Australian Government
Department of Agriculture, Fisheries and Forestry

Future Drought Fund

Government of South Australia
Department of Primary Industries and Regions

LIMESTONE COAST

Regional Drought Resilience Plan

V.3 January 2025

Regional Development Australia LIMESTONE COAST

LCLGA

LANDSCAPE SOUTH AUSTRALIA LIMESTONE COAST

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Acknowledgement of Country

Regional Development Australia Limestone Coast acknowledges and respects the Traditional Custodians of the ancestral lands of the Limestone Coast. We acknowledge Elders past and present, and we respect the deep feelings of attachment and relationship of Aboriginal peoples to Country.

We appreciate the contributions of First Nations people in the development of this Regional Drought Resilience Plan. We look forward to building on this relationship during the implementation.

Executive Summary

This Limestone Coast Regional Drought Resilience Plan tells the story of dry times in the region and identifies opportunities for strengthening communities to respond to drought. The Plan was built on the findings of community engagement across the Limestone Coast, combined with research-based evidence, and the input of project partners:

- Regional Development Australia Limestone Coast
- Limestone Coast Landscape Board
- Limestone Coast Local Government Association
- Department of Primary Industries and Regions SA
- SA Drought Hub
- South East Aboriginal Focus Group

In this plan, the Bureau of Meteorology (2022) definition of drought is used:

Drought is a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use.

For the Limestone Coast, the *timing* of rainfall and the *cumulative effects* of weather are as important to agricultural success as the *amount* of rain. The impacts of weather-related variances across industry are also diverse, with each industry having different water, temperature and timeframe parameters.

Climate projections indicate that the Limestone Coast will spend 40% more time in drought by 2030 (DEW, 2024).

The Plan identifies tangible actions that will help build resilience, with immediate benefits, as well as long-term impacts.

Vision		
A resilient community, economy and environment informed and prepared for drought and dry times.		
Strategic Priorities		
Economic Resilience	Environmental Resilience	Social Resilience
Goals		
Ensuring primary producers and their supply chains have the resources and skills to capitalise on good years and successfully navigate dry times.	Established systems are in place to replenish our waterways, wetlands and landscapes ensuring sustainable future capacity for our environment and industry.	Enhanced community well-being and mental health resilience by creating stronger networks, community collaboration and equitable access to healthcare and education.
Impacts		
Primary production businesses and their communities are self-reliant, productive and profitable.	Primary production landscapes are functional and sustainable, with healthy natural capital.	Primary production communities are resourceful, adaptable and thriving.

The partners will continue to work towards securing funding to deliver the recommendations in this Plan.

1. Introduction

This Regional Drought Resilience Plan (the Plan) has been developed for the Limestone Coast region in South Australia. The Plan development has been a joint project of Regional Development Australia Limestone Coast (RDALC), Limestone Coast Landscape Board (LCLB), Limestone Coast Local Government Association (LCLGA), the Department of Primary Industries and Regions (PIRSA) and the South Australian Drought Hub.

The Plan seeks to bring together local knowledge and lived experiences, with scientific projections to create a roadmap for a resilient Limestone Coast. This has proved challenging with the diversity of industry, climates and geology across the region.

While there are many ways that the region could be divided, for this purpose, this diversity has translated to three distinct zones across the Limestone Coast: Upper (Tatiara District Council and Naracoorte Lucindale Council), Lower (Wattle Range Council, District Council of Grant and City of Mount Gambier), and Coastal (District Council of Robe and Kingston District Council). Each zone has its own unique climate characteristics, influencing the diversity of primary production industries. Each industry varies in the requirements for soil, rainfall and temperatures, often resulting in clusters of similar enterprises across the region aligning within zones.

Figure 1: Limestone Coast region and Aboriginal Language Areas

1.1. Regional Definition of Drought

Drought in this plan is defined as a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use (BOM, 2022).

For the Limestone Coast, the timing of rainfall and the cumulative effects of weather are as important to agricultural success as the amount of rain. The impacts of weather-related variances across industry are also diverse, with each industry having different water, temperature and timeframe parameters.

