ Southern Port Authority. Annual Reports (2023 and 2018).

¹⁵ <https://rdagreatsouthern.com.au/the-great-southern/>

focused primarily on supplying equipment and machinery to the primary production sector and to the processing of commodities.

Continued growth brings demand for skilled people to fill positions in the professional, trades and services sectors. **The manufacturing and fabrication sectors are driven by the requirements of primary production, but also have the capacity to respond to the demands of a diversifying economy.**

Retail trade, construction and tourism also make significant contributions to the economy. The high level of technology available to wine producers, has also generated a need for specialist skills and opportunities in a growing sector.

The coastal subregion has one of the most dynamic small business communities in the state. Small business represents 97.6% of all business activity in the coastal subregion. Of these small businesses, 27.8% are in agriculture, forestry and fishing.

Industries in the coastal subregion are highly interconnected and interdependent.

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Infrastructure

Infrastructure has a major effect on the capacity of a regional economy to grow, to remain resilient in the face of challenges, and to quickly leverage opportunities.

To support the development of this plan and to assess the capacity of infrastructure to respond to future demand and a drying climate, an infrastructure audit was conducted across the coastal subregion. The audit mapped transport links, including road, air, rail and sea, and energy and communication networks. The audit also considered water demand and supply, including rainfall trends, surface water, groundwater, recycled water and potable supply.

Key findings from the audit are summarised in **Appendix 2** to this plan.

Improving Water Knowledge (Regional Insight – Break Out Box)

Since the 2014 Great Southern Regional Water Supply Strategy, the following initiatives have been running to improve our understanding of water resource availability in the Great Southern region. This includes a state-funded South Coast groundwater investigation and the CSIRO Brackish Groundwater Investigation.

The South Coast groundwater investigation has involved development of the Albany Aquifer Modelling System, a 3D digital conceptual model of the Albany Groundwater Area and mapping water resource information of the Albany hinterland. The model and mapping were used to inform allocation planning in the region. Linked to this work, DPIRD has secured funding to extend the WaterSmart Farms program which focusses on locating and developing water resources for agro-industries in partnerships with industry and government. The initial pilot is the Great Southern Beaufort Palaeochannel project.

The CSIRO project is developing methods for identifying and characterising untapped brackish groundwater resources in WA, predominantly for irrigated agriculture and remote communities water supply. The project addresses key challenges facing brackish groundwater desalination including; brackish groundwater resource characterisation, inland brine (desalination waste stream) management and energy availability in remote regions.

The project, expected to be finalised in 2025, will be delivered through a knowledge integration platform to support decision-making processes for desalination implementation projects in agriculture.

Renewable Energy (Regional Insight – Break Out Box)

The City of Albany has an ambition to be 100% renewable in terms of energy by 2026. This will require expansion in solar and wind energy generation but will also require the ability to generate baseload power (currently 15 MW requirement), which is not possible with wind and solar.

A current project by WA Biofuels is investigating the possibility of a 15 MW Energy from Waste and Biomass plant. The concept is to utilise gate fees from municipal waste to purchase sustainable biomass feedstock to co-feed (with waste) a biomass power generation plant. This has the potential for wide ranging regional development and environmental benefits, driving investment and stability in the region's agricultural and forestry sectors whilst also reducing landfill and meeting regional energy demand.

Global Megatrends

Climate change is widely recognised as a global megatrend alongside trends in technology, globalisation and demographics. These ‘Megatrends’ are trajectories of change typically unfold over years or decades and have the potential for substantial and transformative impact¹⁶. The CSIRO’s *Our Future World (2022)* report provides valuable context around the potential impacts of these global megatrends, including adapting to a changing climate.



Figure 11. CSIRO Our Future World – Global Megatrends (2022)

¹⁶ CSIRO, Our Future World. p.4.

The report notes that as the world adapts to a changing climate, a range of impacts will be felt across the globe. For example:

- **the cost of natural disasters**, projected to be \$39.3 billion per year by 2050;
- **the health impacts of climate change**, highlighting the relationship between extreme weather events – including drought – and public health.
- **preparing to live in a hotter world**, with increased heat related deaths, damage to infrastructure and operational problems for critical services such as transportation, healthcare and energy supply.
- **declining water quantity, quality and availability**, as water demand is increasing, reductions in the availability of water resources and pollution are reducing the amount and quality of future water resources.
- **the impact of climate change of critical infrastructure**, for example road and railways that are built using materials and methods designed for stable climatic conditions (with increased rates of deterioration also likely to increase the maintenance cost burden); and
- **climate-drive mass migration**, driven by increases in global surface temperatures and sea-level rises.

Importantly, the CSIRO report highlights that global megatrends are highly interconnected, with flow on impacts and linkages across social, economic and environmental dimensions. This means that although megatrends represent some of society's biggest challenges, they also give rise to possible future responses and solutions.

An analysis of global megatrend exposure risk in the coastal subregion indicates that the coastal subregion's highest performing industries – **Agriculture, forestry and fishing, manufacturing and construction** – also have the highest megatrend exposure risk.

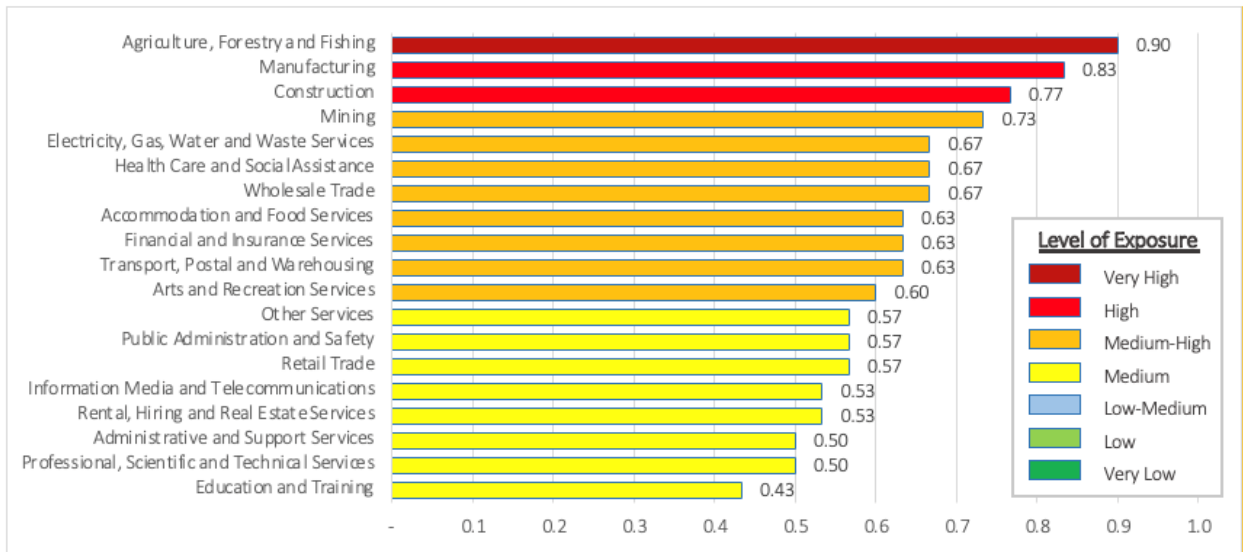


Figure 12. Industry Scoring based on level of exposure to megatrends

“Certain crops need the chill factor for fruit set (apples, stone fruit)...though that’s ideal, they experience fluctuations in the seasons, and ultimately that means supply-demand – there will be less fruit but consumers will pay more for it” (stakeholder survey response)

This high exposure risk presents both challenges and opportunities for the region. For example:

- Increasing urbanisation will present a need for greater production and food security, and greater demand for the construction and manufacturing industries.
- Climate change and resource scarcity will impact on farming practices as rainfall patterns shift and have consequences for energy options, particularly decarbonisation. There will also be resource and energy implications for the construction and manufacturing industries.
- Globalisation and shifts in global economic power represent global competitiveness challenges but also many opportunities, for example in demand for primary produce and food (and potentially downstream processing of agricultural products), Asian tourism and citizen consumers (demand for provenance in food products).
- The ageing population represents both a challenge and an opportunity in increased demand in health and aged care sectors, requiring a skilled service sector workforce.
- Technological advances will have consequences on competitiveness but also present opportunities to attract “digital nomads” and improve productivity in industry sectors, particularly primary production and manufacturing.

It is imperative that industry and infrastructure in the coastal subregion keep pace with global megatrends, as without sufficient investment and development, these industries risk increased import competition and reduced export demand or value from domestic and global markets.

Stakeholder Engagement and Partnerships

Overview

A comprehensive stakeholder engagement and community consultation process was held across the coastal subregion. It involved identifying and leveraging the expertise and connections of existing local networks to tap into a substantial local knowledge base and avoid duplication of existing projects and structures.

Engagement was held across multiple platforms and locations – workshops in Mount Barker and Albany, an online survey, face to face and online interviews – encompassing diverse viewpoints, knowledge and lived experience.

The process benefited from learnings taken from the Inland plan, providing opportunities to refine and improve the approach. In particular, more targeted engagement with peak bodies, who then sought input from their members, resulted in higher levels of engagement. The pre-existing relationship between peak bodies and their members, helped to secure buy-in to the process from individual farmers and growers, which is reflected in a strong survey response rate.

A high level of engagement from individual farmers brings rich lived experience and practical knowledge to the plan.



Image 1. Coastal Great Southern drought resilience workshop held in Albany, July 2024.

The stakeholder engagement process included the following components:

- one-on-one interviews (online and face to face);
- an online survey;
- two dedicated workshops, held in Albany and Mt Barker;
- targeted stakeholder workshops;
- action plan ground truthing; and
- a public comment period.

