



GREAT SOUTH COAST DROUGHT RESILIENCE PLAN

Acknowledgement of Country

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.

The recognised Traditional Owners of the Great South Coast region include the Gunditjmara, Wadawurrung and Eastern Maar Peoples, and the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupgalk Nations, as well as other Traditional Owner groups in Victoria which are not formally recognised

We honour Elders past and present, whose knowledge and wisdom have ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protections of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

This Plan was jointly funded by the Victorian and Commonwealth Government under the Future Drought Fund.



Preface

Drought is a prolonged, abnormally dry period that results in significant impacts to communities, businesses and the environment.

The Great South Coast (GSC) Drought Resilience Plan is one of 9 regional drought plans developed in Victoria, as part of the Regional Drought Resilience Planning (RDRP) Program, under the Future Drought Fund. GSC communities are committed to taking steps now to prepare for and respond to dry seasonal conditions and droughts.

The \$5 billion Future Drought Fund invests in a wide range of drought related initiatives to help Australian communities prepare for the impacts of drought. These are implemented through a suite of programs under 4 focus areas:

1. Better climate information
2. Better practices
3. Better planning
4. Better prepared communities

The Regional Drought Resilience Planning Program is part of the 'better planning' focus area and supports the development of regional drought resilience plans throughout Australia from 2021 to 2025.

This Drought Resilience Plan for the GSC region (the Plan) has been developed through extensive consultation with a wide range of local individuals, groups and organisations. The Plan includes a collectively agreed framework for building economic, environmental and social resilience to guide regional effort and investment.

The Plan builds on historic and recent experiences of drought and integrates existing drought-related programs and strategies. Some of the key programs and documents that informed the Plan are:

- South-West node of the Victorian Drought Resilience Adoption and Innovation Hub
- Barwon South West Regional Climate Change Adaptation Strategy 2020–2025
- Glenelg Hopkins Regional Catchment Strategy
- Glenelg Hopkins Catchment Management Authority Climate Change Strategy
- Food & Fibre Great South Coast '18 Point Plan for water policy reform in Victoria'

- Victorian Government's 'Strong, Innovative, Sustainable: A New Strategy for Agriculture in Victoria'

- Future Drought Fund's Farm Business Resilience Program
- Future Drought Fund's Helping Regional Communities Prepare for Drought Initiative – Community Impact Program

Some aspects of the Plan have been developed using a consistent methodology across Victoria including:

- **Drought impact analysis** to understand the prevalence, severity and frequency of past, present and future drought impacts
- **Stakeholder engagement** to identify key insights and suggested priority areas for action to build drought resilience.

As part of the planning process a Drought Resilience Reference Group was established for the region. This group included key stakeholders with specialist knowledge of agriculture, health, finance, water and environment. The GSC Reference Group included the organisations:

- Corangamite Shire Council
- Moyne Shire Council
- Southern Grampians Shire Council
- Glenelg Shire Council
- Warrnambool City Council
- Glenelg Hopkins Catchment Management Authority
- Food & Fibre Great South Coast
- South West Node of the Victorian Drought Resilience Innovation and Adoption Hub
- Wannon Water
- Southern Farming Systems
- Southern Rural Water
- West Vic Dairy
- Rural Financial Counselling Service
- Department of Energy, Environment and Climate Action
- Department of Families, Fairness and Housing
- Department of Health and Human Services
- National Centre for Farmer Health
- National Emergency Management Agency



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INTRODUCTION

Drought is a recurring feature in the Australian landscape, and has been for thousands of years. However, the impacts of climate change are increasing the frequency and severity of drought. The Australian and Victorian Governments have partnered to support regional areas in building resilience to future droughts, with a focus on adaptative and transformational change. The Australian Government's Drought Response, Resilience and Preparedness Program vision is to have farm businesses and rural communities that

are prepared for, and capable of managing drought in pursuit of a prosperous and sustainable future.

Government, industry and community have contributed to the development of this place-based drought resilience plan for the GSC region. A wide range of stakeholders have participated in either group discussions or one-on-one interviews (Appendix 1). Future engagement will ensure Traditional Owners self-determine their involvement in the Plan.

Purpose and Goals

Development of the Plan has encouraged a collaborative and coordinated approach to building community and business drought resilience. The Plan includes a collectively agreed framework for building **economic, environmental and social resilience**.

The long-term objectives of the Plan are:

- Build the social capital of GSC communities through increased connectivity, improved wellbeing and a greater sense of security.
- Empower GSC communities and businesses to implement economically transformative activities to build their resilience to drought.
- Support GSC land managers to adopt approaches which will improve the natural resource base for long term productivity and landscape health.
- Support Traditional Owners and Aboriginal communities to continue to self-determine and care for Country in lead up to, and during times of drought.

For this Plan, drought resilience is defined as the ability to maintain function while effectively responding to the impacts of drought. It is about being able to adapt, thrive and take advantage of new opportunities rather than trying to maintain

the status quo. This includes the ability to be flexible yet decisive during periods of uncertainty and change.

Resilience is critically important in rural and regional communities because it assists each person and group to build the mindset, social network and business skills to navigate difficult events and challenging seasons.

Droughts pose a key threat for Traditional Owners, impacting the health of Country, and affecting their rights and responsibilities in caring for Country. For Traditional Owners and Aboriginal Victorians, caring for Country extends beyond physical landscapes and involves the natural waters, animals and resources and how they influence and impact each other. Healing Country in the wake of drought events is essential to ensuring positive health and wellbeing outcomes for Aboriginal Victorians.

A partnership approach will be needed with Traditional Owners, in line with the Government's policy and legal commitments, including the Victorian Aboriginal Affairs Framework and the Department of Energy, Environment and Climate Action's *Pupangarli Marnmarnepu – 'Owning Our Future' 2020–2025 self-determination reform strategy*.

“Each community has a responsibility to develop resilience by strategically planning services to support and empower its people”.

— Aunty Claudette Lovett, National Centre for Farmer Health

Plan design and development

Action learning is central to the way this Plan has been developed, by listening to diverse perspectives about how drought has been managed in the past and determining which strategies will likely work best in the future. The Plan was developed over 9 months, drawing on conversations with stakeholders through workshops and meetings, reviewing existing strategic plans, and community feedback through the Victorian Government’s public consultation platform Engage Victoria.

During community conversations, local stakeholders identified that drought is experienced differently across the region and that there are many pathways to resilience depending on individual circumstances. They also commented on the connection between drought, fire and floods, and suggested that a more integrated approach to risk mitigation was required. Similarly, it is acknowledged that for many Traditional Owners, connection to Country is more holistic and not bound by the region and constructs of the Plan, with drought impacts likely to be broader than the GSC region and the actions identified in this Plan.

The community believe that increased awareness and preparedness is essential to building improved social, environmental, and economic resilience. They agreed that all businesses have a responsibility to prepare for variable seasons and drought and that the best way to mitigate the impacts are by understanding the risks and being well prepared.

In this plan, 5 themes were identified as critical to building resilience:

- Resilient communities
- Sustainable management of natural resources
- Resilient local businesses and regional economies
- Innovation and skills development
- Key enablers

Under each theme, stakeholders identified **outcomes and actions** to focus effort and guide investment critical to building drought resilience. The proposed actions capture the lived experience,

local knowledge and solutions identified by the GSC community through 9 months of conversations. Some of the actions can be addressed directly by the community, while others require broader cooperation from governments, agencies and the private sector.

The themes, outcomes and actions provide a robust framework for building regional resilience based on current knowledge of the most effective ways to prepare for drought.

Ultimately, this document is a snapshot of the priorities of the GSC community at a point in time, however, the drought resilience story does not begin or end with this Plan. Rather, these priorities will evolve as our understandings of drought, variable seasons, risk and resilience improve. An implementation plan detailing costed activities and their timelines will be developed once the Plan is approved.

The GSC Drought Resilience Plan Reference Group (the Reference Group), oversaw the consultation process, and developed the thematic framework based on feedback received from local stakeholders. This thematic framework includes themes, outcomes and proposed actions for building resilience. The Reference Group noted that the framework:

- Provides a ‘collectively agreed framework’ to focus effort and guide investment
- Builds on and complements existing drought related strategies and plans (Appendix 2)
- Captures knowledge of recent drought experience in a form that can be used to improve preparedness and response
- Provides an avenue for ongoing conversations with community
- Provides the basis to develop an implementation plan with specific actions.

The Reference Group would like to acknowledge and thank the many organisations and individuals who contributed their time and expertise to shape this Plan.



VISION AND OUR GUIDING PRINCIPLES

“Resilience contains all the elements of connectedness, resourcing, future thinking, social justice and leadership”.

— Joanne Brown, Southern Grampians Glenelg Barwon South West Public Health Unit

To ensure a best practice approach the following vision and principles were used to develop this Plan.

Vision: The Great South Coast region collaborates with purpose for an aligned, strategic and coordinated approach to building drought resilience with improved community connectedness, enhanced business risk management and a focus on building the health of the natural environment.

Guiding Principles

The following principles are known to have positive benefits in building resilience:

- 1 **Self-reliance and risk mitigation:** drought is not an exceptional circumstance, but a risk to be managed along with other business threats.
- 2 **Encourage preparedness:** investment should focus on encouraging preparedness in good years and support community connectedness and wellbeing in times of drought.
- 3 **Collaboration and co-design:** drought preparedness programs should be co-designed with Local Government Authorities and other relevant stakeholders to ensure they effectively address local community priorities.
- 4 **Improved decision making:** providing the best possible information and tools to support evidence-based decision-making for communities, business and government.
- 5 **Integration:** foster collaboration between organisations to deliver timely, place-based, integrated services which simplify user access and reduce stress.
- 6 **Leadership and community networks:** drought programs should be designed and delivered in partnership with trusted, established networks and Traditional Owners/First Peoples.
- 7 **Traditional Owner Self-Determination:** Work with Traditional Owners to provide opportunities for them to be involved in, and have their self-determined goals reflected in, implementation of drought preparedness and resilience activities.

THE GREAT SOUTH COAST REGION

Region and Community

The Great South Coast region covers about 10% of Victoria and consists largely of rural and coastal areas. The southern boundary of the region forms part of the south-eastern Australian coastline. The northern part of the region borders the Wimmera and includes the Grampians, which span several regions. The western reaches of the region border South Australia and primarily consist of agricultural land and national parks.

The region incorporates the local government areas of Corangamite, Glenelg, Moyne, Southern Grampians and Warrnambool. Located approximately 265 kilometers southwest of Melbourne, the City of Warrnambool is the region's largest population centre with over 35,500 people. In 2019 the 'IPSOS

Life in Australia' survey ranked Warrnambool and the Southwest the most livable regional community in Australia (GSC Economic Futures, 2020).

The recognised Traditional Owners of the region include the Gunditj Mirring, Eastern Maar, Wadawurrung and the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupgalk Nations. Aboriginal Peoples have inhabited this region for thousands of years with a strong connection to Country built on cultural practices and spiritual beliefs. There are several heritage sites which hold economic, social, environmental, spiritual and cultural heritage value to Aboriginal communities including Budj Bim Cultural Landscape, Koroitj (Tower Hill) and Gariwerd (the Grampians).

Geography

Taking in the catchment areas of the Glenelg and Hopkins Rivers, the Great South Coast is home to many well-known landscapes including the southern part of the Grampians National Park, Budj Bim Cultural Landscape, Tower Hill, the Twelve Apostles, and Cape Bridgewater. A temperate climate with reliable rainfall as well as extensive groundwater systems make the area well suited to agricultural production. The region also has an impressive and extensive coastline which is popular with locals and tourists.