The need for a regionally appropriate definition of drought was raised several times during the RDRP process. Participants engaged in the RDRP program described "*drought as a natural event marked by insufficient rainfall, that impact[s] negatively on water availability and agricultural production"*. Primary producers often referred to these rainfall deficit periods as "dry times," especially when rainfall is lacking at crucial times or when one or more seasons fail to break. The term dry times is used throughout this document, to reflect our region's lived experience of relatively short periods between significant rainfall.

1.2. Regional Drought Resilience Plans

The Australian Government's *Future Drought Fund* seeks to secure drought resilience by assisting farmers and communities to prepare for the impacts of dry times, building a resilient agricultural sector, landscape, and communities. The Fund is delivered against three inter-connected strategic priorities: economic resilience, environmental resilience, and social resilience, which have been brought through to this plan.

The Regional Drought Resilience Planning program is one of the Future Drought Fund's key programs. Jointly funded by the South Australian Government, this program supports regional consortia to deliver unique, community-led Regional Drought Resilience Plans. The purpose of the Limestone Coast Plan is to benefit communities by:

- building their economic, environmental and social resilience to future droughts
- being in a stronger position to adapt to climate change
- forming stronger connections and networks within and between regions
- applying best practice data and information to make better decisions.

1.3. Building on Existing Work

The Limestone Coast has a long history of industry and government investment in research and resources, which are available to the community. Individuals have also shown their ability to adapt to changing climatic and economic conditions on a farm level scale, as well as uptake of industry wide adaptation. The figure below identifies some of the key stakeholders in primary production in the region and includes their vision statements where appropriate.

Figure 2: Overview of Regional Partners in Sustainable Primary Production

Beyond the vision statements described above, there are many initiatives that have supported primary producers and associated communities to prepare and respond to challenging times. The figure below identifies some of the current programs relevant to drought resilience, although it is not an exhaustive list.

Figure 3: Limestone Coast Existing Programs Snapshot.

The intent of the Plan is to recognise and build on the current and historic work. Significant research and support are available, and the Plan identifies opportunities to maximise the impact of this investment.

1.4. Project Reference Group

Regional Development Australia Limestone Coast were the lead organisation in the development of the Plan, bringing together partners in a Project Reference Group made up of representatives from:

- Regional Development Australia Limestone Coast
- Limestone Coast Landscape Board
- Limestone Coast Local Government Association
- Department of Primary Industries and Regions SA
- SA Drought Hub

The role of the Project Reference Group was to oversee the appointment of a consultant for the community engagement and evidence review, co-design the engagement approach, provide technical advice on the evidence base for the Plan, co-design and review content for the draft Plan, engage with other stakeholders, and approve the response to Independent Review.

2. Dry Times

2.1. What dry times look like in the region

Droughts are a feature of all climates and are defined by regional averages and features. Engagement across the Limestone Coast found terminology such as '***dry times'***, '***when the season doesn't break***', '***we didn't get the rainfall we would normally get***', or '***we had to dry sow***'. While these terms relate to a short duration, they are compounded by other stressors, and can have significant impacts. There is also a cumulative effect when dry times run over multiple seasons.

During engagement, the word 'drought' was reserved for multi-year events associated with an almost complete pause in primary production activities and was described as an event that generally affected other regions, not so much the Limestone Coast.

The three main environmental factors contributing to drought and dry times are:

1. Timing, frequency, intensity and quantity of rainfall.
2. Evapotranspiration, soil moisture and runoff; and
3. Temperature including hot days, heatwaves and heat stress.

At the time of writing in 2024, the region was impacted by back-to-back dry growing seasons. Livestock producers involved in the engagement identified that the dry spring in 2023 reduced the amount of hay, silage or grain that was produced on farm. This resulted in both lower on-farm storage of supplementary feed, as well as lower income from sales to others. The dry start to 2024, was amplified by the dry spring prior. Many farmers spoke of having less feed stored than they preferred, as well as lower cashflow impacting the ability to purchase supplementary fodder.