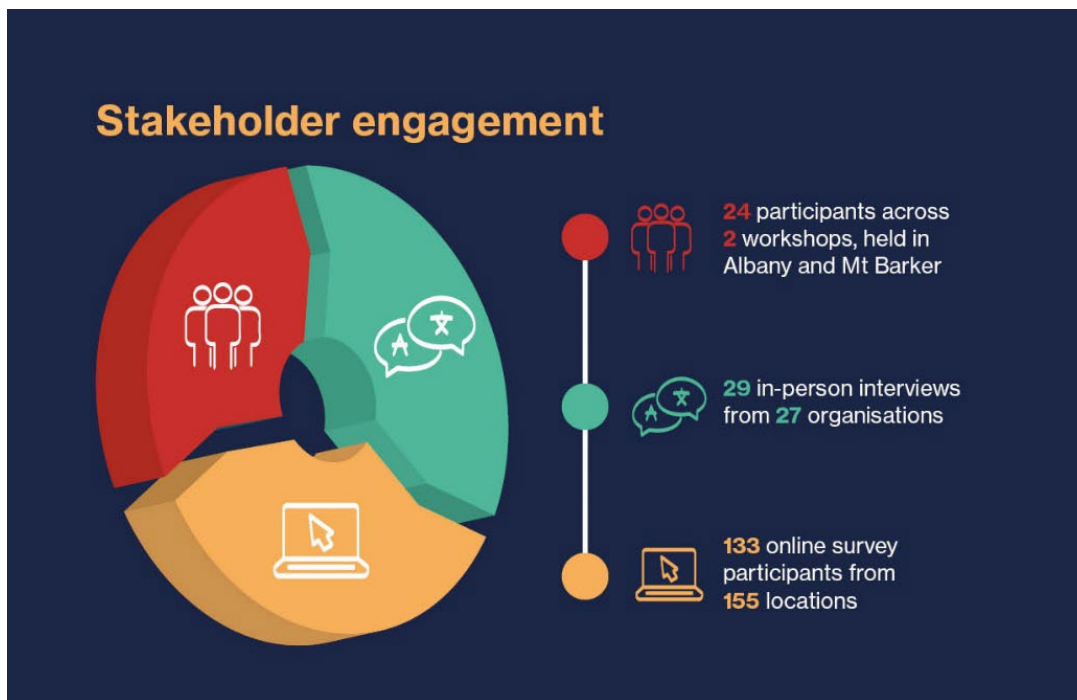


Figure 13. Stakeholder Engagement Snapshot

**REGIONAL
INSIGHT
(Viticulture Case
Studies - TBC)**

**REGIONAL
INSIGHT (Beef
Case Studies -
TBC)**

Stakeholder Engagement Key Findings

Qualitative information gathered from the two workshops, interviews and survey responses was collated, synthesised and grouped into emerging themes and ideas, under the five plan themes. The key findings from this process are summarised below.

Resilient Agriculture

- **There is a need for more on-ground human resources.** This would ensure that NRM, Local Catchment and Grower Groups have 'creative' redundancy, Research and Development needs and outcomes are communicated and provide more opportunities for information exchange and planning support.

“Apart from managing the impacts of drought, farmers are at a “critical mass...balancing remnant bush, creek lines, farming, sand, soil conditions and stability” (stakeholder survey response)

“Learning/training needs to be refreshed and followed up to ensure currency and application. This is for individual on farm business planning as well supporting sectors e.g. emergency response” (stakeholder survey response)

“Catchment/NRM/Grower groups need security of funding/permanency to explore what people really need and how to progress – space to be innovative” (stakeholder survey response)

- **There needs to be more investment in planning.** It is critical for producers to know their thresholds for dry seasons, plan strategically and invest in good years. This could involve farmers being better engaged and supported to invest in planning, and more targeted support for small landholders and 'boutique' sectors on tighter margins.

“Key is building resilience for mum and dad farmers. Small growers are essential to keep the community working and drive practice change” (stakeholder survey response)

“We are very reactive...What about a permanent position, that is there all the time to continuously build networks maintaining relationships, making sure we are always ready” (stakeholder survey response)

“Seasons are unpredictable and there is a lot of variation. The pattern of winter/spring and summer autumn rainfall is different, with quick transitions... but outcome overall is similar. This needs to be considered in planning” (stakeholder survey response)

Resilient Water

- **There is a critical need for investment in water infrastructure and management.** This should include both support for strategic on-farm water infrastructure and support for strategic community water infrastructure.

“...the key challenge is that strategic thinking is missing... the concept of looking forward, what are the risks over the next 10 years.. what do we need to do to ensure a smoother run, particularly for water infrastructure” (stakeholder survey response)

“We need water in the community for those years (one in 50) where there is no rain into October, and nothing but a few mm for 12 months (green drought). When that happens, on-farm water stocks will be used up – there needs to be community sources to help take it through” (stakeholder survey response)

Resilient Landscapes

- **We need to do more to incorporate natural ecosystem processes.** This could involve consideration of ecosystem processes as part of drought risk and resilience planning, better capture and understanding of our region's natural asset values and harnessing traditional ecological knowledge and land management practices.

Resilient Community

- **We need to work harder to close the urban country divide.** Adapting to the changing climate is everyone's responsibility, not just landowners. This community cohesiveness will help communities look out for each other in times of drought.

“Need for on ground, human resource support. To foster and develop ideas, facilitate information exchange ‘over the fence’ and support planning” (stakeholder survey response)

“Mental anguish in community...in less than 2 years, 70% reduction in income” (stakeholder survey response)

“How can we look out for each other better in times of drought?” (stakeholder survey response)

Resilient Economy

- **There needs to be a broader focus on market options.** For example option for destocking, sale of fodder and water during dry seasons, expanded local markets and more opportunities for on farm sales and simplified regulation (for example for on-farm processing and diversification ventures) across the region.

“Red tape limits the ability to develop infrastructure, to diversify income and become more resilient”. (stakeholder survey response).

“Need uniformity in decision making e.g. catchments, dams, haysheds on farms, on farm sales, . Not three Shires with three different rules” (stakeholder survey response).

“...Torbay Catchment farmers are keen on regenerative farming. What are the drought adaptive-strategies relevant and sustainable for regenerative farming practices?” (stakeholder survey response)

“People need to plan for a dry year every year, and on sell what resources they don't use later” (stakeholder survey response)

The key findings and insights from the stakeholder engagement process, paired with the data and technical evidence, inform the development of the Drought Vulnerability Assessment, provided in the following section.

Drought Vulnerability Assessment

Note: The following section provides an overview of the Drought Vulnerability Assessment components and findings. A full copy of the DVA Report will be made available on the GSDC website.

The Drought Vulnerability Assessment (DVA) provides the evidence base for this plan. It represents the culmination of literature, data, technical reports and extensive stakeholder engagement, which informs a science-based approach to evaluating the coastal subregion's susceptibility to drought and provides strategic recommendations to enhance resilience.

These strategic recommendations form the basis of the interventions, strategies and projects put forward in this plan for Building Drought Resilience.

The DVA addresses the key questions:

- What does drought look like for the coastal subregion now and in the future?
- Where are the areas of most vulnerability?
- What gaps exist in current strategies?

By identifying risks and vulnerabilities, the DVA identifies mitigation strategies and opportunities to build capacity within local communities, businesses, and industries to adapt to the multidimensional challenges posed by drought over the next 20 years and beyond.

The following section provides an overview of the DVA components and findings. A full copy of the DVA Report can be found on the GSDC website: www.gsdc.wa.gov.au

Conceptual framework

The conceptual framework for this DVA illustrated in Figure 15 was used as a guide to generate a **Vulnerability Index** for each local government area and agriculture industry in the Coastal Great Southern region by using both quantitative and qualitative data.

The aim is to provide valuable insights into where resources and interventions are most needed by identifying the vulnerabilities in the regions.

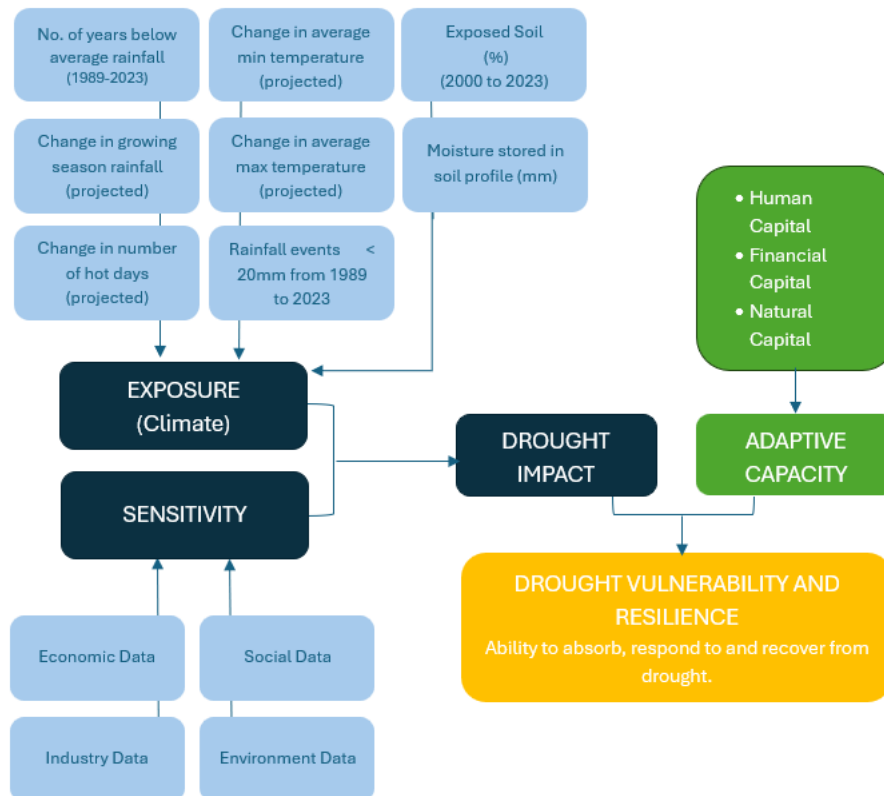


Figure 15: Conceptual framework for drought vulnerability assessment

Regional drought vulnerability assessments require consideration of both the potential impacts of drought and the adaptive capacities of the people and systems in each region. Each element in this conceptual framework has a focus.

Exposure is the extent to which a given system, community or region will be subjected to a particular hazard. It is measured in terms of the extent to which a focus region will be exposed to drought and drought-related climate change processes such as increasing atmospheric temperatures and changes in rainfall patterns and soil moisture.

Sensitivity is the extent to which a given system, community or region will be affected by a particular hazard. For the Coastal Great Southern RDRP, sensitivity is about the ways in which this region is impacted by drought. It is measured in terms of the effect of drought on crops and animal production, and the influence of regional characteristics such as soil types and farming systems on the effect that a drought has in the region.

Drought impact includes the degree of exposure to drought in the regions and each region's inherent sensitivity to drought conditions.