Photo: Tracey McRae



POPULATION
(2020)

POPULATION GROWTH
(2011–2020)

GROSS REGIONAL PRODUCT
(2020)

\$5.8
billion

2.4%

104,200

Source: Great South Coast Regional
Economic Development Strategy (2022)

Population

In 2020 the region had a population of approximately 104,200. Except for the major hub of Warrnambool, population is spread across the region's major towns including Hamilton, Camperdown, Portland, Terang, Port Fairy and Casterton. The region has experienced limited population growth in recent years. Subdued growth is expected in the Warrnambool and Moyne shires, while the population is predicted to decline in the other areas, largely driven by a net outflow of younger residents (Frontier Economics, 2022).

Industry/employment

The major sectors in the GSC economy include agriculture, forestry and fishing, health care and social assistance, retail trade and education and training. These are the dominant sectors contributing to the Gross Regional Product (GRP) of approximately \$5.8 billion. The agri-food sector (Agriculture, Forestry & Fishing and Food Product Manufacturing) employs a quarter of the region's workforce and generates a third of the regional economic output. The GSC region is the gateway to the Otway Basin, a 150,000 square kilometer onshore and offshore natural gas basin (Great South Coast Regional Economic Development Strategy, 2022).

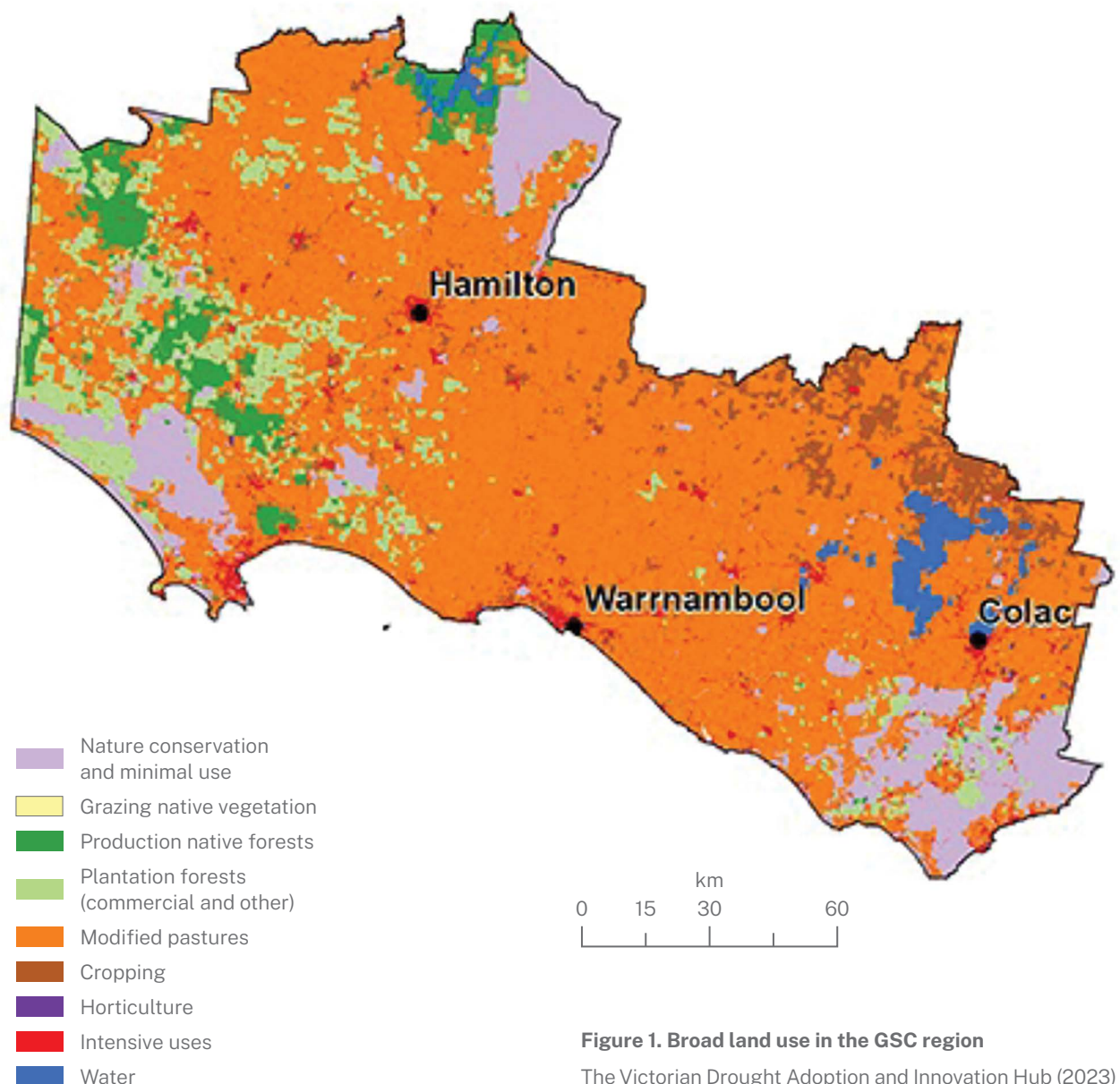


Figure 1. Broad land use in the GSC region

The Victorian Drought Adoption and Innovation Hub (2023)

Two universities and a TAFE operate in the region. Deakin University's Warrnambool Campus provides specialist education, research, development and commercialisation across a number of fields, while RMIT University Hamilton has undergraduate and postgraduate course offerings, and a focus on applied research. Vocational training is offered by Southwest TAFE, and Rural Industries Skills Training (RIST).

The GSC workforce is highly skilled, exceeding Victoria's regional average share of the skilled agricultural workforce. Often referred to as a 'powerhouse agricultural economy', the region has some of Victoria's largest dairy, beef, lamb and wool producers, providing productivity and efficiency benefits through economies of scale.

The health care and social assistance sectors have realised significant growth, which is consistent with regional Victorian trends. Other prominent industries include retail trade, manufacturing, education and training. Total employment growth has averaged just 0.2% per annum over the last decade, although strong employment growth has been registered in the health care and social assistance, education and training sectors, reflecting some population growth in the region.

Similar to other agricultural economies across Victoria, the last 5 years have seen declines in output and productivity. Rural industries are encountering an adjustment period marked by variable seasonal conditions, a globally competitive environment, farm aggregation, and rapid technological change. The outlook for the industry to return to growth is positive, but it largely depends on how it adapts to changes and capitalises on opportunities (Great South Coast Regional Economic Development Strategy, 2022).

Climate trends

Rainfall in the GSC region occurs predominantly in winter and spring and is generally the result of rain-bearing weather systems from the southwest. Most areas receive between 600–750mm of rain per year. The highest rainfall generally occurs in the Simpson area, with over 950mm annually, while Coleraine records approximately 606mm per year. Since the 1950s, average rainfall has declined, especially in autumn.

Climate projections for the region based on climate change scenario modelling (Frontier Economics, 2022) indicate continued variability and change in future with:

- average temperatures to increase by 1.4–1.9°C
- spring rainfall to decrease by 6–12%
- an increase of up to 52% in the number of fire danger days

“Adoption of practices is the key”.

— Cam Nicholson, Southern Farming Systems, South West Node
of the Victorian Drought Resilience Innovation and Adoption Hub

DROUGHT IN THE GREAT SOUTH COAST REGION



Droughts are a cyclical feature of the Australian climate. They can easily be characterised in hindsight, however in reality they are slow moving, complex and dynamic. The impacts of drought can be highly variable across the region depending on rainfall, soil type and topography. Droughts have wide ranging consequences and can severely impact multiple sectors leading to lower agricultural yields, increased production costs and negative flow on effects to regional economies.

The effects of climate change, including drought,

also significantly impact Aboriginal communities across Victoria. Drought harms Country and people, through impacts on waterways, plants, animals, ecosystems and seasons, making it hard to practice culture and heal Country. Cultural heritage sites are also damaged by fire, drying soils and erosion, caused by drought.

An integrated assessment by Frontier Economics (2022) of the socio-economic and environmental impacts of past and future droughts was prepared to inform the development of the Plan and is



available as a supplementary report –Drought in the GSC Region. The report looks at not only the effect drought has on agriculture, but also the flow on effects to regional communities.

Agriculture is the dominant land use, economic driver and employer for the region and the impact of drought on this sector depends on the preparedness and ability of agribusinesses to respond. Some agribusinesses can prosper if they are able to take advantage of good decision making, and high commodity prices. However,

there is generally an economic downturn associated with drought, including reduced cash flow through the local economy. Younger and less established farmers may be disproportionately impacted, and succession planning in family businesses is often disrupted.

The GSC community recognises the cyclical connection between drought, fire and floods, and the devastation they can cause. Often the first rains following a drought contribute to issues associated with contaminated run off and erosion.

Recent experience of drought

Historically, drought has affected the region to varying degrees with each drought being unique in its severity and distribution. Areas around Hamilton, Dunkeld, Casterton and Heywood are often the most seriously impacted due to their inland location and reliance on agriculture. Areas closer to Warrnambool, Port Fairy, and Portland tend to have more diverse economies and a milder climate.

The following section provides an insight into community experiences of drought in the region. Lessons learned from these experiences have greatly influenced the development of the Plan.

Significant droughts in the region include:

- 1915, which many say was the worst drought on record
- 1940–44, this dry period led up to the devastating 1944 bushfires
- 1966–67, remains vivid in the minds of many farmers in the Hamilton area
- 1977–78, when the extraordinarily hot conditions led to many livestock perishing
- 1982–83, the Bransholme area in particular encountered severe drought
- 1997–2009, the Millennium drought
- 2014–2015, where rainfall totals from July to October were among the lowest ever recorded
- 2018–2019, when severe dry seasons affected many areas

The Bureau of Meteorology (2022) reported that the Millennium drought was essentially a cool-season drought in southern mainland Australia, with low rainfall in winter and spring, and above average warm-season (November to March) rainfall received in many areas. A feature of the Millennium drought was the extended dry period the region encountered. The following section provides an overview of the community's experiences of drought and some of the lessons that have influenced the development of this Plan.

Figure 2 shows the severity of the Millennium drought from 1997 to 2009 with parts of the region experiencing rainfall very much below the average.

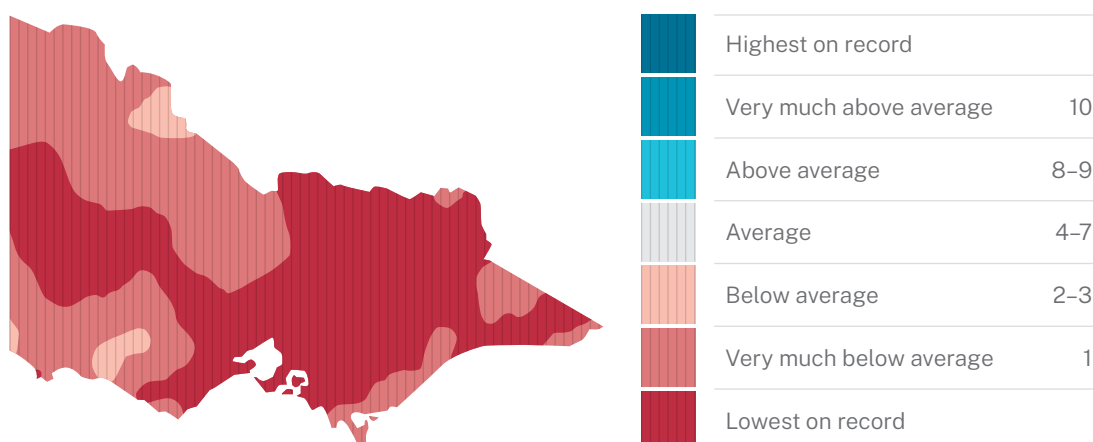
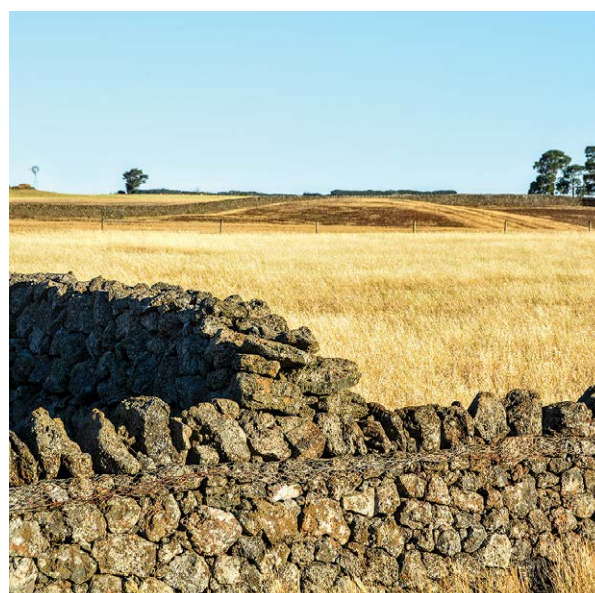


Figure 2. Victorian rainfall decile range during the Millennium drought 1997 to 2009.