Adaptive capacity describes the internal features and characteristics of the regions that influence their ability to respond effectively to and withstand past and future droughts.

The map below (Figure 16) spatially integrates relevant economic, environmental and social data for local government areas (LGAs) in the Coastal and Inland Great Southern regions to create a GIS-based multi-criteria analysis (MCA). The inputs into the MCA, follow the conceptual framework outlined in Figure 15.

The map shows how areas in the Great Southern region vary from 'very low' to 'very high' vulnerability to drought. This assessment is based on temperature, rainfall and production data, access to infrastructure, population demographics and environmental characteristics.

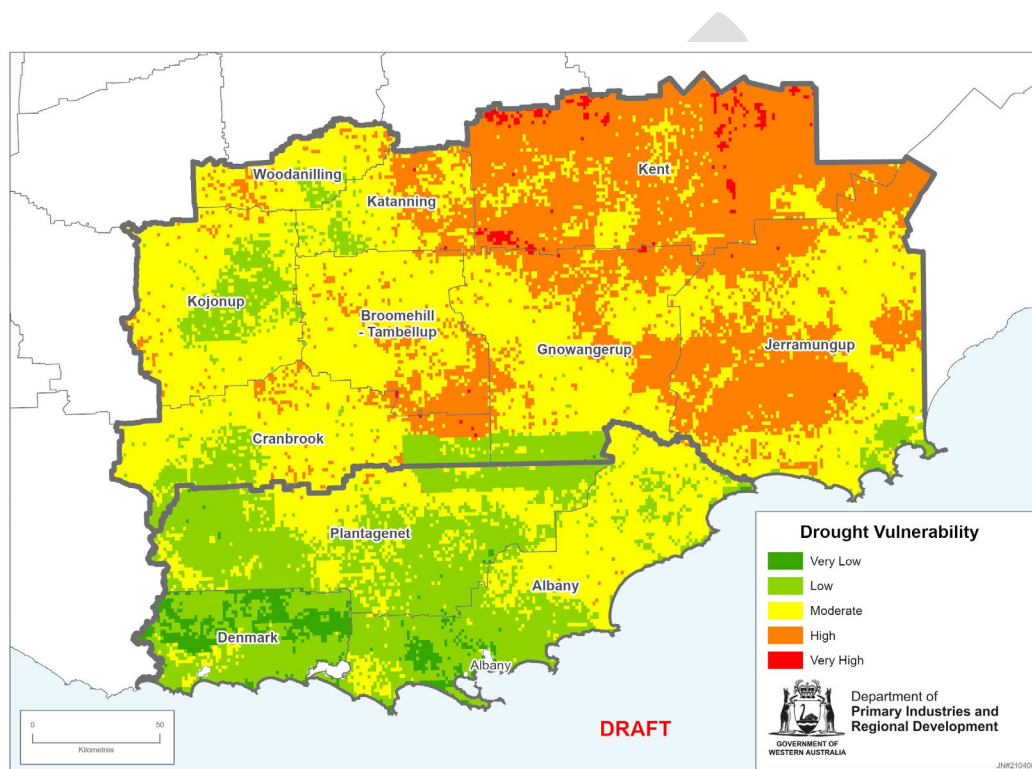


Figure 16. Draft Analysis of Drought Vulnerability for Coastal Southern and Inland Great Southern

The Coastal Great Southern LGAs appear to be rated either low or moderately vulnerable to drought with some small areas either high or very highly vulnerable.

The DVA outlines the overall climate conditions for the Coastal Great Southern Region, showing that most of the region is in high rainfall area and some is very-high rainfall with more than 900 mm of annual rainfall. There is, however, a high level of variation within the rainfall. This provides a level of complexity with managing agricultural enterprises reliant of rainfall, as there is either too much or not enough.

Impact of drought

The DVA provides an assessment of the overall impacts of drought on the economy, the environment and communities.

Impacts of drought on the economy

Unlike other natural disasters, droughts develop gradually, making it difficult to notice early signs and assess their economic impact until severe precipitation shortages occur. Droughts have long-term effects on agricultural productivity, leading to significant crop and livestock losses, business failures, and reduced income in farming regions, causing long-term economic strain on rural communities. While farmers are less likely to lose jobs, droughts negatively affect employment rates in rural areas, particularly in non-agricultural sectors, with employment dropping 4-5 percentage points in drought-affected areas compared to regions with average rainfall.

The impact of recent dry years on the horticulture and viticulture industries in the Coastal Great Southern region appears significant. A combination of rising costs, declining terms of trade and reduced yields are impacting on the financial viability of these businesses. Yield have been seriously impacted due to low rainfall, increased heat stress and reduced harvesting of water.

Impacts of drought on the environment

A changing climate increases the frequency and severity of droughts, leading to greater environmental risks. Four key indicators were selected in the DVA to investigate and understand the impact of drought on the environment. These indicators include Leaf Area Index, Vegetation Growth, Soil Moisture and Exposed Soil (soil protection).

The impact of drought on soil is complex. Reduced rainfall and higher temperatures dry out the soil, creating cracks that reduce the moisture and volume of the soil. This affects the activity of soil organic matter and reduces soil particle cohesion, which changes soil texture and decreases its water holding capacity. Limited plant growth reduces vegetation and crop residue cover, leaving soil vulnerable to erosion through water runoff and wind.

Impacts of drought on the environment also include:

- Reduced water availability and quality, promoting harmful algal blooms (HABs) that produce toxins and harm aquatic life and animals.
- Stressed ecosystems caused by reduced oxygen levels and increased nutrient build-up due to low water flows and higher temperatures.
- Reduced plant productivity, increased mortality, and long-term impacts on species diversity, particularly in regions like Western Australia.
- Irreversible ecosystem changes affecting soil fertility and water purification due to loss of vegetation.
- Increased bushfire risk.

Impacts of drought on communities

The social and economic impacts of drought are closely linked. The more severe the drought the larger the social and economic impacts for farming families and local communities.

Workshops held in the Coastal Great Southern region highlighted the impacts of drought on communities. Workshop participants shared their experiences and impacts of drought:

- Smaller land holders not being prepared, they have less resources to manage a drought. They have less grain and hay storage facilities and less ability to respond quickly.
- Increasing debt loads.
- Accessing professional help is expensive when there is no income/money.
- The inability to sell livestock when you need to before they lose too much condition and the animal welfare implications.
- Ceasing of the live sheep trade means this market avenue to sell livestock is lost, this was a traditional market that helped when drought conditions existed.
- The significant cost of hay and stock feed when it is in short supply compounds the financial situation and animal welfare situation.
- The need to work off-farm to financially support families and farm debt.
- The lack of water for livestock and spraying.
- Additional resources required to manage water requirements.
- Looking after community spaces such as ovals and parks is appreciated during a drought.
- Increase time to manage a drought situation and the significant negative effect on mental health as stress levels increased to extremes.
- Other industries are impacted like tourism.
- Small businesses supported by farm businesses struggle, reducing services, skilled workers, and long-term employment opportunities.
- Impacts on the natural environment where trees and bush are dying.
- There is increased risk for bush fires.

Drought Vulnerability Index

The purpose of the Vulnerability Index is to provide actionable insights into the vulnerabilities of different local government areas and agricultural sectors, guiding the community on where to focus resources and interventions for improving drought resilience in the Coastal Great Southern region. The index was created by aggregating both qualitative and quantitative data within the following components:

1. **Climate Vulnerability:** Measures the exposure to drought, rainfall variability, temperature changes, and long-term climate forecasts.

2. **Economic Vulnerability:** Considers economic resilience factors such as income, employment in agriculture, and financial stability of the local economy.
3. **Environmental Vulnerability:** Includes data on soil health, water availability, and the impact of environmental degradation on agricultural productivity.
4. **Social Vulnerability:** Considers factors like population demographics, access to social services, and community support systems in the face of drought.
5. **Industry Vulnerability:** Focuses on the specific challenges faced by different agricultural sectors (e.g., livestock, cropping, horticulture) and their capacity to adapt to drought.

Vulnerability Index Results

Results from the Vulnerability Index shown in Table 2 below identify the most vulnerable aspects for each LGA in the Coastal Great Southern region.

The maximum value shows where the highest level of vulnerability lies in comparison to the other values in the index. The minimum value shows where the least vulnerable areas are.

| | City of Albany | Shire of Denmark | Shire of Plantagenet | Shire of Cranbrook |
|--|----------------|------------------|----------------------|--------------------|
| Climate Exposure Index | 0.26 | 0.29 | 0.19 | 0.13 |
| Economic Vulnerability Index | 0.96 | 0.82 | 0.96 | 0.89 |
| Environmental Vulnerability Index | 0.67 | 1.05 | 0.69 | 1.03 |
| Social Vulnerability Index | 0.33 | 0.36 | 0.56 | 1.07 |
| Regional Industry Vulnerability index | 4.43 | 1.01 | 5.49 | 4.36 |

| Legend | Minimum | Maximum |
|--------|---------|---------|
| | | |

Table 2. Results from the Drought Vulnerability Index

The results in Table 3 below show the results of the Vulnerability Index for industries in the Coastal Great Southern region, ranked by total value of the index:

| Ranked by Total Index | Average | Total |
|---|---------|-------|
| Sheep & Lambs | 426.46 | 1.62 |
| Meat Cattle | 414.46 | 1.50 |
| Hay & Silage | 382.49 | 1.25 |
| Broad Acre | 237.57 | 0.75 |
| Grapes | 56.33 | 2.17 |
| Vegetables | 46.90 | 1.69 |
| Dairy | 46.20 | 4.20 |
| Fruits & Nuts | 32.75 | 1.80 |
| Pigs | 32.20 | 1.40 |
| Nurseries, cut flowers or cultivated turf | 23.61 | 1.16 |

| | | |
|---------|-------|------|
| Poultry | 13.20 | 1.15 |
| Eggs | 9.20 | 1.15 |

Table 3. Results from the Drought Vulnerability Index for the industries in the Coastal Great Southern region ranked by the total value of the index

The results from Tables 2 and 3 tell us that:

- The Shire of Denmark is most vulnerable to climate exposure, which is due to the predicted decline in rainfall by 2050.
- The area of natural vegetation in Denmark Shire makes it the most vulnerable from an environmental perspective.
- The Shire of Plantagenet's economic profile is the most vulnerable because it has the highest value agriculture of all the LGAs.
- The Shire of Cranbrook social vulnerability index is the highest due to its low population and high reliance on agriculture employment with low diversity in its economy.
- The Dairy industry is the most vulnerable to drought.
- The Sheep and Beef sector is a much larger industry with many more businesses in the region and is more vulnerable to drought when the number of businesses is considered.

Recommendations

The DVA highlights the critical need for adaptive strategies to mitigate the impacts of drought. The assessment reveals significant challenges posed by climate variability, including reduced rainfall, altered weather patterns, and their consequent effects on agriculture, ecosystems, and community well-being.

By investing in water infrastructure, sustainable farming practices, and enhanced climate monitoring, alongside fostering community resilience, the region can better withstand future droughts.

The following recommendations emphasize the importance of proactive measures for resilience, from an economic, environmental and social perspective. Implementing these strategies will be pivotal in securing the long-term viability of the region's agricultural sector and preserving the unique fabric of the coastal subregion.

These strategic recommendations form the basis of the Building Drought Resilience Action Plan in the following section.

Invest in Water Infrastructure:

- Develop and upgrade water harvesting and storage systems to ensure a reliable supply for livestock, irrigation, and crop spraying.
- Promote water-efficient technologies and practices to optimise usage in agricultural activities.

Enhance Climate Monitoring and Forecasting:

- Use and improve climate monitoring systems for accurate and timely weather forecasts.
- Utilise climate data to inform agricultural planning and decision-making processes, aiding farmers in adapting to changing rainfall patterns.

Promote Sustainable Farming Practices:

- Encourage conservation tillage, mulching, and other soil moisture retention techniques to improve soil health and crop resilience.
- Support the adoption of drought-tolerant crop varieties and diversified cropping systems to mitigate risks associated with climate variability.

Strengthen Community Engagement and Support:

- Foster community programs that enhance social capital, such as local agricultural groups, workshops, and information-sharing platforms.
- Provide mental health and well-being support services to assist farming families and communities in coping with the stress and impacts of drought.

Develop Comprehensive Risk Management Plans:

- Create and implement risk management strategies tailored to the specific vulnerabilities of different agricultural sectors and regions.
- Encourage farmers to adopt decision support tools and financial tools that help mitigate the economic impact of drought and improve preparedness.

Support Research and Innovation:

- Invest in research initiatives exploring new technologies and methods for improving drought resilience in agriculture.
- Facilitate collaboration between researchers, policymakers, and farmers to develop practical and scalable solutions.

Improve Soil and Land Management:

- Promote practices that prevent soil erosion, such as maintaining ground cover and restricting grazing during vulnerable periods.
- Encourage the use of soil amendments like lime and fertilizers to manage soil pH levels and improve fertility.

Enhance Adaptive Capacity and Education:

- Provide training and educational programs to farmers and communities on adaptive practices and climate resilience.
- Develop resources and tools that help farmers anticipate and respond to drought conditions effectively.

Implement Environmental Conservation Measures:

- Protect and restore natural vegetation areas to enhance ecosystem resilience and biodiversity.
- Support land management practices that maintain or improve the condition of natural resources and ecosystems.

Facilitate Access to Financial Resources:

- Ensure farmers and agricultural businesses have access to financial support and incentives for implementing resilience-building practices.
- Develop funding programs that support the adoption of innovative and sustainable agricultural practices.

Building Drought Resilience Action Plan

The creation of an enabling environment is critical to the success of the plan. This will require ongoing participation and cooperation from government, agencies, statutory bodies, not-for-profit organisations, and the private sector.

The Action Plan takes the first step in providing a framework to identify and communicate drought resilience needs and priorities. It has been drafted for and by the community, and community members and organisations have an important part to play in realising its vision for a more drought resilient region.

The Action Plan can be used by the community in collaboration with industry, the non-profit sector, and all levels of government to:

- identify shared priorities;
- make connections between people, projects, organisations and information;
- build a knowledge base around region-specific drought resilience by establishing baseline data and a monitoring framework;
- support and champion local innovations and innovators; and
- target and coordinate investment opportunities.

Some implementation approaches can be addressed by the community, while others require broader cooperation from governments, agencies, statutory bodies, not for profit organisations, and the private sector. The plan also contains unfunded activities, and some actions can only be addressed with further investment.

Each focus area is aligned to relevant drought resilience themes:

- Resilient Water
- Resilient Communities
- Resilient Agriculture
- Resilient Landscapes
- Resilient Regional Economy

Focus Area 1: Water Infrastructure and Management

Outcomes

- Water harvesting and storage systems are a reliable supply for livestock, irrigation, and crop spraying.
- Agricultural activities are water-efficient and optimised.

| Implementation Approach |
|--|
| Wider adoption of water-efficient technologies and practices that optimise usage in agricultural activities. |
| Better planning around and proclamation of water sources in high demand areas, to ensure effective allocation to highest priority purpose |
| Increased access to hydrology expertise to inform land management and water management. |
| LGA-level water plans that promote understanding of supply and demand, emergency water supplies, potential new water sources and competing demands. |
| Investment in new water infrastructure to meet increasing demand, and drought-proof industries and businesses, whilst nurturing the natural environment. |

Theme Alignment:

Resilient Water

Resilient Agriculture

Resilient Landscapes

Focus Area 2: Climate Monitoring and Forecasting

Outcomes

- Farming communities have access to climate monitoring systems that are accurate and timely.
- Farmers can readily access climate data, including changing rainfall patterns, to inform planning and decision-making processes.

Implementation Approach

Increased investment in climate monitoring systems that provide accurate and timely weather forecasts.

Better access to climate data to inform agriculture planning and decision-making processes, aiding farmers in adapting to changing rainfall patterns.

Increased investment in advanced weather stations and localised climate models, that provide regular climate updates and advisories to farmers and agribusinesses.

Theme Alignment:

Resilient Agriculture

Resilient Economy

Resilient Communities

Focus Area 3: Soils, Sustainable Farming Practices and Adaptive Capacity

Outcomes

- Farmers are informed and supported to mitigate risks associated with climate variability on soil health and crop resilience.
- Farmers can access educational programs, resources and tools that help anticipate and respond to drought conditions.

| Implementation Approach |
|--|
| Effective local networks that communicate the benefits of conservation tillage, mulching, and other soil moisture retention techniques to improve soil health and crop resilience. |
| Wider adoption of drought-tolerant crop varieties and diversified cropping systems which have the potential to mitigate risks associated with climate variability. |
| Wider adoption of practices that prevent soil erosion, such as maintaining ground cover and restricting grazing during vulnerable periods. |
| Effective local networks that communicate the benefits of using soil amendments - including lime and fertilisers - to manage soil pH levels and improve fertility. |
| Increased investment in training and educational programs to farmers and communities on adaptive practices and climate resilience. |
| Increased investment in resources and tools that help farmers anticipate and respond to drought conditions effectively. |

Theme Alignment:
Resilient Agriculture
Resilient Economy
Resilient Landscapes

Focus Area 4: Community Engagement and Support

Outcomes

- Farming communities have a diverse range of programs that enhance social capital, such as local agricultural groups, workshops, and information-sharing platforms.
- Farming families and communities can access mental health and well-being support services to assist with the stress and impacts of drought.
- Local economies are diverse and provide varied employment opportunities, creating a more stable economic environment that is better able to withstand and respond to the economic impacts of drought.

Implementation Approach

Government programs and budgets reflect the value of investing in mental health and well-being support services for farming families and communities coping with the stress and impacts of drought.

Fit for purpose community spaces and community-run events that support community cohesion and wellbeing, which is a key protective factor against the impacts of drought.

Effective local networks that undertake early detection and monitoring of seasonal conditions and disseminate relevant information to farming communities about the potential for drought conditions.

Effective local networks that encourage and support local businesses and entrepreneurship.

Theme Alignment:

Resilient Economy

Resilient Communities

Focus Area 5: Finance, Business and Risk Management

Outcomes

- Farmers can access decision support and financial tools to mitigate the economic impact of drought and improve preparedness.
- Farmers and agricultural businesses have access to financial support and incentives for implementing resilience-building practices.
- Funding programs support the adoption of innovative and sustainable agricultural practices.

Implementation Approach

Collaborations and partnerships that support the development of risk management strategies tailored to the specific vulnerabilities of different enterprises, agricultural sectors and geographical areas within the subregion.

Effective local networks that communicate the benefits of financial tools that mitigate the economic impact of drought, and the value of these tools for both large scale farming operations and smaller landholders.

Effective local networks that build awareness of financial support and incentives for farmers and agricultural businesses implementing resilience building practices.

Wider take up of funding programs that support the adoption of innovative and sustainable agricultural practices.

Theme Alignment:
Resilient Agriculture
Resilient Economy

Focus Area 6: Research and Innovation

Outcomes

- Local leadership of new technologies and methods for improving drought resilience in agriculture.

Implementation Approach

Effective networks – with both a local and broader reach – that identify opportunities to connect with research, technologies and methods for improving drought resilience in agriculture.

Increased collaborations and partnerships between researchers, policymakers, and farmers to develop practical and scalable solutions in the subregion.

Theme Alignment:
Resilient Agriculture
Resilient Economy

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Focus Area 7: Environmental Conservation

Outcomes

- Natural vegetation is protected and restored to enhance ecosystem resilience and biodiversity.
- Land management practices maintain or improve the condition of natural resources and ecosystems.

| Implementation Approach |
|---|
| Attract investment in research and initiatives that protect and restore natural vegetation areas. |
| Wider adoption of land management practices that maintain or improve the condition of natural resources and ecosystems. |
| Effective local networks that support First Nation's stewardship of natural resources and facilitate the use of traditional ecological knowledge (TEK) and land management practices. |
| Effective local networks that address bushfire vulnerability by building regional capacity around strategic risk mitigation. |
| Effective local networks that connect urban populations to biodiversity and environmental values. |

Theme Alignment:
Resilient Communities
Resilient Landscapes

Monitoring and Evaluation

Monitoring and evaluation are critical components of effective drought resilience planning, providing the framework to assess progress, adapt strategies and achieves intended outcomes.

The Monitoring and Evaluation Framework for this plan sits within the broader context of the FDF Monitoring, Evaluation and Learning Plan (MELP) and the WA RDRP Monitoring Evaluation and Reporting Plan (MERP).