Frontier Economics (2022)

Drought has many pervasive impacts on communities. As surface water and subsoil moisture continue to decline during drought, the cash, fodder and water reserves of many farms becomes dangerously low or depleted. Compounding the issue of reduced cash flow are high supplementary feed or agistment costs, and the additional work of carting water for stock. In this situation agricultural businesses look for ways to reduce their spending on critical things like healthcare. The reduced spending of farmers flows on to other regional businesses, and impacts the regional supply chain.

A scan of local newspapers between 2006–2009 revealed some of the Millenium drought related issues that were being reported on, for example:

- The drought was having a severe impact on farmers across the southwest, from broadacre crop growers and graziers to dairy farmers and horticulturalists.
- Full Exceptional Circumstances (EC) drought assistance was declared for southwest Victoria, this meant farmers were eligible for interest rate subsidies, income support, assistance with municipal rates, and potentially receiving a Health Care card.
- The Minister for Agriculture, Fisheries and Forestry said the declaration covered about a third of the state, with assistance being provided to more than a quarter of Victoria's farmers and farm dependent businesses.
- Many farmers had already sold older stock to help ease the burden of high fodder costs and were now concentrating on feeding their breeding stock.
- Farmers were borrowing money to buy feed for stock, with feed costs of up to \$10,000 a week.
- Water levels in local lakes and river systems had significant declines.
- Community leaders were calling for improved access to mental health support.
- Invasive pests were causing widespread damage on public and private land.
- The Reserve Bank of Australia (RBA) were anticipating that the drought would 'knock off' up to one percentage point of GDP growth in the 2007 financial year, and that in terms of macro-economic impacts food inflation would pick up (Hamilton Spectator, March 2007).
- While it did not receive significant media coverage, the Department is aware that drought also had a significant impact on Traditional Owners' ability to care for Country.

Higher temperatures during these dry years resulted in increased evaporation rates which further dried out the landscape. These conditions peaked during the Black Saturday heatwave where catastrophic bushfires resulted in the loss of 173 lives in Victoria. Bushfires started in January 2009 and continued until March (Bureau of Meteorology, 2022).

The social, environmental and economic vulnerabilities that already exist in communities are amplified as drought conditions slowly unfold. Table 1 summarises the interconnected impacts of drought as described by the GSC community.



Social

- People self-isolating and disengaging from community life
- Breakdown of community connections/although sometimes there is a strengthening of community connections
- Decrease in volunteering
- Increased sense of powerlessness and isolation experienced by many
- Trauma from past and lived experience
- Increased stress and pressure on relationships and families
- Many not seeking help because they were too proud
- Increased anxiety and depression
- Poor mental and physical health e.g., high blood pressure and heart disease
- Most vulnerable families struggled with providing basic meals, paying bills, often defaulting on payments to local businesses
- Increased suicide and self-harm
- Increased strain on health services
- Younger people felt there was no future in the region and left to find employment in the city
- Gardens, sports fields, green spaces dying and parks turning to dust
- Traditional Owners unable to practice culture and care for Country
- Damage to cultural heritage sites

Economic

- Increased input costs for farmers
- Increased transport and logistics issues
- Most of our larger centres are heavily dependent on servicing the agricultural sector. Farmers were not “spending” in small towns, hence lower spending affected the whole business community
- Less cashing circulating through the regional supply chain
- Spending re-directed or re-prioritised to high need ag inputs e.g. water and feed to keep animals alive
- Water costs became unsustainable
- Some dairy herds needed to be dried off
- Difficulties encountered with succession planning
- Loss of family farms and businesses
- Impact on workforce and decrease in job numbers
- Less training undertaken, fewer apprenticeships and traineeships
- Increased costs constructing automatic watering systems for sports ovals, botanic gardens and other public open spaces
- Less disposable income for recreation
- Coastal areas often had more diverse economies

Environment

- There were extreme differences observed between north and south of the Glenelg Highway
- Reduced river, dam, lake and surface water levels
- Loss of ground cover and soils due to erosion
- Loss of resilience in the environment with many in the community feeling more vulnerable
- Negative impact on biodiversity with pressure on the ecosystem from hungry stock and wildlife
- Potential loss of plant species
- Stress on patches of native vegetation, waterways and fauna
- Increasing weeds
- Increased vulnerability to attacks from invading pests
- Mouse, locust and vermin plagues
- Green drought, at times the landscape still looked green but there was little growth and no surface water
- Increased fire risk
- Traditional Owners’ ability to care for Country using traditional and culturally appropriate tools is reduced.
- Culturally significant places, species and ecosystems impacted
- Cultural water flows reduced

Table 1. The interconnected impacts of drought in the GSC region

“All land in the GSC region needs to be managed in a way that protects and builds biodiversity and soil health, including pest, plant, and animal management”.

— Sally Cunningham, National Centre for Farmer Health

Future drought scenarios

Future drought modelling by Frontier Economics (2022) includes the below scenarios:

- Gross Domestic Product falling by 9.2%, a reduction of more than 800 jobs, and a decline of 2.7% in consumer spending
- Lower average rainfall and hotter, drier seasons with a growing number of fire danger days
- Inland lakes, rivers and dam levels to decline with negative impacts on biodiversity
- Social and economic impacts on the community
- An increase in ‘sea changers’ moving to coastal areas leading to increased water demands
- Parks and sporting precincts facing water restrictions
- Fluctuating tourist numbers when water restrictions are implemented or following bushfire
- Services such as healthcare and Rural Financial Counselling may see increasing wait times
- Cropping areas in the north may move further south impacting landscape biodiversity
- Cultural sites located on flood plains may be vulnerable to damage
- Smaller, more agriculturally reliant communities located in the north-west of the region will potentially be more severely affected





RESILIENCE

Definitions of Resilience

Walker (2020) defines resilience as 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 also about changing and adapting to new circumstances.

For this Plan resilience is described as the ability to effectively respond to the impacts of drought and maintain function. It is about being able to adapt, thrive and take advantage of opportunities when encountering change. Rather than maintaining a persistent or stoic response to the situation, resilience includes the ability to make tactical decisions in times of uncertainty.

Resilience assists individuals and groups to build the mindset, social network and business skills required to navigate the challenges encountered in difficult seasons.

Community Resilience

The Resilient Communities Framework (2022) describes 'community resilience' as "the capacity of individuals, communities, institutions, and systems exposed to hazards to survive, adapt, and thrive in ways that improve outcomes, and improve community well-being more broadly."

The Victorian Community Resilience Framework for Emergency Management (2020) provides a coherent perspective on community resilience. Although drought is not a legislated emergency, it is closely aligned to the guiding principles of this document, which offers a useful foundation on which to build a more resilient region. The Framework is composed of the following 7 characteristics that lead to greater resilience:



1. Safe and well
2. Connected, inclusive and empowered
3. Culturally rich and vibrant
4. Sustainable built and natural environment
5. Dynamic and diverse local economy
6. Reflective and aware
7. Democratic and engaged

Building resilience includes a focus on well-functioning communities with the explicit objective of strengthening the liveability, viability, and wellbeing of both the people and the region.

It also focuses on diversity of experience and needs, accounting for different parts of the community, including Traditional Owners.

Although there is no one-size-fits-all solution, alignment with this community resilience perspective will support organisations to:

- Better understand and participate in building safer and more resilient communities
- Align adaptive governance, policies and programs to strengthen community resilience
- Improve collaboration within and between organisations
- Use connected networks to support wellbeing, liveability and sustainability
- Utilise planning systems to mitigate risk
- Partner with Traditional Owners to support culturally appropriate practices in emergency events.

“Vulnerability and hardship look different in each context”.

— Thriving Communities Partnership Southwest Victoria Chapter

GREAT SOUTH COAST THEMATIC FRAMEWORK



The Themes, Outcomes and Priority Actions (the Framework) detailed below capture the lived experience and local knowledge of the GSC community and organisations through 9 months of conversation and builds on other existing strategic plans and policy documents.

The framework consists of 5 themes, each with an outcome, and a list of actions to move the region towards achieving its vision. Some of the actions can be addressed directly by the GSC community, while others will require broader cooperation from governments, industry, and community.

Many actions identified in the Plan are incremental, building on existing approaches such as improving water use efficiency and better business planning across the region. However, incremental changes alone will not be sufficient to build resilience and adapt to a changing climate, and transformational change is required. Transformation will require a significant change to how things are currently done.

For example, land use change where a higher water use industry, like dairy, is replaced by a lower water use industry, like beef cattle. Transformational changes can be disruptive, and the businesses and communities involved may require support to navigate the changes.

The actions identified encourage preparedness for drought, including the need for adaptive and transformational change. Actions include implementing sustainable water practices, adopting different farming methods, fostering community engagement, encouraging innovation and supporting Traditional Owners to build drought resilience in line with their values and self-determined goals and aspirations for Country and community.

Great South Coast Themes

Theme 1: Resilient communities

Theme 2: Sustainable management of natural resources

Theme 3: Resilient local businesses and regional economies

Theme 4: Innovation and skills

Theme 5: Key enablers

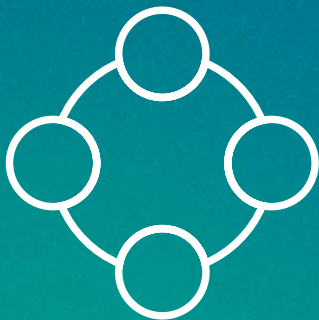
“Soil sampling is an often-overlooked tool when improving productivity, make sure you use test results to better allocate and select inputs”.

— Lisa Miller, Southern Farming Systems



Theme 1

RESILIENT COMMUNITIES



Theme 1 is about building more resilient communities by promoting collaboration, strengthening and enhancing health services, fostering leadership, and engaging the community at various levels.

The actions identified can help build an environment where people connect, learn, and develop their abilities while effectively navigating the challenges posed by drought.

Outcome:

People have ample opportunity to connect and collaborate and to develop their abilities through learning and leadership while supporting everyone in the community to be more resilient.

“One of the most important things is the capacity to coordinate events so communities can connect and engage”.