The GSDC will work with stakeholders to develop, refine and prioritise the implementation approaches identified in this plan and scope out specific projects for implementation. Progress will be reviewed against the plan objectives, making changes to the plan as needed to maintain its relevance and usefulness.

During the program period, reporting against the MELP and MERP is coordinated by the DPIRD in WA, including monthly activity tracking, quarterly reporting and a 6 monthly progress report to the DAFF. The MERP also includes a client survey at the completion of the program to collect qualitative data on engagement, capacity and understanding of drought resilience.

A FDF Steering Committee formed within DPIRD will provide high-level monitoring and evaluation of the program at a State level.

Short term FDF indicators of success:

- Regional representatives have considered and planned incremental, transitional and transformational opportunities to strengthen resilience.
- Identified actions, pathways and opportunities (including innovative and transformative) to improve regional drought resilience, mitigate risks and adapt to change.
- Communities use relevant data and information to better understand their resilience to plan for drought.
- Plans have buy-in from key stakeholders in the region.
- The number of, and participation in, local networks and programs to enhance drought resilience increases.
- Communities share knowledge, collaborate and partner with government more often to build drought resilience.
- Regional leaders are in a stronger position to implement strategic actions, adapt to change and take advantage of opportunities to build economic resilience as they arise.
- Partnerships, networks and engagement are built between stakeholders managing natural resources.
- Increased community understanding of the region's current and future drought resilience, considering the region's unique economic, environmental and social characteristics.
- Natural resource management capability is improved across region.

Long term FDF indicators of success:

- Agricultural landscapes are functional and sustainable, with healthy natural capital (environmental resilience).
- Agricultural businesses are self-reliant, productive, and profitable (economic resilience).
- Agricultural communities are resourceful, adaptable, and thriving (social resilience).
- Stronger connectedness and greater social capital within communities, contributing to wellbeing and security.
- Communities implement transformative activities that improve their resilience to drought.
- More primary producers preserve natural capital while also improving productivity and profitability.

Monitoring and Evaluation Framework

The Monitoring and Evaluation Framework outlines how the regional level impact of the Coastal Great Southern Regional Drought Resilience Plan will be measured against the federal, state and regional indicators.

A range of assessment tools will be used to assess progress, including but not limited to surveys, environmental scans, data analysis, direct industry engagements and project counts.

In addition to the qualitative measures, the DVA is a key component of the Regional Drought Resilience Planning program. In addition to identifying key areas of vulnerability to inform interventions and actions, the information captured could be used as a baseline for comparison with future assessments to measure the success of the program at building drought resilience.

Monitoring and Evaluation Approach

The GSDC will monitor all implementation approaches by:

- Tracking activity and strategic communication across both the Coastal and Inland Great Southern RDRPs using a centralised project management tool (Monday.com). This will highlight any crossovers and manage connection and engagement with related projects.
- Leveraging the existing Inland Great Southern Regional Drought Resilience Subcommittee to support project delivery and track implementation across both Coastal and Inland Great Southern regions.
- Continuing quarterly reporting to DPIRD on implementation activities, including progress on funding expenditure, collaboration and engagement activities.
- Seeking evidence of satisfaction with the achievement of project outcomes from key stakeholders during implementation.

The GSDC will develop Key Evaluation Questions (KEQs) to inform a consistent evaluation approach across all implementation approaches for the Coastal Great Southern RDRP. The KEQs will cover the:

- extent to which the Plan improved environmental, social and economic resilience of agricultural industries, businesses and communities in the Coastal Great Southern region;
 - effectiveness of the Plan in achieving it's intended vision, goals and outcomes;
- and

changes or support required to ensure the Plan remains relevant and stakeholders are engaged to implement priority projects.

Reporting and Responsibility

Though the implementation of the plan will be undertaken by a range of agencies and organisations, the GSDC, with DPIRD, is responsible for monitoring and evaluation through this framework.

Reporting will include progress towards achieving the desired outcomes of the Coastal Great Southern RDRP through the identified priorities and implementation activities. In addition to monitoring, reporting will be used to capture emerging opportunities, record learnings and considerations for future interventions. Short-term evaluation will be captured through DPIRD MERP reporting during the program phase.

Ongoing Learning

GSDC will leverage the existing Inland Great Southern Regional Drought Resilience Subcommittee to govern, share knowledge and learnings throughout the implementation of both the Inland and Coastal Great Southern Regional Drought Resilience Plans. This could include aligning innovations across projects and brokering the relevant links between projects and relevant stakeholders.

COASTAL GREAT SOUTHERN REGION DROUGHT RESILIENCE PLAN MONITORING AND EVALUATION FRAMEWORK

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|--|---|---|--|--|
| <p>Resilient Landscapes</p> <p><i>“Healthy landscapes with natural resources able to sustain industry and environmental services”</i></p> | <p><i>Improve the natural capital of agricultural landscapes for better environmental outcomes</i></p> | <p><i>WA’s primary producers are productive, profitable and preserve natural capital (Environmental Resilience)</i></p> | <p>Focus Area 1: Water infrastructure and management</p> <p>Wider adoption of water-efficient technologies and practices that optimise usage in agricultural activities.</p> <p>Better planning around and proclamation of water sources in high demand areas, to ensure effective allocation to highest priority purpose.</p> <p>Increased access to hydrology expertise to inform land management and water management.</p> <p>LGA-level water plans that promote understanding of supply and demand, emergency water supplies, potential new water sources and competing demands.</p> <p>Investment in new water infrastructure to meet increasing demand, and drought-proof industries and businesses, whilst nurturing the natural environment.</p> | <p>Focus Area 1: Outcomes</p> <p>Water harvesting and storage systems are a reliable supply for livestock, irrigation, and crop spraying.</p> <p>Agricultural activities are water-efficient and optimised.</p> |
| | | | <p>Focus Area 3: Soils, Sustainable Farming Practices and Adaptive Capacity</p> <p>Effective local networks that communicate the benefits of conservation tillage, mulching, and other soil moisture retention techniques to improve soil health and crop resilience.</p> <p>Wider adoption of drought-tolerant crop varieties and diversified cropping systems which have the potential to mitigate risks associated with climate variability.</p> <p>Wider adoption of practices that prevent soil erosion, such as maintaining ground cover and restricting grazing during vulnerable periods.</p> <p>Effective local networks that communicate the benefits of using soil amendments - including lime and fertilisers - to manage soil pH levels and improve fertility.</p> | <p>Focus Area 3: Outcomes</p> <p>Farmers are informed and supported to mitigate risks associated with climate variability on soil health and crop resilience.</p> <p>Farmers can access educational programs, resources and tools that help anticipate and respond to drought conditions.</p> |

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|---|--|---|--|--|
| | | | <p>Increased investment in training and educational programs to farmers and communities on adaptive practices and climate resilience.</p> <p>Increased investment in resources and tools that help farmers anticipate and respond to drought conditions effectively.</p> | |
| | | | <p>Focus area 7: Environmental Conservation</p> <p>Attract investment in research and initiatives that protect and restore natural vegetation areas.</p> <p>Wider adoption of land management practices that maintain or improve the condition of natural resources and ecosystems.</p> <p>Effective local networks that support First Nation’s stewardship of natural resources and facilitate the use of traditional ecological knowledge (TEK) and land management practices.</p> <p>Effective local networks that address bushfire vulnerability by building regional capacity around strategic risk mitigation.</p> <p>Effective local networks that connect urban populations to biodiversity and environmental values.</p> | <p>Focus area 7: Outcomes</p> <p>Natural vegetation is protected and restored to enhance ecosystem resilience and biodiversity.</p> <p>Land management practices maintain or improve the condition of natural resources and ecosystems.</p> |
| <p>Resilient Agriculture</p> <p><i>“An agriculture sector that is highly engaged in innovating farming systems to be resilient to drought”</i></p> | <p>Grow the self-reliance and performance (productivity and profitability) of the agricultural sector</p> | <p><i>WA’s regional communities are connected, well and secure.</i></p> | <p>Focus Area 1: Water infrastructure and management</p> <p>Wider adoption of water-efficient technologies and practices that optimise usage in agricultural activities.</p> <p>Better planning around and proclamation of water sources in high demand areas, to ensure effective allocation to highest priority purpose.</p> <p>Increased access to hydrology expertise to inform land management and water management.</p> <p>LGA-level water plans that promote understanding of supply and demand, emergency water supplies, potential new water sources and competing demands.</p> | <p>Focus Area 1: Outcomes</p> <p>Water harvesting and storage systems are a reliable supply for livestock, irrigation, and crop spraying.</p> <p>Agricultural activities are water-efficient and optimised.</p> |

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|-----------------|---------------|-------------------|---|--|
| | | | <p>Investment in new water infrastructure to meet increasing demand, and drought-proof industries and businesses, whilst nurturing the natural environment.</p> | |
| | | | <p>Focus Area 2: Climate Monitoring and Forecasting</p> <p>Increased investment in climate monitoring systems that provide accurate and timely weather forecasts.</p> <p>Better access to climate data to inform agriculture planning and decision-making processes, aiding farmers in adapting to changing rainfall patterns.</p> <p>Increased investment in advanced weather stations and localised climate models, that provide regular climate updates and advisories to farmers and agribusinesses.</p> | <p>Focus Area 2: Outcomes</p> <p>Farming communities have access to climate monitoring systems that are accurate and timely.</p> <p>Farmers can readily access climate data, including changing rainfall patterns, to inform planning and decision-making processes.</p> |
| | | | <p>Focus Area 3: Soils, Sustainable Farming Practices and Adaptive Capacity</p> <p>Effective local networks that communicate the benefits of conservation tillage, mulching, and other soil moisture retention techniques to improve soil health and crop resilience.</p> <p>Wider adoption of drought-tolerant crop varieties and diversified cropping systems which have the potential to mitigate risks associated with climate variability.</p> <p>Wider adoption of practices that prevent soil erosion, such as maintaining ground cover and restricting grazing during vulnerable periods.</p> <p>Effective local networks that communicate the benefits of using soil amendments - including lime and fertilisers - to manage soil pH levels and improve fertility.</p> <p>Increased investment in training and educational programs to farmers and communities on adaptive practices and climate resilience.</p> <p>Increased investment in resources and tools that help farmers anticipate and respond to drought conditions effectively.</p> | <p>Focus Area 3: Outcomes</p> <p>Farmers are informed and supported to mitigate risks associated with climate variability on soil health and crop resilience.</p> <p>Farmers can access educational programs, resources and tools that help anticipate and respond to drought conditions.</p> |