— Cam Nicholson, Southern Farming Systems, Southwest Node of the Victorian Drought Resilience Adoption and Innovation Hub

Actions

- 1.1 Strengthen existing trusted local health services and co-design any new programs with services that best meet local needs. (See case study 1)
- 1.2 Advocate for the provision of outreach community support services with an integrated case management model, which links clients to specialist services, community engagement and peer supports.
- 1.3 Maintain and enhance formal and informal networks of key stakeholders to enhance preparedness and resilience building.
- 1.4 Integrate drought resilience engagement activities with other planned industry engagement, to increase collaboration between groups and reduce the number of events people need to attend.
- 1.5 Foster a culture of collaborative leadership across community, agencies, industry, emerging leaders and community groups.
- 1.6 Engage community champions to support the design and planning of community engagement activities and events and deliver activities which allow families to connect and support each other in remote areas.
- 1.7 Through industry leadership groups, build the skills and capacity of stock agents, vets, CFA, SES, Rural suppliers, agronomists, and field officers to identify issues and refer individuals to services and community engagement activities.
- 1.8 Support opportunities for Traditional Owners to build drought resilience and preparedness efforts, in line with their self-determined values, goals and aspirations for Country and community.



Photo: Heytesbury Landcare

Theme 2

SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES



Theme 2 is about protecting biodiversity and soil health while managing water for multiple purposes. This includes improved decision-making through training and education, using demonstration sites to showcase sustainable

practices, promoting on-farm water planning, maintaining the emergency water supply network, supporting trusted networks like Landcare and collaborating and partnering with Traditional Owners, to share learnings.

Outcome:

Land in the region is managed in a way that protects and enhances biodiversity and soil health. Water is managed for urban, agricultural, cultural and environmental purposes, based on availability, improved efficiencies, and increased recycling of water.



“Water needs to be managed across the region for urban, agricultural and environmental purposes based on reduced availability, improving efficiencies, and increased recycling and reuse of water”.

— Sherie Bain, Wannon Water

Actions

- | | |
|-----|--|
| 2.1 | Develop the decision-making capability of individuals and groups through training and education. |
| 2.2 | Encourage the setup and promotion of demonstration sites across the region highlighting profitable, sustainable, and resilient management strategies. |
| 2.3 | Support on farm extension advice and research into improved design and use of grazing management and containment feeding to reduce soil erosion, maintain soil cover and improve the survival of pastures. |
| 2.4 | Encourage primary producers to develop and implement farm water plans. |
| 2.5 | Collaborate with Food & Fibre Great South Coast on the delivery of their ‘18-point Plan for water policy reforms to drive jobs, growth and sustainability.’ |
| 2.6 | Promote the availability and maintain the functioning of the Victorian emergency water supply network in the Great South Coast region. |
| 2.7 | Support and promote the role that Landcare Networks play in building drought resilience at farm and landscape level. (See case study 2) |
| 2.8 | Improve sustainable land and water management practices through collaboration and partnership with Traditional Owners and First Peoples, in line with Government’s legal and policy obligations. |
| 2.9 | Mitigate fire risk to the community by proactively reducing fuel loads in a timely manner. |

Theme 3

RESILIENT LOCAL BUSINESSES AND REGIONAL ECONOMIES



Theme 3 is about providing local businesses with access to affordable and quality business planning and financial advice. Businesses are encouraged to proactively plan for adversity, build capabilities through professional guidance, consider income diversification, create financial

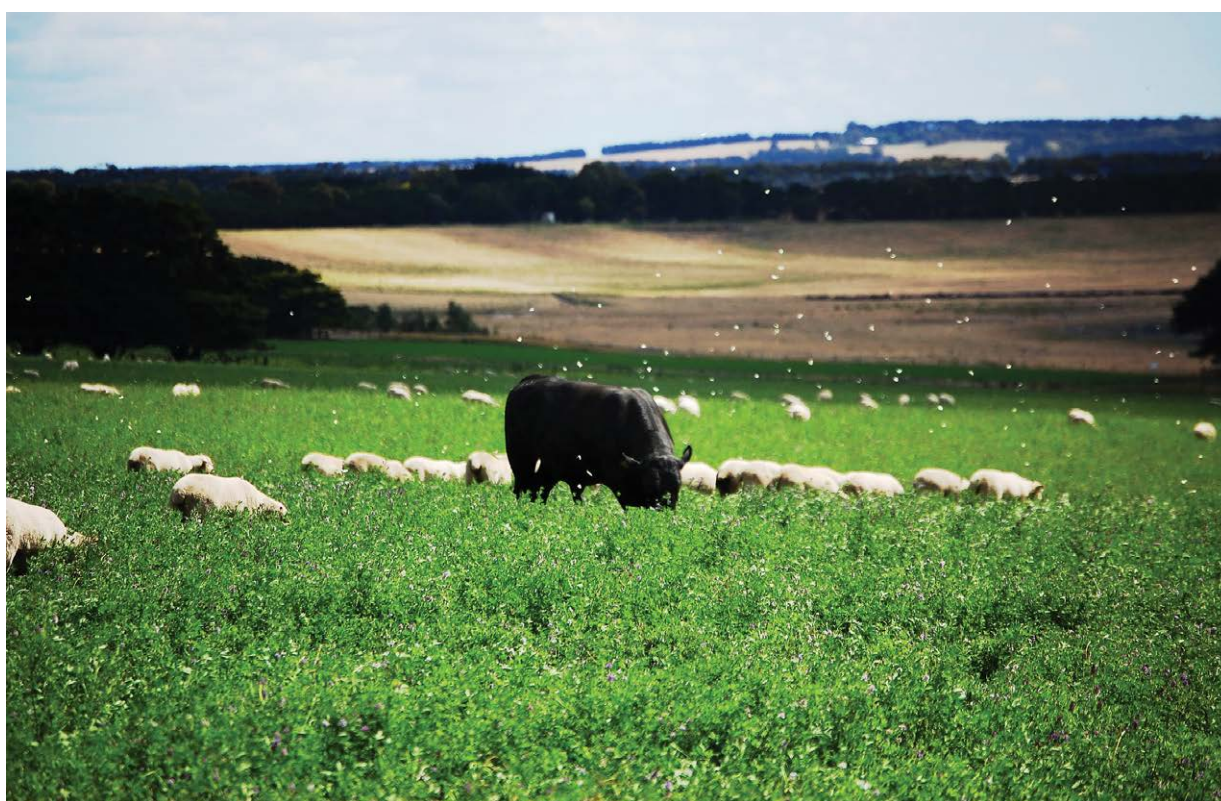
buffers during good years, and collaborate with neighboring communities. The actions will promote economic growth and enhance access to services in times of drought for a resilient and thriving regional economy.

Outcome:

All businesses within the Great South Coast region access affordable quality business planning and financial advice.

Actions

- | | |
|-----|--|
| 3.1 | Encourage small businesses to use professional advice to proactively plan for adversity and build capability through skill development. (See case study 3) |
| 3.2 | Promote the potential opportunities of income diversification for small business. |
| 3.3 | Support individuals and organisations to mitigate risks by being well prepared. |
| 3.4 | Promote the building of financial buffers during good years that can be used during difficult times like drought. |
| 3.5 | Provide opportunities for small business owners to network with advisors, to help them choose the right 'team' of advisors to generate financial success and resilience. |
| 3.6 | Collaborate with neighbouring communities for economic growth, emergency response and better access to services. |



“The agenda is to facilitate the national availability of product while building a profitable business, and research to unlock the enormous opportunities local produce provides”. — Wayne Schild, Grange Garlic

Theme 4

INNOVATION AND SKILLS



Theme 4 is about encouraging collaboration between industry groups and research organisations to identify and develop innovative ideas to build drought resilience through transformative technologies and practices. Research and innovation

will see the development of more resilient crops, pastures, and farming practices. The theme also includes actions to improve the capability and capacity of the local workforce through education and industry pathways.

Outcome:

Industry groups and research organisations are working collaboratively to identify and overcome drought related constraints. Information products relating to resilience are widely shared and can be easily accessed.

Actions

- | | |
|-----|---|
| 4.1 | Identify and promote opportunities that best contribute to drought resilience arising from new and emerging technologies and new practices. |
| 4.2 | Encourage research and development into more resilient crops, pastures and farming practices. (See case study 4) |
| 4.3 | Update and promote the Future Ready Regions website developed in partnership between the Australian Government Future Drought Fund and the Glenelg Hopkins Catchment Management Authority Future Ready Regions (arccgis.com) |
| 4.4 | Develop and share case studies and other stories demonstrating innovative responses to drought. |
| 4.5 | Undertake research into the development and use of trigger points to enhance proactive decision making. |
| 4.6 | Improve the capability and capacity of the local workforce by developing and promoting educational opportunities and industry pathways. |
| 4.7 | Identify, in partnership with Traditional Owners, opportunities to use traditional knowledge, and culturally appropriate tools to heal and care for Country. |

“The region’s long-term prosperity is intrinsically linked to agriculture, and its continuing productivity demands that water is managed and used sustainably”.

— Chris Solum, Glenelg Hopkins CMA



Photo: Rod Hayes

Theme 5

KEY ENABLERS



Theme 5 is about establishing key enablers for effective drought preparedness and response. Clear coordination arrangements, defined responsibilities, a Resilience Advisory Group,

inter-agency planning, and the integration of drought preparedness activities will all contribute to the region's collaborative drought resilience efforts.

Outcome:

Community, industry and government are clear on their responsibilities relating to drought preparedness. A standing Drought Resilience Advisory Group helps to maintain a functioning network with a focus on resilience.

Actions

- | | |
|-----|--|
| 5.1 | Build the capability of organisations and leaders to better partner in developing clear regional drought governance and coordination arrangements and allocate appropriate time and resources to coordination and partnership. |
| 5.2 | Organisations to communicate their responsibilities in drought preparedness, then maintain and regularly review these. |
| 5.3 | Support the setup of a Drought Resilience Advisory Group to coordinate delivery of the Plan. |
| 5.4 | Promote inter-agency planning for preparation and response to drought, and incorporate mitigation actions into relevant strategies and plans. (See case study 5, Harvesting Resilience Futures) |
| 5.5 | Develop working partnerships with relevant Traditional Owners on matters relating to drought preparedness and response in the GSC region. |



Photo: Heytesbury Landcare

“We already have bush networks. We don’t have to reinvent the wheel, but we do need to make sure that existing networks communicate well and combine their efforts”.

— Tim Leeming, Farmer, Paradoo Prime

CASE STUDIES OF RESILIENCE

The following case studies provide examples of the lived experience in the GSC community and are grouped according to the themes identified in the Plan. They highlight different aspects of building resilience including community engagement, health and wellbeing, sustainable land management, self-responsibility and effective communication.

THEME 1: RESILIENT COMMUNITIES

Improving mental health in farming communities

Those in rural farming communities are at a higher risk of suicide than average Australians. Farmers are known to be generous in providing help to others, but they are often reluctant to ask for help themselves. Access to mental health support in rural areas is limited, and where support is available, providers may have poor understanding of the realities of life and work in the farming environment.

Recognising these risk factors, the National Centre for Farmer Health worked in collaboration with Great South Coast community members to develop a dedicated resource for farmers and farming communities.

Steering Straight empowers farmers to reflect on and prioritise their health and wellbeing by identifying personalised, practical steps to take when navigating difficult situations. It helps to:

- Identify personal signs of stress
- Identify and plan helpful activities
- Break down goals into manageable steps
- Know who to call for support

*Written by Dr Alison Kennedy from the National Centre for Farmer Health. **Steering Straight** and the **Managing Stress on the Farm** publication were developed as part of the Great South Coast Suicide Prevention Place-Based Trial, and are now being used across Australia and internationally. www.farmerhealth.org.au/managing-stress-book*





Photo: Chris Hibburt & Katy Millard

THEME 2: SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

Climate Resilient Farms

Smart farmers know healthy soils are the foundation of a productive, profitable and resilient farming enterprise. Heytesbury District Landcare Network's *Climate Resilient Farms* program supported 30 farms to explore soil health best practice and regenerative farming methods, with a focus on:

- Increasing yield and soil carbon while reducing fertiliser use
- Pasture management
- Planting and fencing wind breaks and riparian buffers
- Water conservation

Chris Hibburt and Katy Millard from Port Campbell joined the program with an existing system that included shelter belts, a reticulated water system, laneway infrastructure, rotational grazing, and a large storage dam with wetlands. With a strong foundation already in place, they explored whether sowing multi-species forage crops would help protect soils and grow pasture in variable climate conditions. Their trial was a success, demonstrating the benefits of selecting pastures that can survive through the seasons. They now take every opportunity to resow and update their pastures to continue building the organic matter and nutrient value of their soils.

The *Climate Resilient Farms* program provided Great South Coast farmers with peer-to-peer learning, technical advice and practical local solutions, and the results are demonstrated by improvements in organic carbon, organic matter and nutrient value in their soils.

Written by Chris Hibburt.

THEME 3: RESILIENT LOCAL BUSINESSES AND REGIONAL ECONOMIES

The importance of business planning

Less than 1,000 farms between Geelong and the South Australian border produce more than 20% of Australia's milk. Dairy Australia's WestVic Dairy team support these businesses and their 6,000 employees to manage their businesses in a changing economic and environmental climate.

The **Our Farm, Our Plan** program helps farmers develop a well-designed business plan by getting everyone in the business on the same page, clarifying where the farm business needs to go, and understanding how to get there.

Through a series of structured workshops, farmers identify their goals and explore opportunities to optimise their farm production and profitability. The program uses measurements and metrics to inform decision making and track progress. This information also empowers farmers to understand opportunities for their businesses to embed best practice approaches, test new ideas, and manage risk and volatility.

By encouraging participants to connect with discussion groups throughout the program, **Our Farm, Our Plan** helps farmers to build more resilient farming businesses, and a more connected industry and agricultural community.

Written by the WestVic Dairy.



Photo: Basalt to Bay Landcare Network

THEME 4: INNOVATION AND SKILLS DEVELOPMENT

Creating innovative solutions for local problems

Southern Farming Systems (SFS) coordinates the South West Node of the Victorian Drought Resilience Adoption and Innovation Hub – a part of the Australian Government’s Future Drought Fund.

Working with universities, regional development, catchment management organisations and private sector partners, the role of Node coordinator builds on the commitment of SFS to support farming businesses. The Node works to identify and promote opportunities that best contribute to drought resilience arising from new and emerging technologies.

A recent collaboration with National Landcare has enabled two innovative tools to improve on-farm decision making:

- **MyFarm Dashboard** centralises real-time information on climate, soil moisture, prices and pasture into a dashboard to inform common decisions to address soil constraints and optimise soil health.
- **Decision Wizard** helps farmers to structure the decisions they make on-farm to yield better choices and a more resilient farm business.

These world-leading solutions for local problems, are enabling innovation in farming systems and supporting farmers to implement adaptive practices on-farm.

Written by Cam Nicholson.

Driving innovation and profitability

On the site of a former pork farm in Victoria’s Western Districts, Grange Garlic is an innovative vertically integrated operation. A dedicated team manage everything in-house from seed production, sowing, harvesting, storage, food processing and sales, all the way through to warehousing and distribution. Behind their streamlined business and deceptively simple product is insight, innovation and persistence throughout an 8-year journey at the Croxton East property.

While ‘innovation’ can sound like an exciting prospect, owners Wayne and Tracey Schild know that it can also be risky and difficult to navigate while managing cashflow, production cycles and business operations. They emphasise the need for a clear business strategy and understanding what you are doing and why.

Recognising an opportunity, Wayne and Tracey transitioned from pork to garlic production. Through early challenges, Grange Garlic learned many lessons and worked hard to refine and innovate their business while remaining operational.

Initially planting and harvesting garlic crops by hand, they identified that greater scale would be essential to profitability, and shifted to mechanised models. They have built prototype harvesting equipment to meet their needs, navigated the ins-and-outs of water licensing, and explored the need for clear governance to enable their business.

After years of learning and evolving, Wayne and Tracey say that developing a network of trusted advisers, informed research, and enabling their staff has driven innovation and profitability. Grange Garlic is a success story of transformation, innovation and resilience.

Written by Kirsten Diprose, founder of the Rural Podcasting Co.



Photo: Grange Garlic

THEME 5: KEY ENABLERS

Realising the Water Opportunity

Food & Fibre Great South Coast (FFGSC) is the representative body for Southwest Victoria's \$4.6 billion agriculture sector. Their purpose is to grow the prosperity and wellbeing of the sector and Great South Coast communities through food and fibre.

By quantifying the flow on value of primary production in the region – further food and fibre value in the supply chain is estimated at \$12 billion, 60% of Gross Regional Product (GRP), and 21.6% of all regional jobs. FFGSC have helped to articulate the importance of working together to secure the sector's future.

Building the long-term value and profitability of the agriculture sector in the region is dependent on the region's water resources. In 2021, FFGSC commissioned research to determine how water could be managed across the region to ensure adequate supply for the environment, traditional owners, recreational and productive use.

The research indicates less than 50% of current water license allocations are being used, and that lifting underutilised water by a modest 10% could yield an additional \$40 million dollars in GRP, without risking water security.

The data yielded in the research has informed an '18-point plan for water policy reform for the Great South Coast'. The 18-point plan recommends key practice changes, regulatory reforms and other measures that will enable the region to realise this water opportunity together, to benefit all.

With over half of a projected boost of \$21 million in household income and 400 new jobs anticipated to benefit non-food and fibre households (\$12.4 million), the data demonstrates food and fibre sectors' ability to raise regional prosperity and resilience.

*Written by Natalie Collard,
Food & Fibre Great South Coast*

The Harvesting Resilient Futures Project

Over the past year the Southern Grampians Glenelg Community Partnership (Barwon South West Public Health Unit) has been leading the *Harvesting Resilient Futures Project* which aims to build community resilience to stressors and shocks. The project is working to establish networks, build capability, align effort, and improve overall community mental health outcomes.

Recognising that there are activities, programs and frameworks already in place across the community that contribute to resilience, the project works to clarify the role that each organisation can play and support them to develop their own actions towards the shared goal.

Through the first phase of the project, by working with the local community to develop an understanding of community resilience and how collaboration can be enhanced, the team have identified the following factors as key to resilience:

- Community connectedness
- Access to resources
- Future thinking
- Leadership
- Social justice

With these factors in mind, the project team will now collaborate with community members and stakeholders to map the 'local resilience system'. This map will make the existing resources visible and enable a community led strategic path with place-based actions to be developed. The actions are responsive and flexible to their needs now and in the future.

Ultimately, the goal is a long-term strategic approach and collaborative structure to improve community resilience through place-based actions that are mobilised by locals.

Written Joanne Brown, Manager Community Partnerships, Southern Grampians Glenelg Barwon South West Public Health Unit.



NEXT STEPS

“Our land is resilient. Mother Earth has been resilient for many centuries. Take care of our land, and it will take care of you”.

— Aunty Claudette Lovett, National Centre for Farmer Health

This Plan has been drafted with input from community members and organisations who have an important part to play in realising the Plan’s vision. It provides a framework for focusing future effort and guiding investment decisions to enhance drought resilience in the Great South Coast region.

The framework is only the first step in identifying the priorities of the community and recognises that continued collective action is necessary for the Plan to succeed.

This Plan is a document to be used by the community – in collaboration and partnership with First Peoples, industry, the not-for-profit sector, and all levels of government to:

- coordinate investment
- align to other plans or strategies to support funding proposals
- collaborate for shared outcomes
- inform future drought resilience priorities
- develop drought resilience programs
- monitor resilience to future droughts.

Some of the actions identified can be addressed directly by the GSC community, while others will require broader cooperation from governments, not-for-profit organisations, and industries. Many of the actions identified in the Plan will require investment if they are to be undertaken.

Immediate next steps include securing resources to support delivery of actions within the Plan, identification of a lead organisation to coordinate the Plan’s delivery, and establishment of a governance group to support and collaborate on the Plan’s implementation.

The Plan Coordinator will ensure engagement with community, industry, business, not-for-profit, and government stakeholders to identify roles and responsibilities to deliver the Plan and achieve desired outcomes.

Partnerships with Traditional Owners/First Peoples of the Great South Coast region will ensure their unique rights and responsibilities, and self-determined goals and aspirations for Country, are reflected during implementation of Plan actions.

It is acknowledged that the Plan will need to be agile and adapt in response to changes in the natural environment, the operational and policy environments of industry and various levels of government, evaluation and learning, and the needs of the community.

The GSC Reference Group acknowledge the experience, knowledge and generosity of organisations and individuals who contributed to the development of this Plan. Increased awareness and preparedness are essential to building resilience, and everybody has a responsibility to be well prepared for the coming seasons. An integrated approach to managing risk is critical to mitigating the impacts of drought and being well prepared.

This approach will support GSC communities to be better prepared for, and capable of, managing drought in pursuit of a prosperous and sustainable future.

“It is about learning from your mistakes and also learning from your victories as well”.

— Tim Leeming, Farmer, Paradoo Prime



MONITORING, EVALUATION AND LEARNING

The collaborative effort and shared expertise used to prepare the Plan is an important first step in building drought resilience in the Great South Coast. Work has been done by the region to articulate the actions needed to achieve

desired regional outcomes. The next step is for the actions and activities identified in the Plan to be implemented, evaluated and adapted as needed to achieve the longer-term outcomes for drought resilience.

Figure 3. Pathway of program delivery through discovery, engagement, development, implementation and evaluation



Monitoring, evaluation and learning (MEL) is a key element of the Regional Drought Resilience Planning program. Program objectives, outcomes and measures of success are clearly articulated at all levels of program delivery (national, state and regional) and are over a range of short, medium and long timeframes.

Measuring success

The outcomes identified in this Plan are community and region wide, and dependent on the fourth step of implementation identified in the pathway of program delivery (Figure 3). Given the long-term outcomes of the Plan, the MEL framework below outlines how progress toward success will be measured.

Management and reporting

The successful lead organisation chosen to coordinate delivery of the Plan will work with Agriculture Victoria to provide up-to-date data and information to support program implementation and planning. Monitoring and reporting will enable: key learnings to be identified, effective reporting, and adaptive program management.

A range of assessment tools may be used to indicate progress including, but not limited to, surveys, case studies, stakeholder interviews and engagement data analysis. Data and information will be collected at various intervals across implementation planning, and during and after activities are implemented.

Assumptions underpinning success of the Plan

Measuring success and reporting on progress toward regionally specific outcomes is dependent on several key assumptions.

Key assumptions affecting short-term outcomes (1–2 years)

- Regional stakeholders have the capacity and capability to participate in strategic planning
- Regional stakeholders are willing to cooperate with each other for regional planning
- Program design is sufficient to give regional stakeholders opportunities to identify and communicate regional drought resilience needs
- Regional communities are motivated to take ownership of completed plans and actively seek to implement them
- There are sufficient learnings to continuously improve program implementation

Key assumptions affecting medium term outcomes (2–4 years)

- Supporting regional stakeholders through program implementation will result in change in practice in the Great South Coast region
- There are sufficient opportunities and funding for the region to implement elements of the Plan
- Plans contain implementable activities to build drought resilience
- The Great South Coast Plan Coordinator and regional stakeholders continue to review and implement the Plan

MEL Framework

Key regional themes and outcomes are matched with relevant Future Drought Fund strategic priorities, regional progress measures (2-4 years) and indicators.

The MEL Framework is aligned to existing MEL plans at the Program and Fund level to ensure consistency and to ensure the data collection tools provide information across a range of learning and reporting requirements.

Table 2. MEL Framework for the Great South Coast.