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|---|--|--|---|--|
| | | | <p>Focus Area 5: Finance, Business and Risk Management</p> <p>Collaborations and partnerships that support the development of risk management strategies tailored to the specific vulnerabilities of different enterprises, agricultural sectors and geographical areas within the subregion.</p> <p>Effective local networks that communicate the benefits of financial tools that mitigate the economic impact of drought, and the value of these tools for both large scale farming operations and smaller landholders.</p> <p>Effective local networks that build awareness of financial support and incentives for farmers and agricultural businesses implementing resilience building practices.</p> <p>Wider take up of funding programs that support the adoption of innovative and sustainable agricultural practices.</p> | <p>Focus Area 5: Outcomes</p> <p>Farmers can access decision support and financial tools to mitigate the economic impact of drought and improve preparedness.</p> <p>Farmers and agricultural businesses have access to financial support and incentives for implementing resilience-building practices.</p> <p>Funding programs support the adoption of innovative and sustainable agricultural practices.</p> |
| | | | <p>Focus Area 6: Research and Innovation</p> <p>Effective networks – with both a local and broader reach – that identify opportunities to connect with research, technologies and methods for improving drought resilience in agriculture.</p> <p>Increased collaborations and partnerships between researchers, policymakers, and farmers to develop practical and scalable solutions in the subregion.</p> | <p>Focus Area 6: Outcomes</p> <p>Local leadership of new technologies and methods for improving drought resilience in agriculture.</p> |
| <p>Resilient Water</p> <p><i>“The region has a water system the community has confidence in to sustain industry, agriculture, and the community through consecutive decile 1 rainfall years”</i></p> | <p>Improve the natural capital of agricultural landscapes for better environmental outcomes</p> | <p><i>WA’s primary producers are productive, profitable and preserve natural capital</i></p> | <p>Focus Area 1: Water infrastructure and management</p> <p>Wider adoption of water-efficient technologies and practices that optimise usage in agricultural activities.</p> <p>Better planning around and proclamation of water sources in high demand areas, to ensure effective allocation to highest priority purpose.</p> <p>Increased access to hydrology expertise to inform land management and water management.</p> | <p>Focus Area 1: Outcomes</p> <p>Water harvesting and storage systems are a reliable supply for livestock, irrigation, and crop spraying.</p> <p>Agricultural activities are water-efficient and optimised.</p> |

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|---|---|--|---|--|
| | | | <p>LGA-level water plans that promote understanding of supply and demand, emergency water supplies, potential new water sources and competing demands.</p> <p>Investment in new water infrastructure to meet increasing demand, and drought-proof industries and businesses, whilst nurturing the natural environment.</p> | |
| <p>Resilient Communities</p> <p><i>“Communities that are resourceful, adaptable and supported to mentally and physically bounce back from drought”</i></p> | <p>Strengthen the well-being and social capital of rural, regional and remote communities.</p> | <p><i>WA’s regional communities are transforming and improving drought resilience.</i></p> | <p>Focus Area 2: Climate Monitoring and Forecasting</p> <p>Increased investment in climate monitoring systems that provide accurate and timely weather forecasts.</p> <p>Better access to climate data to inform agriculture planning and decision-making processes, aiding farmers in adapting to changing rainfall patterns.</p> <p>Increased investment in advanced weather stations and localised climate models, that provide regular climate updates and advisories to farmers and agribusinesses.</p> | <p>Focus Area 2: Outcomes</p> <p>Farming communities have access to climate monitoring systems that are accurate and timely.</p> <p>Farmers can readily access climate data, including changing rainfall patterns, to inform planning and decision-making processes.</p> |
| | | | <p>Focus Area 4: Community Engagement and Support</p> <p>Government programs and budgets reflect the value of investing in mental health and well-being support services for farming families and communities coping with the stress and impacts of drought.</p> <p>Fit for purpose community spaces and community-run events that support community cohesion and wellbeing, which is a key protective factor against the impacts of drought.</p> <p>Effective local networks that undertake early detection and monitoring of seasonal conditions and disseminate relevant information to farming communities about the potential for drought conditions.</p> <p>Effective local networks that encourage and support local businesses and entrepreneurship.</p> | <p>Focus Area 4: Outcomes</p> <p>Farming communities have a diverse range of programs that enhance social capital, such as local agricultural groups, workshops, and information-sharing platforms.</p> <p>Farming families and communities can access mental health and well-being support services to assist with the stress and impacts of drought.</p> <p>Local economies are diverse and provide varied employment opportunities, creating a more stable economic environment that is better able to withstand and respond to the economic impacts of drought.</p> |
| | | | <p>Focus area 7: Environmental Conservation</p> | <p>Focus area 7: Outcomes</p> |

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|---|--|--|--|--|
| | | | <p>Attract investment in research and initiatives that protect and restore natural vegetation areas.</p> <p>Wider adoption of land management practices that maintain or improve the condition of natural resources and ecosystems.</p> <p>Effective local networks that support First Nation’s stewardship of natural resources and facilitate the use of traditional ecological knowledge (TEK) and land management practices.</p> <p>Effective local networks that address bushfire vulnerability by building regional capacity around strategic risk mitigation.</p> <p>Effective local networks that connect urban populations to biodiversity and environmental values.</p> | <p>Natural vegetation is protected and restored to enhance ecosystem resilience and biodiversity.</p> <p>Land management practices maintain or improve the condition of natural resources and ecosystems.</p> |
| <p>Resilient Economy</p> <p><i>“A diverse, forward-looking, adaptable business sector, not wholly dependent on seasonal conditions”.</i></p> | <p>Grow the self-reliance and performance (productivity and profitability) of the agricultural sector</p> | <p><i>WA’s regional communities are connected, well and secure</i></p> | <p>Focus Area 2: Climate Monitoring and Forecasting</p> <p>Increased investment in climate monitoring systems that provide accurate and timely weather forecasts.</p> <p>Better access to climate data to inform agriculture planning and decision-making processes, aiding farmers in adapting to changing rainfall patterns.</p> <p>Increased investment in advanced weather stations and localised climate models, that provide regular climate updates and advisories to farmers and agribusinesses.</p> <p>Focus Area 3: Soils, Sustainable Farming Practices and Adaptive Capacity</p> <p>Effective local networks that communicate the benefits of conservation tillage, mulching, and other soil moisture retention techniques to improve soil health and crop resilience.</p> <p>Wider adoption of drought-tolerant crop varieties and diversified cropping systems which have the potential to mitigate risks associated with climate variability.</p> <p>Wider adoption of practices that prevent soil erosion, such as maintaining ground cover and restricting grazing during vulnerable periods.</p> | <p>Focus Area 2: Outcomes</p> <p>Farming communities have access to climate monitoring systems that are accurate and timely.</p> <p>Farmers can readily access climate data, including changing rainfall patterns, to inform planning and decision-making processes.</p> <p>Focus Area 3: Outcomes</p> <p>Farmers are informed and supported to mitigate risks associated with climate variability on soil health and crop resilience.</p> <p>Farmers can access educational programs, resources and tools that help anticipate and respond to drought conditions.</p> |

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|-----------------|---------------|-------------------|---|--|
| | | | <p>Effective local networks that communicate the benefits of using soil amendments - including lime and fertilisers - to manage soil pH levels and improve fertility.</p> <p>Increased investment in training and educational programs to farmers and communities on adaptive practices and climate resilience.</p> <p>Increased investment in resources and tools that help farmers anticipate and respond to drought conditions effectively.</p> | |
| | | | <p>Focus Area 4: Community Engagement and Support</p> <p>Government programs and budgets reflect the value of investing in mental health and well-being support services for farming families and communities coping with the stress and impacts of drought.</p> <p>Fit for purpose community spaces and community-run events that support community cohesion and wellbeing, which is a key protective factor against the impacts of drought.</p> <p>Effective local networks that undertake early detection and monitoring of seasonal conditions and disseminate relevant information to farming communities about the potential for drought conditions.</p> <p>Effective local networks that encourage and support local businesses and entrepreneurship.</p> | <p>Focus Area 4: Outcomes</p> <p>Farming communities have a diverse range of programs that enhance social capital, such as local agricultural groups, workshops, and information-sharing platforms.</p> <p>Farming families and communities can access mental health and well-being support services to assist with the stress and impacts of drought.</p> <p>Local economies are diverse and provide varied employment opportunities, creating a more stable economic environment that is better able to withstand and respond to the economic impacts of drought.</p> |
| | | | <p>Focus Area 5: Finance, Business and Risk Management</p> <p>Collaborations and partnerships that support the development of risk management strategies tailored to the specific vulnerabilities of different enterprises, agricultural sectors and geographical areas within the subregion.</p> <p>Effective local networks that communicate the benefits of financial tools that mitigate the economic impact of drought, and the value of these tools for both large scale farming operations and smaller landholders.</p> | <p>Focus Area 5: Outcomes</p> <p>Farmers can access decision support and financial tools to mitigate the economic impact of drought and improve preparedness.</p> <p>Farmers and agricultural businesses have access to financial support and incentives for implementing resilience-building practices.</p> |

| THEME & OUTCOME | FDF ALIGNMENT | WA RDRP ALIGNMENT | FOCUS AREA & IMPLEMENTATION APPROACH | COASTAL GREAT SOUTHERN RDRP OUTCOMES |
|-----------------|---------------|-------------------|---|---|
| | | | <p>Effective local networks that build awareness of financial support and incentives for farmers and agricultural businesses implementing resilience building practices.</p> <p>Wider take up of funding programs that support the adoption of innovative and sustainable agricultural practices.</p> | <p>Funding programs support the adoption of innovative and sustainable agricultural practices.</p> |
| | | | <p>Focus Area 6: Research and Innovation</p> <p>Effective networks – with both a local and broader reach – that identify opportunities to connect with research, technologies and methods for improving drought resilience in agriculture.</p> <p>Increased collaborations and partnerships between researchers, policymakers, and farmers to develop practical and scalable solutions in the subregion.</p> | <p>Focus Area 6: Outcomes</p> <p>Local leadership of new technologies and methods for improving drought resilience in agriculture.</p> |