FDF ¹ Strategic priority	Progress measures (2–4 years)	Indicators
Resilient communities People have ample opportunity to connect and collaborate and to develop their abilities through learning and leadership while supporting everyone in the community to be more resilient.		
Social resilience for resourceful and adaptable communities	Communities are coming together to prepare for and respond to drought. Communities are learning and building capability, capacity, expertise, and sharing innovative ways to build social resilience. Improved community awareness of and access to health and wellbeing services.	Groups and networks continue to function and work well together. Leaders in the region are more confident to implement strategic actions. Stakeholders are working together to plan and deliver on actions across the region.
Sustainable management of natural resources Land in the region is managed in a way that protects and enhances biodiversity and soil health. Water is managed for urban, agricultural, cultural and environmental purposes, based on availability, improved efficiencies, and increased recycling of water.		
Environmental resilience for sustainable and improved functioning of our natural landscapes	Primary producers and businesses are better able to prepare for drought. Knowledge and understanding of resilience of natural resources across the region is increasing. Plan actions and opportunities are incorporated into other water strategies and planning documents across the region.	Farmers are learning about and implementing new water management strategies and practices. Stakeholders have increased understanding of natural resource management to build drought resilience. Stakeholders are working together to plan and deliver on actions across the region.
Resilient local businesses and regional economies All businesses within the Great South Coast region access affordable quality business planning and financial advice.		
Economic resilience for an innovative and profitable communities	Impacts of drought on the economies of region are known and prepared for. Primary producers are better able to identify business risk and make timely decisions. Businesses are identifying, managing and planning for the business risks associated with drought.	Agricultural businesses have an improved understanding of the risks to their businesses from drought in their region. Businesses are learning about and implementing new business management strategies and practices.

FDF ¹ Strategic priority	Progress measures (2–4 years)	Indicators
Innovation and skills Industry Groups and Research organisations are working collaboratively to identify and overcome drought related constraints. Information products relating to resilience are widely shared and can be easily accessed.		
Social resilience for resourceful and adaptable communities Environmental resilience for sustainable and improved functioning of our natural landscapes Economic resilience for an innovative and profitable agricultural sector	Innovative pathways and opportunities to improve drought resilience in the region are being identified. Research and extension programs are being co-designed with community and industry to provide outputs relating to the region.	Stakeholders are learning about and implementing new practices.
Key enablers Community, Industry and Government are clear on their responsibilities relating to drought preparedness. A standing Drought Resilience Advisory Group helps to maintain a functioning network with a focus on resilience.		
Social resilience for resourceful and adaptable communities Environmental resilience for sustainable and improved functioning of our natural landscapes Economic resilience for an innovative and profitable agricultural sector	Communities are communicating regional drought resilience needs and priorities to inform investment. Improved collaboration and coordination between governments, industry, communities and other networks. Regions are monitoring their resilience to drought in accordance with the Plan. Traditional Owners are engaged in regional drought preparedness activities, and those activities reflect Traditional Owners' priorities.	Increased community understanding of the region's current and future drought resilience, considering the region's unique economic, environmental and social characteristics. Communities are using their knowledge to plan for drought resilience. Traditional Owners are increasingly involved in drought programs and activities.

APPENDICES

Appendix 1 Great South Coast stakeholders consulted

Development of the Great South Coast Drought Resilience Plan (the Plan) was based on in-depth conversations with the organisations and individuals listed below.

The Great South Coast Drought Resilience Plan Reference Group was established to provide expert input to the Plan and ensure that the **outcomes and actions** identified represent a

coherent and balanced view of stakeholder feedback. We acknowledge and appreciate the knowledge, insight and support that we have received in the creation of this Plan.

The Great South Coast region includes the following Local Government Areas:

- City of Warrnambool Shire
- Corangamite Shire
- Glenelg Shire
- Moyne Shire
- Southern Grampians Shire

Regional Reference Group members

Agriculture Victoria (Chair)
City of Warrnambool Shire
Corangamite Shire
Glenelg Shire
Moyne Shire
Southern Grampians Shire
Barwon South West Health Unit
Barwon South West Climate Alliance
Department of Health
Department of Energy, Environment and Climate Action (formally the Department of Environment, Land, Water and Planning)
Department of Family, Fairness and Housing
Farming networks
Food & Fibre Great South Coast
Glenelg Hopkins Catchment Management Authority
National Centre for Farmer Health
Rural Financial Counselling Victoria
Southern Farming Systems
Southern Rural Water
Victorian Drought Node
Wannon Water
Westpac

Agricultural industry and farm business services

Agriculture industry representatives
Agriculture consultants
Banking and Finance
WestVic Dairy

Community and not for profit organisations

Australian Red Cross
(State-wide and regional programs)
Lions Need for Feed (Victoria)
Rotary Club

Community Health Organisations

National Centre for Farmer Health
Southern Grampians-Glenelg Community Partnership (Jo Brown)

Community leaders

Bruce Valance
Bruce Noles
Oonagh and Harper Kilpatrick
Rhonda Henry
Georgina Gubbins
Ian Morris

Education and capability building

Deakin University
Federation University
(Future Regions Research Centre)
South West TAFE (Rural Science programs)

Farmer groups and local business leaders, including

Municipal agriculture sector advisory groups
Victorian Farmers Federation
United Dairy Farmers Victoria
Southern Farming Systems
Rural Financial Counselling Service
Small Business Mentoring Service

Government Agencies and Statutory Authorities

Barwon Regional Emergency Management Team (REMT) Chair
Centre for Regional and Rural Futures
Climate Change Adaptation, Community and Partnership Programs
Country Fire Authority
Cross Border Commissioner
Department of Energy, Environment and Climate Action
Department of Family, Fairness and Housing
Emergency Management Victoria
Emergency Recovery Victoria (formerly Bushfire Recovery Victoria)
National Recovery and Resilience Agency
Fire and Forest Operations
Rural Assistance Commissioner
Small Business Victoria
Victoria Police
Agriculture Victoria

Major farmer, industry and community events

Food & Fibre/DELWP Great South Coast Water Opportunities workshop in Warrnambool (6 December 2022)
Food & Fibre Great South Coast Water Forum in Warrnambool (15 February 2023)

BestWool/BestLamb Network in Dunkeld (3 March 2023)

Victoria Drought Adoption and Innovation Hub's Think Tank in Bendigo (23 March 2023)

Victoria Drought Adoption and Innovation Hub's Showcase in Geelong (21 June 2023)

Natural Resource Management organisations

Glenelg Hopkins Catchment Management Authority
Wannon Water
Landcare networks
Parks Victoria
Southern Rural Water
Nature Trust Glenelg

Other Future Drought Fund programs

Victorian Drought Hub
Victorian Drought Resilience Adoption and Innovation Hub – South West Node (Southern farming Systems)
Leadership development program (Australian Rural Leadership Foundation)
Farm resilience planning program (Agriculture Victoria)
Regional Drought Resilience Pilot Plans – Goulburn, Gippsland and Wimmera Southern Mallee (Agriculture Victoria)
Southern Farming Systems
Agriculture Dependent Resilient Communities – Community of Practice

Regional development organisations

Great Ocean Road Regional Tourism
The Agricollective

Small business organisations

Small Business Victoria

Traditional Owners

Wadawarrung Aboriginal Corporation
Eastern Maar Aboriginal Corporation
Barengi Gadjin Land Council

Appendix 2

Great South Coast References

This Appendix outlines some of the existing strategies, reports and programs that have been reviewed for their relevance in building drought resilience in the region. It is intended to be used as a resource document.

Agriculture

Dairy Australia Strategic Plan 2020–2025 (2020). Dairy Australia

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Dairy Australia Climate Change Strategy 2020–25 (2020). Dairy Australia

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Farm decision making. The interaction of personality, farm business and risk to make more informed decisions (2020). Grains Research Development Corporation

People in Agriculture, www.peopleinag.com.au (last updated 2022)

Community Health

From inside the farm gate: rural women's stories of surviving and thriving. National Centre for Farmer Health, www.farmerhealth.org.au/inside-farm-gate (last updated 2021)

Summary of the Royal Commission into Victoria's mental health system. National Centre for Farmer Health, www.farmerhealth.org.au (last updated 2022)

Economic Development

Australian Bureau of Statistics. www.abs.gov.au (last updated 2023)

Economic Analysis of Food & Fibre in the Great South Coast. A Report for Food & Fibre – Great South Coast Inc. (2021) Prepared by BDO EconSearch

Great South Coast. Regional Economic Development Strategy (2022) Regional Development Victoria. Victorian Government

Shipwreck Coast Masterplan (2015) Parks Victoria, Victorian Government

The Economic Benefits of Native Shelter Belts Report. (2015) Basalt to Bay Landcare Network Inc. Landcare: Issue 3 2015

The Great South Coast Digital Plan (2022) Regional Partnerships Great South Coast, Regional Development Victoria. Victorian Government

Emergency Management

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Bushfire recovery consultation report (2020) Victorian Council of Social Services

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Agriculture and Climate Change. Department of Energy, Environment and Climate Action, www.agriculture.vic.gov.au/climate-and-weather/policy-programs-action (last updated 2021)

Drought, disaster and rural support. Department of Agriculture, Fisheries and Forestry, www.agriculture.gov.au/agriculture-land/farm-food-drought/drought (last updated 2023)

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Future Drought Fund Regional Drought Resilience Planning Program Framework Extension (2022). Department of Agriculture, Fisheries and Forestry, Australian Government

National Climate Resilience and Adaptation Strategy 2021–2025 (2021). Department of Agriculture, Water and Environment, Australian Government

National Drought Response, Resilience & Preparedness Plan (2019). Department of Agriculture, Australian Government

Natural Environment Climate Change Adaptation Action Plan Victorian Government (2022). Department of Environment Land Water and Planning, Victorian Government

Loddon Mallee Regional Climate Adaptation Strategy (2022). Department of Environment Land Water and Planning, Victorian Government

Primary Production Climate Change Adaptation Plan 2022-2026 (2022). Department of Environment Land Water and Planning, Victorian Government

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For more information on the Future Drought Fund visit:
www.agriculture.gov.au/fdf

For more information on Victoria's Regional Drought
Resilience Planning program visit:
www.agriculture.vic.gov.au/futuredroughtfund



Drought in the Great South Coast Region

Information to support the Great South Coast Drought Resilience Plan

November 2022



This research was jointly funded by the Australian Government
and Victorian Government under the Future Drought Fund.



Regional summary

The Great South Coast is situated in South Western Victoria with Warrnambool as its largest centre. The Great South Coast is renowned for its stunning natural scenery from the Grampians National Park in the north to the Great Ocean Road in the south. The area stretches from Shipwreck Coast to the South Australian Border and has a Gross Regional Product of \$5.8 billion. The region had a population of 105,635 in 2021.

Agricultural production is the dominant land use in the rural areas of the Great South Coast. Dairy farms are concentrated in the south, broadacre cropping (mainly wheat and canola) in the north, and there is extensive plantation forestry in the west. The two key regional centres outside of Warrnambool are the city of Portland and the town of Hamilton. Portland features a range of manufacturing activities and a port. Hamilton supports agricultural and industrial use with a range of food processing facilities.

The Great South Coast includes the traditional lands of the Gunditj Mirring, Eastern Maar and Wadawurrung peoples and Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupgalk Nations as well as other Traditional Owner groups in Victoria who are not formally recognised.

Key industries for employment in the Great South Coast in 2021 included health care and social assistance, manufacturing and retail trade, with agriculture, fishery and forestry contributing 15.4% employment to the region.

Aside from rainfall relied upon for dryland farming, water is sourced predominately from groundwater with limited irrigation in the region. The region recently experienced drought and dry seasonal conditions during the Millennium drought, 2013 to 2015 and 2017 to 2019.

Assessing the impacts of drought

The Regional Drought Resilience Planning Program (RDRP Program) is about planning with communities at the regional level to better prepare for the next drought and forms part of the Commonwealth Government’s Future Drought Fund.

Economic analysis, research and stakeholder discussions have been undertaken to consider three questions:



Consultation with local stakeholders was undertaken for the analysis, which enabled a better and more localised understanding of how droughts impact the region.

This research was jointly funded by the Australian Government and Victorian Government under the Future Drought Fund.

Drought

The definition of drought varies depending on region, needs and disciplines. Below are 4 ways to measure whether a region is in drought.



1. Meteorological drought:
degree of dryness
or rainfall deficit



2. Hydrological drought:
precipitation shortfalls
on surface or subsurface
water supply



3. Agricultural drought:
links various characteristics of
meteorological (or hydrological)
drought to agricultural impacts



4. Socioeconomic drought:
associates the supply and
demand of some economic
good with elements of
meteorological, hydrological,
and agricultural drought.

The first three approaches deal with ways to measure drought as a physical phenomenon. The last deals with drought in terms of supply and demand, tracking the effects of water shortfall as it ripples through socioeconomic systems.

However, there is no one definition that encompasses all factors that bring rise to drought conditions — and the resultant impacts on regions and communities. Drought is complex and dynamic, meaning a universal ‘definition’ is near impossible. For example, when referring to the Millennium drought in practice it was a combination of the types of drought listed above.

Assessment framework

In order to consider how drought affects farms and the wider community, the following analytical framework distinguishes between agricultural impacts and non-agricultural impacts of drought. The framework is designed to consider the implications of specific drought impacts and what the outcomes of these implications will be. Within the two distinctions, the framework considers the social, economic and environmental impacts, to develop a more complete understanding of how drought impacts flow through the community.

Figure 1 demonstrates how this analytical framework can be applied to agriculture. Drought reduces agricultural productivity, which results in a change in primary production on farm. This impacts farm income, consumption of farm inputs, and production of farm outputs. These on-farm implications of drought flow through to the community to generate a range of outcomes. The existence of agricultural markets (e.g. sheep and cattle prices, crop prices, etc) means the impact of drought on agriculture is easier to quantify than other non-market impacts of drought.

Figure 1 also considers how drought impacts non-agricultural settings. Drought can lead to significant water restrictions and low availability of water in lakes, rivers and dams. A reduction in water availability may mean community greenspace is reduced which will in turn reduce liveability benefits in the community and the amenity values from the green space. Furthermore, there are flow on effects if parks and sportsgrounds cannot be used including impact on community cohesiveness. A lack of water in lakes, rivers and dams could also hurt tourism in the region as there is a reduced ability to boat, water ski or fish. This in turn reduces the income and spending within the regional economy.

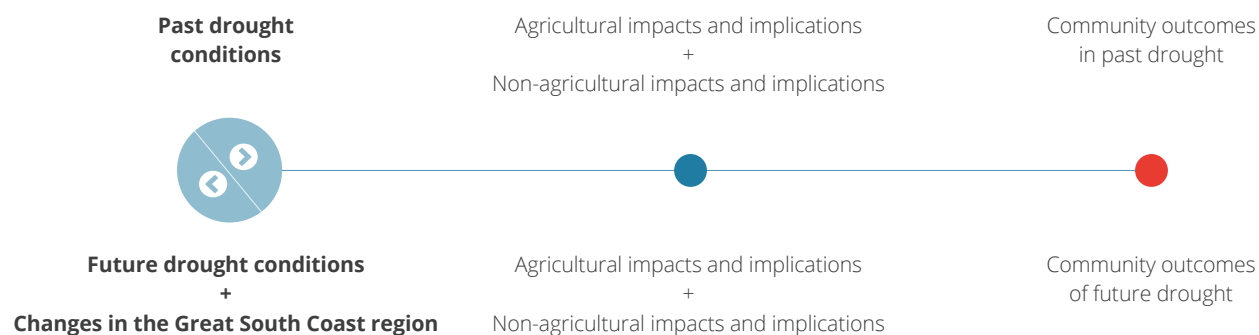
Figure 2 demonstrates the structure of the analysis for both past and future drought periods, with considerations from both agricultural and non-agricultural impacts of drought flowing through to community outcomes.

Figure 1 Impacts of drought and flow on effects

➤ Drought impact	➤ Implications	➤ Outcomes
 Change in agricultural productivity	<ul style="list-style-type: none"> • Change in primary production • Change in farm income • Change in farm inputs • Change in farm outputs 	<ul style="list-style-type: none"> • Reduced spending in the community • Reduced demand for ag farm services (but could increase in demand for feed) • Reduced output associated • transport, processing/ manufacturing • Reduced primary production for distribution and value-add • Mental toll (and potential migration)
 Water restrictions	<ul style="list-style-type: none"> • Households: outdoor water use • Community green assets: parklands and sportsgrounds 	<ul style="list-style-type: none"> • Liveability and mental health • Mental toll • Potential migration • Access to green space and flow on effects (i.e. footy clubs, parent groups etc) • Amenity values from green space
 Water availability in lakes, rivers & dams	<ul style="list-style-type: none"> • Less water available for recreation (boating, water skiing, etc) • Reduced fishing opportunities 	<ul style="list-style-type: none"> • Reduced recreation and tourism

Note: this summary does not provide an exhaustive list of impacts, but rather is about providing a consistent evidence base across Victoria's nine regions

Figure 2 Structure of analysis





01 Past drought conditions

02 Agricultural impacts and implications of drought + Non-agricultural impacts and implications

03 Community outcomes in past drought

01 Past drought conditions

Large drought events have had wide effects across Victoria, with each drought being different in its regional severity and distribution. Although agriculture and communities in the Great South Coast have been built around relative consistent rainfall, the last 25 years has seen the region experience extensive drought and dry periods — starting with the Millennium drought from 1997 to 2009 and more recently the dry conditions experienced from 2013 to 2015 and to a lesser extent 2017 to 2019.

The historical rainfall and temperature charts for Hamilton in **Figure 3**, provides evidence of the severity of these recent drought events. During the Millennium drought and the recent dry periods

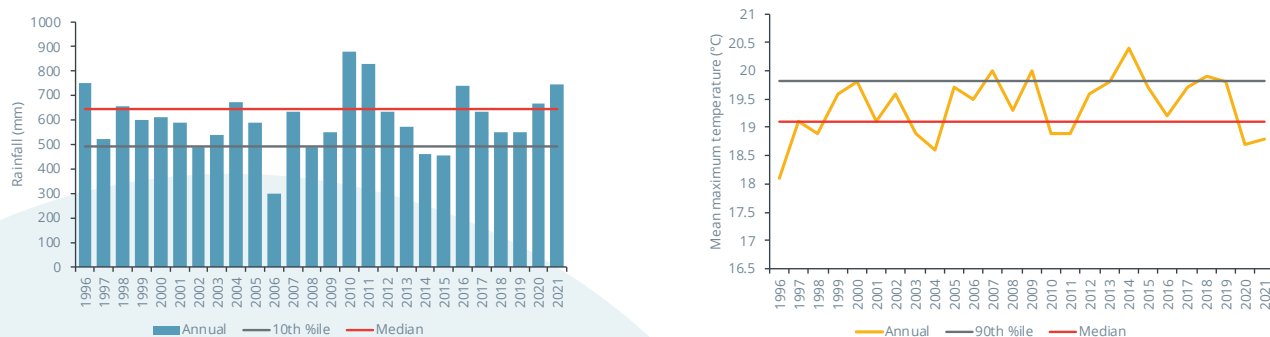
the maximum temperature was consistently hotter than the median temperature in the region. The Millennium drought also resulted in below average rainfall, however apart from 2006 when rainfall was significantly below the 10th percentile, the Great South Coast experienced more consistent rainfall than other parts of Victoria. This was again the case in the recent 2017 to 2019 dry period which was more significant in the east of Victoria.



Recently experienced droughts and dry periods in the region:

- Millennium drought
- 2013 to 2015
- 2017 to 2019

Figure 3 Annual rainfall and average maximum temperature in Hamilton



02 Agricultural impacts and implications of drought + Non-agricultural impacts and implications

During drought and dry conditions, livestock farms, which are the predominate farms in the Great South Coast, have been impacted by:

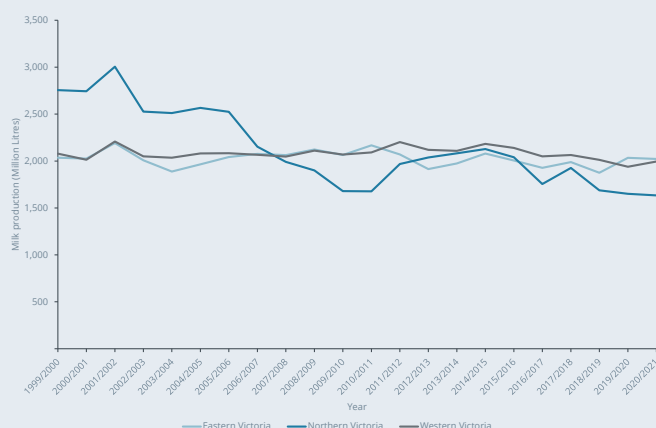
- Reduced pastures and feed for livestock
- Reduced on farm water storages and rainfall for pasture growth
- Increased reliance on hay which can be more costly
- Higher reliance on livestock prices to manage destocking if required.

Regional milk production in Western Victoria, which includes the Great South Coast and Barwon regions, remained relatively steady at around 2 to 2.1 billion litres during the Millennium drought.

In contrast, Northern Victoria experienced a significant decline in milk production (see **Figure 4**). Western Victorian production levels were likely less impacted due to:

- Significant levels of dryland dairy production not linked to irrigation
- Varying dairy locations that are not reliant on a single connected water source
- Drought impacts not being as severe as in Northern Victoria
- Additional access to fodder, mostly via failed cereal crops

Figure 4 Victorian annual dairy production



Town water

Severe and enduring water restrictions were required during the Millennium drought in the Great South Coast. Balmoral experienced Stage 4 restrictions from 2006 to 2009. During the same period Hamilton, Tarrington, Cavendish and Dunkeld experienced Stage 3 restrictions, with Stage 4 implemented for 11 months from 2006 to 2007. Stage 4 was also implemented in the Glenthompson System for 12 months during this time period.

Stage 4 water restrictions prohibit the watering of any outdoor space, amongst other restrictions, which had profound impacts on the community's liveability.

Recreation and Tourism

Tourism in the region is both water dependent and non-water dependent, however the Great South Coast has an extensive coastline with some of Victoria's most well-known tourist sites. These sites, such as the Twelve Apostles attract a range of tourists. The Great South Coast was able to maintain much of its tourism during past droughts due to its coastal tourism not being highly reliant on rainfall.

03 Community outcomes in past droughts

Farming communities in the Great South Coast have been severely impacted during periods of drought due to:

- Financial pressures resulting from reduced on-farm income and increased costs
- On-farm issues mostly relating to lack of water and feed for stock
- Pressures from invasive native and pest animals on farms
- Physical and mental health and wellbeing impacts on individuals and families
- Flow on financial pressures being experienced by supporting businesses in the community.



The Southern Grampians Local Government Area (LGA) contains part of the Grampians National Park which also continued to be visited during past drought periods.

Environment

There were negative impacts on riverbank and in-stream vegetation in rivers and streams during the Millennium drought. The lack of moisture in the soil decreased soil quality, impacting the growth of native flora and reducing habitat for native fauna.

Traditional Owners

Culturally significant sites particularly those located on flood plains and/or water dependent were exposed and became vulnerable to damage, particularly during the prolonged Millennium drought. Additionally, the movement of stock to areas where there were feed reserves resulted in stock being placed in areas of cultural significance which increased the risk of damage to these sites.