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Bibliography

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Appendices

Appendix 1: Regional Context –Strengths, Challenges, Needs and Opportunities

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Geographic Strengths, Challenges, Needs and Opportunities

| Strengths | Challenges |
|--|--|
| <ol style="list-style-type: none"> 1. Cooler and more temperate climate, providing more diverse primary production opportunities (e.g. fruit, nuts, vegetables, wine grapes, dairy, poultry, timber, nursery products, etc.). 2. Access to the coast to support diversified primary production and other industry opportunities, particularly associated with fishing and aquaculture. 3. Access to the coast and Port of Albany provides strong export opportunities to support primary production and other industries. 4. Coastal positioning provides additional energy and water production opportunities which continue to emerge through technological advances (e.g. wave/tidal energy, desalination, green hydrogen production, etc.). | <ol style="list-style-type: none"> 1. The distance from the state's capital, Perth, creates several challenges, including road, water and energy infrastructure capital development and maintenance times and costs, industry transport times and costs, and community isolation. 2. Distance impacts all industries and sectors that are heavily reliant on export and/or import, particularly primary production, construction, and tourism (in the context of destination visitor import). 3. Distance also impacts the attraction and retention of residents, directly through access and isolation, and indirectly through industry challenges (e.g. materials transport, construction delays, and costs of goods and services relative to Perth or closer regional areas). |
| Needs | Opportunities |
| <ol style="list-style-type: none"> 1. Attraction/retention of residents, businesses & visitors. 2. Greater support and channels for primary production exports. 3. Expanded port capacity is needed to support primary production, mineral and, potentially, container exports. 4. Improved & diversified tourism packages, infrastructure development and promotion, to overcome the barrier of distance from the metropolitan area. 5. Expansion of aviation services to/from Perth (and potentially elsewhere) is required for the growth of the tourism and events sectors. 6. Enhanced opportunities for domestic and international transport networks. 7. Investment is required in inter-regional transport routes, including east-west links to meet the needs of residents, tourists and industry. | <ol style="list-style-type: none"> 1. Enhanced community assets and infrastructure will serve to attract and retain residents. 2. Enhanced industry infrastructure and networks will serve to attract, retain and support businesses/encourage industry development and expanded output. 3. Enhanced transport, business and trade infrastructure can encourage private investment into regional industry. 4. Strong and informed tourism and economic development initiatives can stimulate key growth sectors, such as construction, retail trade, arts and recreation, rental, hiring and real estate services. 5. Enhanced assets and infrastructure, with consequent growth in population and visitation, will increase opportunities for private and/or public investment in transport infrastructure and networks. |

Demographic Strengths, Challenges, Needs and Opportunities

| Strengths | Challenges |
|--|--|
| <ol style="list-style-type: none"> 1. Reasonably strong resident attraction/retention and steady growth across Coastal Great Southern LGAs. 2. Strong future population growth prospects, supporting industry development and regional socio-economic development. 3. Strong and growing multiculturalism, adding new knowledge and skills, expanding and diversifying cultural experiences, and supporting industry development. 4. Strong historic median income growth, catching up to state and national incomes to reduce cost of living pressures. 5. Strong historic jobs growth, including in agricultural sectors, leading to industry output growth and overall regional socio-economic development. 6. Relatively low unemployment rates across all localities, demonstrating strong industry demand for workers. | <ol style="list-style-type: none"> 1. Balancing the management of growth in coastal towns with well-planned infrastructure development, including addressing notable challenges associated with the availability of dwellings. 2. An ageing population, leading to increased demand in the aged care, housing, retail, recreation and lifestyle industries. It will require a skilled service sector workforce. 3. The outmigration of youth, reducing the availability of worker capital to support ageing populations and future skills needed for future growth and innovation. 4. Increasing multiculturalism, where some immigrant cohorts are poorly skilled and have minimal English, continuing to health issues and limiting capacity to become active members of the community, and/or where discrimination can cause isolation. 5. Indigenous people continue to face higher levels of discrimination and disadvantage than the broader community. 6. Lower personal incomes than WA and Greater Perth averages, but comparable costs of living; contributing to disadvantage. 7. Volatile rates of unemployment compared to state and national averages; creating uncertainty that may exacerbate disadvantage and outmigration of youth. |
| Needs | Opportunities |
| <ol style="list-style-type: none"> 1. Continued growth in the region requires concomitant growth in the economy, supporting infrastructure development (including affordable housing and social services), and employment prospects to cater for the growth, together with social development. 2. An ageing population demands differing levels of infrastructure and services compared with a younger demographic, such as recreational needs, seniors housing, aged care services, and healthcare. 3. There is a need to attract and retain youth, not only to refresh an ageing workforce, but also to provide ongoing critical support services to an ageing population. This requires appropriate infrastructure and services. 4. Initiatives that will grow economic and employment opportunities for Aboriginal residents are fundamental to the long-term prosperity of the region. 5. Infrastructure and services to cater for multiculturalism, with diversified cultures presenting differing needs and to reduce community discrimination. 6. Existing industry resilience and diversification is required to improve income prospects and offset cost of living challenges. | <ol style="list-style-type: none"> 1. An ageing population presents new opportunities for employment and income, for example in recreational fields and healthcare. 2. Diversified infrastructure and assets could attract and retain a younger age demographic, to reduce youth outmigration and cater for a multicultural community. 3. Diversification of the economy, stimulation and resilience building of sectors such as agriculture, construction, manufacturing, and education could help address comparative disadvantage in incomes and improve unemployment volatility. 4. With the further development of agriculture, construction, manufacturing, and supporting industries, there will be significant opportunities for Aboriginal people who have the skills to secure permanent jobs in these areas of the economy. 5. Significant opportunities exist associated with worker attraction and multicultural diversity, provided they can be suitably accommodated. |

Economic Strengths, Challenges, Needs and Opportunities

| Strengths | Challenges |
|---|--|
| <ol style="list-style-type: none"> 1. A cooler and more temperate climate provides more diverse primary production opportunities. 2. The region is a net exporter, with particular strengths in primary production and manufacturing. 3. Livestock diversification in recent decades has resulted in a relative increase in the production of poultry and pork, particularly in Plantagenet. There are considerable ongoing export opportunities associated with sector development. 4. The Coastal Great Southern is one of the state's top performing wine producing regions. There is strong potential for expansion of sector output and associated tourism. 5. The subregion is a strong plantation timber grower. Woodchopping is a sector with established export market and port throughput. Additional value is gained through the existence of the Albany biomass plant. 6. A strong manufacturing base provides opportunities to capitalise on and adapt to growth in other industries and sectors (e.g. mining). | <ol style="list-style-type: none"> 1. Per capita GRP is lower than for WA as a whole, and the lowest of all other regions apart from Peel. 2. Industry is dominated by agriculture, manufacturing and construction. A lack of diversification creates risks, particularly where industry is exposed to external geopolitical or climate forces. 3. The region's population is ageing, with potentially profound and far-reaching impact on the longer-term outlook, including productivity declines as the workforce retires, increased costs of health and welfare services, and possibility for a long-run population decline. 4. Current energy, water and transport infrastructure limits industry and business growth. 5. Rapid changes in technology will require concomitant upgrades to infrastructure to support them, particularly for advances in primary production, manufacturing and construction technologies that could make or break future performance of these top Coastal Great Southern industries. 6. The construction industry is lagging behind demand, particularly for residential dwellings, which is in turn impacting the attraction and retention of workers and the broader population. |
| Needs | Opportunities |
| <ol style="list-style-type: none"> 1. Diversification of industry is required to boost performance, to provide support in times when certain industries experience downturns, and to reduce exposure to global megatrends. 2. There is a need to encourage new investment and expenditure throughout the Coastal Great Southern, where subregion tends to circulate existing capital or leak it to other regions and states. 3. Energy, water, transport and telecommunications / technology infrastructure must keep pace with industry demand and changing geopolitical, climate, and technology megatrends, or our top performing industries will suffer. 4. Primary production, manufacturing and construction industries in the Coastal Great Southern need to keep pace with global megatrends, in terms of both adaptation to climate, technological and geopolitical changes and increased volume output to support rapid urbanisation and demographic change. 5. The construction industry in particular needs to boost volume output to meet resident and worker demand, in turn supporting other industry growth and development (including through the attraction and retention of | <ol style="list-style-type: none"> 1. Stimulation of the primary production, construction, manufacturing and related industries can boost performance in these sectors, including improvements to net export capabilities. 2. New job opportunities can provide enhanced economic outcomes for Great Southern residents, including persons experiencing disadvantage, and provide additional incentive to attract and retain younger residents. 3. The Great Southern has a wealth of untapped potential in local produce and niche primary production or manufacturing opportunities for international export markets, particularly to service growing Asian markets such as China, Indonesia, Malaysia and India. There are additional opportunities associated with global food security and land as a resource (e.g. niche products for global markets such as carbon sequestration credits). 4. There are opportunities for value-adding industries and to diversify the economy. For example, the end to live sheep export by sea could create new value-adding opportunities for the subregion. 5. An end to post-COVID Chinese tariffs on Australian produce provides opportunity to capitalise on renewed market availability (particularly for barley, beef, and wine). |

workers and through non-residential building development to support various industries).

6. Hardwood plantations in the area are mostly chipped or pulped, as for wider WA. There are opportunities to add greater value (e.g. through biomass or cross laminated timber sector establishment).

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Appendix 2: Infrastructure Audit Summary

The following section provides a condensed summary of the infrastructure audit conducted for this plan. The full infrastructure audit is included in the **Coastal Great Regional Context Report** which can be accessed on the GSDC website www.gsdc.wa.gov.au

Infrastructure Audit

Infrastructure quality has a major effect on the capacity of a regional economy to grow, to remain resilient in the face of challenges, and to quickly leverage opportunities. Infrastructure is fundamental to the future success of the Great Southern.