Agriculture is an important segment of the regional economy. It contributes 25% of the 'value add' in the Colac-Corangamite area (which is shared with the Barwon region) and 21% in the Glenelg-Southern Grampians area. The Corangamite LGA is heavily dependent on agriculture, with 31% of the sub-region employed in the agricultural, forestry or fishing industries. By comparison only 2.3% of the Warrnambool sub-region is employed in the sector. Other key industries across the Great South Coast include health care and social assistance and retail trade.

The high reliance on agriculture means that decreases in agricultural production caused by drought created significant flow-on community impacts through reduced income and employment, especially for on-farm labour and agricultural services. The impacts of reduced agriculture flowed through the wider community due to reduced overall spending in the community.

Overall, the cumulation of direct and flow through economic effects and the drought impacts on liveability in these communities led to significant impacts on the community during past drought and dry conditions. These also led to an increase in demand for services such as mental health and Rural Financial Counselling.



01

Future drought conditions + Changes in the Great South Coast region

02

Agricultural impacts and implications of drought + Non-agricultural impacts and implications

03

Community outcomes of future drought

Future Impacts of drought

Future impacts will differ from past impacts depending on the severity of future droughts, and the changes in the characteristics of the Great South Coast and its communities.

01 Future drought conditions

Climate change is likely to increase the variability of the weather in the Great South Coast with future droughts expected to be longer, more frequent and more severe. Climate projections show that by 2050 the Great South Coast on average will be hotter, drier and be exposed to a growing number of fire danger days. Similar to the past, the region and sub-regions will continue to face variable conditions within and across seasons — however in the future this variability will be around a lower average rainfall and higher average temperature than previously experienced. This means that, compared to current conditions, it is likely that parts of Great South Coast will face some seasons with rainfall significantly below and temperatures significantly above current averages.

Changes in the Great South Coast

There have been a number of changes in the Great South Coast that will alter the impacts of drought in the future, including:

- An increase in town water security planning and investment, which will provide towns with improved access to water during times of drought.
- Population changes (including an increase in sea-changers due to Covid19), which will likely increase water demand as population grows in coastal areas.
- Continued diversification of the region's economy, with a decreased reliance on agriculture as an employing sector (ABS Census data from 2006 to 2021 identified the percentage of the community directly employed in the agricultural industry has decreased from 18% to 15% across the period).
- The Great South Coast being more exposed to agricultural production than other rural areas of Victoria, with agriculture being the key export from the region. However, the strongest employment growth in the region is now in the services sector, with manufacturing and agriculture expected to continue to decline. This continued trend should support the region in times of drought.
- A shift of agriculture from other regions into the Great South Coast to benefit from the relatively consistent water availability (and in response to the drier climate expected throughout Victoria).

Figure 5 Climate projections for the Great South Coast region

Future droughts are likely to be longer, more frequent and more severe: By the 2050s



Average maximum temperatures in spring expected to increase by up to 2.4°C. Number of days over 35°C increasing from 8.7 days to 10-23 days.



Rainfall will continue to be very variable. Average rainfall in spring expected to decrease by 8-22%.



Number of very high fire danger days to increase by 10 days per year.

02 Agricultural impacts and implications of drought + Non-agricultural impacts and implications

Agricultural production in dairy and dryland farming operations are dependent on rainfall to feed and water their livestock. These operations are likely to be most exposed to the increasing likelihood and severity of future droughts. The adaptiveness of dairy and dryland producers and their ability to maintain sufficient reserves will be critical to their farm profitability, with farmers already having many strategies to manage drought. The prevailing circumstances of a future drought — such as commodity prices, interest rates and fuel and fertiliser costs — will also play a role in resultant impacts.

The strong, but declining, manufacturing sector is unlikely to contribute significantly to diversified income during times of future drought.

There is a high percentage of manufacturing related to agriculture, including food product manufacturing. Food product manufacturing now makes up 64% of the manufacturing industry in the region. Food processing centers are located in Warrnambool, Camperdown, Cobden, Portland, Hamilton and Koroi. However given this processing is reliant on primary agricultural production it is not likely to provide much diversification benefit in times of drought. Any declines in dairy production will have flow on effects to dairy processing facilities, which may need to be rationalised if dairy production levels are not able to recover. A factory closure, as has just been announced in Camperdown, will have major implications for the town community

and will also have a ripple effect through surrounding communities. Therefore, the impacts of decreases in primary production are only likely to be amplified as the impact of drought flows through to downstream markets such as food processing and manufacturing.

Future implications of drought are likely to continue to impact the wellbeing and mental health of the local communities. Farmers and local businesses are likely to continue to rely on financial counselling services and the broader community will continue to rely on mental health services.

Access to mental health services needs to be supported moving into the next drought. People responding to the challenges of drought are in a vulnerable space and poor mental health can make it harder to make the required decisions. The physical and mental health of the community might be impacted as people in the community value green spaces, trees and the waterways.

Town water

Tourism will continue to be exposed to fluctuations in water access under future drought. Initiatives that are not dependent on water availability could boost visitors to the region. COVID-19 has provided a boost to regional travel and relocation evidenced by an increase in population from 2016 to 2021. However, the Great South Coast is better placed than many other regions in Victoria due to the majority of its tourism being related to the coast which is less rainfall dependant.

Recreation and Tourism section

Tourism will continue to be exposed to fluctuations in water access under future drought. Initiatives that are not dependent on water availability could boost visitors to the region. COVID-19 has provided a boost to regional travel and relocation. However, the Great South Coast is better placed than many other regions in Victoria due to the majority of its tourism being related to the coast which is less rainfall dependent.

Environment

Inland lakes, rivers and dams are likely to be at lower levels during times of drought which will impact the native biodiversity living in and relying on these water bodies. There is likely to be a lack of food and

drinking water for wild animals living in the national and state parks in the region. Additionally, the increased risk of wildfires will have significant environmental and economic impacts.

As cropping in the north of the region moves further south there may also be a negative impact on biodiversity, the landscape and the structure of ecosystems.

Traditional owners

Culturally significant sites particularly those located on flood plains and/or are water dependent will continue to be exposed and become vulnerable to damage. Damage to these sites can lead to distress within the community.

03 Community outcomes in future droughts

The Great South Coast is likely to be more heavily impacted by drought in the Corangamite, Moyne and Southern Grampians LGAs due to their large agriculture industry — employment in agriculture is in excess of 20%. However, many of the towns closer to Warrnambool and the coast attract a range of tourists in a mixture of drought impacted and drought resilient activities. This coupled with larger diverse economies around Warrnambool and Portland means drought impacts are likely to vary across the region.

Economic modelling of potential future drought in Victoria found the Great South Coast would be significantly affected with GDP falling by 9.2% and a reduction of more than 800 jobs in the region (see **Figure 6**). The modelled 3-year drought, while prolonged, is not equivalent to the most severe recorded in Victoria.

Access to local mental health services for community members in the agriculture and non-agriculture sectors will be vital as drought conditions become more prevalent. Not only are mental health services important during times of drought, but improved mental health increases a person's ability to adapt. This can improve drought resilience by allowing people to effectively plan for future drought conditions as well as make informed decisions during a drought period.

Figure 6 Computable General Equilibrium (CGE) Modelling for a future drought

Flow through impacts from agriculture to the community

The increased likelihood and severity of drought in the future and the increased competition for water under these conditions will mean that the drought impacts on the community from agricultural consequences of drought are expected to be larger than have been historically observed.

Impacts on GDP

Economic modelling of potential future drought in Victoria found the Great South Coast to be significantly affected, with:

- GDP impact:
 - Direct agriculture impact -6.8%
 - Regional impact -9.2%
- A fall in employment of more than 800 jobs.

This would flow through the region reducing consumption/spending by 2.7%.

9.2%
\$ GDP



300
👤 jobs

Employment and value add impacts

The effects on employment will not be distributed equally across the regions, with the more agriculturally dependent regions likely to experience larger decreases in employment.

The economic modelling finds that the large impact of drought on value-added output of agricultural primary production **has significant impacts on the value-added output of the livestock and dairy sectors.**

Drought in the Great South Coast Region

The physical and mental health of the community might be impacted as people in the community value green spaces, trees and the waterways. Greenspace and associated community sport are drivers of community spirit and liveability within local communities in the region. Water Corporations and Councils now have a strong understanding of the importance of greenspace for their communities.

The diversity of the economy and landscapes across the Great South Coast will continue to mean that some areas will be impacted by future droughts more than others. While it is not possible to predict which area within the Great South Coast will be more affected than others, smaller communities that are highly dependent on agriculture and more geographically isolated will be most exposed. Declining populations in smaller towns may mean they are more vulnerable to change.

Overall the Great South Coast's high exposure to agricultural industries creates the potential for significant community impacts from future drought.

Vulnerabilities and gaps in preparedness

The diverse Great South Coast already has many drought resilience measures in place or in development.

Agricultural research, development and extension will remain important to support ongoing adaptation to build preparedness to future drought. Farmer's capacity to adequately prepare for drought differs significantly within the Great South Coast region. Addressing gaps in on-farm business and decision-making skills, such as the skills required to maintain more adaptive farming practices and the ability to maintain buffers of financial assets or feed stocks, will help farmers better prepare for future droughts.

A particular characteristic of the Great South Coast that facilitates regional drought resilience is the 'internal buffer' between cropping and livestock in the region. Due to the relatively consistent and higher rainfall (compared to regions further north such as the Wimmera),

if there is a drought/dry-affected cereal crop there may still be sufficient biomass for it to be harvested and used on farm, or sold for feed in the region. This provides a (reduced) return on the crop and also provides a valuable feed to livestock industries that will need to bring in supplementary feed in response to the dry conditions. Water logging is a persistent challenge in the region and can prevent winter crops. It may be that climatic changes and future dry conditions enable more feed to be grown in winter — with resultant changes to agricultural production systems in the region.

Tourism will continue to provide much needed income to the region during times of drought. Key tourist locations such as the Twelve Apostles, Port Fairy and the Grampians National Park are relatively rainfall independent. Other coastal towns should also benefit from this source of income.

Diversification is a key mechanism for the regional economy to contain the drought impacts flowing from agricultural sector. Towns throughout the Great South Coast have varying degrees of diversification with larger, centrally located towns more likely to experience these benefits. Specifically:

- The major regional centre, Warrnambool, will provide somewhat of a buffer to future drought impacts as it has a diverse economy. Warrnambool itself will be buffered to some degree from reductions in agricultural output as it has alternative industries (such as health, education, retail). Townships near Warrnambool can also benefit from some of this buffering in the face of less agricultural activity because of drought. This is especially the case for townships within an approximately 50km radius of the centre, which offers the benefits of rural living while also allowing access to employment opportunities in the larger centre.
- Medium to smaller sized communities such as Hamilton, Camperdown, Cobden and Koroit all have food processing facilities, however these are likely to be strongly linked to agricultural production. A recently announced milk processing factory closure in Camperdown will have major implications for the town due to its size and diversification and will also have a ripple effect through surrounding communities. Given this, food processing and manufacturing is less likely to provide a buffer during drought than in some other regions across Victoria. Koroit's proximity to Warrnambool is likely to provide additional income opportunities for the community.
- Smaller, more agriculturally reliant communities that are not located near the coast, such as those found in the west and north-west of the region will be more severely affected by drought, as there are limited alternatives that can replace the people and economic activity provided by agriculture.

However, even the large regional centers are highly exposed to the flow-through impacts of drought given the prevalence of agricultural support services, agriculture-related manufacturing as well as logistics. Drought impacts will flow through the entire farm supply chain.

Access to services such as mental health and Rural Financial Counselling are particularly important to manage drought. These kinds of health services have long wait times in the region, even outside of drought. Following the onset of a drought there is a general lag in the provision of additional health services. This means that individuals unable to access these services are having to make drought management decisions under significant stress.



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