The following section provides an overview of current infrastructure in the subregion, likely future demand, and the opportunities and challenges this will present for the region in the context of drought and adapting to a changing climate.

| Key Findings – Transport Infrastructure (Road, Air, Rail, Sea) | |
|---|--|
| Current Situation | Future Considerations |
| <p>The region’s strategic freight, tourist and inter-town road routes are Albany Highway (the main route to and from Perth), South Coast Highway and Chester Pass Road.</p> <p>Albany Regional Airport is the only airport with scheduled passenger services, carrying over 60,000 passengers per year to and from Perth.</p> <p>The region is well-serviced by rail transportation of bulk commodities, predominantly grain (from a network of CBH receival bins) and woodchips.</p> <p>The Great Southern Rail line links to Perth, including Kwinana, and the Port of Albany.</p> <p>The Port of Albany provides a strong connection to global markets for primary produce and plays a secondary tourist visitation role, through hosting cruise ships. It is located in one of the three best natural harbours in the Southern Hemisphere, with safe natural anchorage, location to major shipping routes, road and rail access and the capacity for expansion for new industries.</p> | <p>The quality and efficiency of the road network directly impinges on the competitiveness of the region’s primary producers in global markets.</p> <p>The high cost of passenger flights is a barrier to significant expansion.</p> <p>With additional investment, there is potential to expand the rail service.</p> <p>The port does not have a containerisation facility, which limits its role in relation to manufacturing and other containerised export opportunities.</p> |

Figure 7. Major Roads South West WA



Key Findings – Water (Supply and Demand)

| Current Situation | Future Considerations |
|---|--|
| <p>The Great Southern has multiple town potable water schemes; the Lower Great Southern Towns Water Supply Scheme and the Great Southern Towns Water Supply Scheme. Other settlements in the region, including Frankland River, receive their water supplies from a variety of local sources.</p> <p>Surface water is the primary water source for towns, agriculture and industry with groundwater playing an increasingly important role.</p> <p>The Great Southern region is leading wastewater recycling in WA. On average, the Water Corporation recycles 70 per cent of its wastewater flows across the region; however, in Albany, Mount Barker, Tambellup and Walpole the rate is 100 per cent.</p> <p>It is estimated that 80 per cent of water use in the region is unlicensed, and most of that is abstracted from surface water sources.</p> <p>Water for spraying and other purposes can also be made available through Shire standpipes.</p> <p>Low rainfall coupled with ongoing hot and dry conditions are impacting on-farm storages, shire dams and strategic community water supplies. Both surface water and groundwater resources are not being replenished at the same rate as in the past.</p> | <p>An increase in water demand is projected, driven by population growth, an increase in visitor numbers and agricultural production.</p> <p>There are insufficient water resources available to support the projected growth of agriculture in the Great Southern; use of existing groundwater and surface water sources has reached sustainable limits.</p> <p>The climate in the region is continuing to dry, and climate change will continue to place more pressure on surface and groundwater resources, affecting town water supplies, agricultural production and ecosystems.</p> <p>The drier landscape could have implications for bushfire fuel loads, potentially worsening the severity of bushfires in the future.</p> <p>Streamflow and groundwater recharge are likely to continue to decline, increasing pressure on existing water sources, particularly independent town water supply schemes that draw on local dams and catchments. Some of those local dams are already performing less reliably; this effect is likely to intensify.</p> <p>There is likely to be increased water loss through evaporation as temperatures rise, and increased salinity due to seawater intrusion into aquifers in coastal areas, and soil salinity and saline groundwater in inland areas. Shallow groundwater resources and small dams with small catchments are the most vulnerable.</p> |

“Issue with groundwater around Albany being acidic.. may have additional treatment costs. Sheep/cattle can drink it but will shut down stomach system. So can be in green field, but starving” (stakeholder survey response)

Figure 8. Water use by sector in the Great Southern region 2020-21

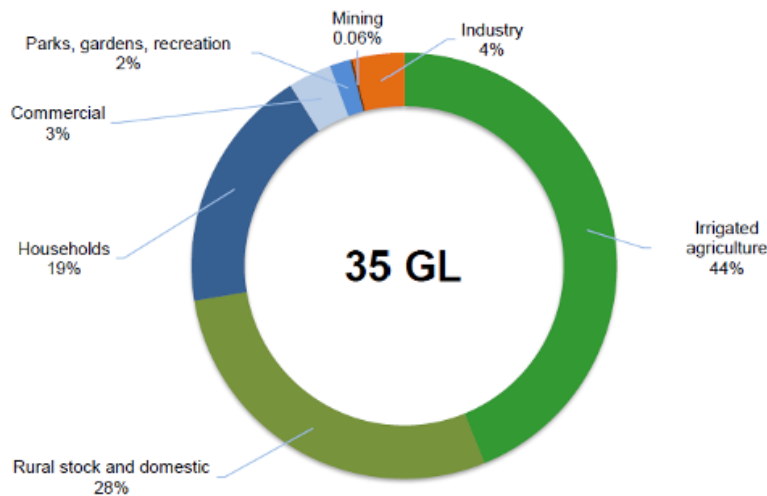


Figure 9. Proclaimed groundwater and surface water



“In drought times, labour becomes a massive issue. (animal) mortality means more time picking up and disposing, pumping water. Then this impacts regular activities” (stakeholder survey response).

“The (Torbay) area is drought affected and is changing perceived accessibility to water. Watercorp manages the waterways, floodgates and siphons. Torbay Catchment is a Priority 2 area (referring to the Water Quality Protection Framework) and is known to be the ‘Food Bowl’ of the region” (stakeholder survey response).

Key Findings – Energy

| Current Situation | Future Considerations |
|---|---|
| <p>Baseload power to the region is provided from the South West Interconnected System (SWIS), with generation from coal-fired power stations in the Collie area.</p> <p>Wind power has a relatively long history in the region, with the Albany Wind Farm opening in 2001. Recent developments include the extension of the Albany Wind Farm and wind turbines at Mount Barker and Denmark. There is also a well-advanced project from the private sector for a 150 MW wind farm at Flat Rocks (located near Kojonup).</p> <p>In 2024, 33.6 percent of electricity delivered by the SWIS was from renewable sources (including generation from solar PV systems)¹⁷.</p> <p>The lower southwest areas of the state are not currently serviced with natural gas.</p> | <p>Population growth will lead to increasing peak demand within the SWIS, which is forecast to increase at an average annual rate of 1.4% over the next 10 years, resulting in the need for upgrades and expansion of capacity.</p> <p>Prospects for economic growth, from anticipated diversification of the economy into the minerals sector and further downstream processing of agricultural product will further increase demand on infrastructure.</p> <p>The extension of the Dampier to Bunbury Natural Gas Pipeline (DBNGP) would provide significant flow-on benefits.</p> <p>New developments in gas, solar, wind and wave energy technology and the potential they present for more ‘localised’ energy generation, present opportunities for meeting the needs of the region.</p> |

Key Findings – Communications

| Current Situation | Future Considerations |
|---|--|
| <p>Gaps in electronic and digital infrastructure constrain social and economic development and rural enterprises in the region.</p> <p>Broadband and mobile phone coverage are patchy across rural areas of the Great Southern.</p> | <p>High quality, consistent broadband is essential to attract new businesses to the region and digital awareness is essential for existing operators to stay competitive. Although services have improved, bandwidth and quality concerns continue to impact numerous sectors.</p> <p>Future proofing’ rural communities is a high priority; this requires improved IT support and the capacity to utilise technology.</p> |

¹⁷ Australian Energy Market Operator, Fact Sheet – The Wholesale Electricity Market, 2024

Infrastructure Strengths, Challenges, Needs and Opportunities

| Strengths | Challenges |
|--|---|
| <ol style="list-style-type: none"> 1. The Port of Albany is an extremely valuable asset with strong grain and woodchip export capacity. The port is well serviced by road and rail networks. 2. Coastal Great Southern water systems are relatively well mapped and understood. New sources are being investigated and implemented and procedures are in place to provide water in times of need. 3. The Coastal Great Southern has a relatively strong renewable energy mix. | <ol style="list-style-type: none"> 1. Coastal Great Southern road networks are experiencing increasing volumes of traffic from resident, visitors and heavy haulage. Many roads are narrow or in poor condition, presenting both safety and productivity risks for road users. 2. The port currently does not have a containerisation facility, and this limits its role in relation to manufacturing and other containerised export opportunities, potentially constraining market access for some sectors. 3. Water security, changing weather patterns and other climate-related factors threaten the future of traditional industry within the Coastal Great Southern, particularly with a heavy reliance on conventional agricultural produce and production. Each of these factors has significant infrastructural implications. 4. It is difficult to estimate the use of unproclaimed water supply and the amount of water drawn in these areas cannot be regulated. The vast majority of the Coastal Great Southern is unproclaimed, and thus unregulated. 5. There is not enough water supply to meet projected demand from the agricultural sector. 6. Energy supply is key challenge for the region. Whilst the proportion of renewable energy is increasing, there are several challenges associated with maintaining baseload power, particularly when wind and solar are not available. 7. Rapid changes in technology will require concomitant upgrades to infrastructure to support them (including energy and communications). |
| Needs | Opportunities |
| <ol style="list-style-type: none"> 1. Ongoing road infrastructure upgrades are required to keep pace with population, visitor and industry growth. 2. Expanded port capacity is needed to support primary production, mineral and, potentially, container exports. 3. Providing regional energy and water security is an essential support for economic growth in the region. 4. There is a need to better regulate non-potable water supply / increase proclaimed areas, providing more control and better monitoring capacity, particularly in times of drought. 5. Continued investment in water and energy infrastructure is required to keep pace with projected population and industry growth. 6. Continued enhancement of technology and communication infrastructure is required to support growth in diverse demographic groups. | <ol style="list-style-type: none"> 1. Enhanced road infrastructure will improve safety and productivity for road users. 2. Enhanced port infrastructure, such as containerisation facilities, could provide new export opportunities. 3. Climate change should be viewed as an opportunity, as well as a challenge – providing a driver for increased innovation in a sustainable, more diverse, and resilient primary industry sector, and developing a regional knowledge base that can contribute to the knowledge economy. However, this requires adaptation, updating and innovating current practices and technologies, upskilling the workforce, and overcoming barriers such as the perceived risks of regional innovation. 4. Improved water infrastructure and better regulation of water sources can improve industry resilience. 5. Enhanced energy infrastructure and systems could reduce reliance on inefficient energy networks spread over long distances, reducing energy costs and improving reliability and hence lowering barriers to existing industry growth as well as attracting new businesses. |

7. Agriculture and manufacturing sectors will need to adapt to technological advances, particularly those that increase productivity, such as AI, automation and robotics.

6. Adaptation to and adoption of technological advancement in primary industry and manufacturing sectors can improve competitiveness and provide new growth opportunities.

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