The timing of rainfall in the Limestone Coast is crucial. From a grazing perspective, the autumn break must come before ground temperatures become too cold for vegetation growth. For those involved in cropping, many producers were forced to dry sow crops for the 2024 season. While this is standard practice in other regions, it is unusual for the Limestone Coast. Dry sowing is a substantial investment with no guarantee of a return if sufficient rain does not fall in the days and weeks post sowing.

Other examples of adaptive management during dry times include containment feeding for livestock, reducing overheads, delaying capital improvements, and reducing stocking rates. The flow on effects for the primary production supply chain and local communities are discussed below.

In good years, the Limestone Coast supports other Australian producers who may be experiencing drought. This support includes purchasing or agisting stock, as well as supplying grain, hay and silage. In some instances, assisting with transport of stock and fodder is also provided.

2.2. Impacts of dry times

Primary industry

The impact of drought and dry times on primary production in the Limestone Coast are dependent on many factors, including the:

- Duration of drought conditions
- Frequency of drought conditions
- Presence of other stressors

- Industry resilience
- Farm level resilience; and
- Broader economic climate.

For livestock producers, one of the major and immediate impacts is the need for high levels of supplementary feed such as lucerne, hay, silage and grain. In addition to the cost for purchase and transport from outside suppliers, farmers also have the lost income from the usual sale of fodder produced on farm.

The labour costs for supplementary feeding are significant, both in financial terms, and on wellbeing. The time commitment, as well as the financial burden means that farming families are less likely to be able to leave the farm for social events, travel or holidays. Without a break, particularly during the traditionally quieter winter season, or over the Christmas period, resilience can be further eroded.

Other impacts on livestock producers include:

- Oversupply and market saturation of livestock as farmers destock to reduce farm upkeep and expenditure.
- Heat stress on beef/dairy cattle, sheep, or other animals, impacting feed intake, lowering weight gain, reducing fertility, lowering milk production and increasing susceptibility to death or disease.
- Loss of productive pastures increasing weed infestations, reducing overall productivity and impacting livestock health, reducing farming profitability.
- Loss of genetics as a result of deliberate destocking or livestock losses.
- Wool producers can experience reduced output, having to slaughter adult sheep to meet landscape carrying capacities. Average yields can decline, as well as changes in quality. The value of breeding ewes is recognised, with producers holding onto their strong genetic bloodlines for as long as humanely possible.

For cropping enterprises, the major impact is the dual loss of harvest, as well as the loss of seed grain, legume, and fodder crop to soil condition deterioration, dry conditions, and a lack of rain. Timing and consistency of rainfall, evapotranspiration rates, and temperature can all impact the quantity and quality of pasture and crop production.

Many farms in the Limestone Coast are mixed enterprise, providing diversity of income and spreading the risks associated with market fluctuations. In drought and dry times, the impacts can be magnified by the range of enterprises on-farm.

For the viticulture industry, irrigation availability is a key factor in minimising the impacts of drought and dry times. In addition, hot seasonal conditions can impact vine flowering, bunch growth, and soil water availability (including from irrigation). This can result in shrivelled grapes, early fruit ripening (up to 4 weeks earlier), and sweeter wines (due to elevated sugar concentrations (baumé) and less acidity) with higher alcohol levels in final products. Extreme heat conditions can place strain on refrigeration equipment and chillers, leading to increased running costs and reduced capacity. Wines are also ageing quicker than ‘typical’ years as they can be susceptible to microbial activity.

The risk of bushfire is significantly increased during drought and dry times. With this, comes the increased threat of loss of life, stock, and infrastructure. While fire is a concern for all communities and producers, the forest industry is particularly susceptible, with potentially catastrophic results. The cost of fire monitoring and emergency response is high, and the long-term impacts from the loss of timber and wood flow are significant.

The forest industry invests heavily in fire protection, not only for their own assets, but for broader community benefit. In addition to the increased fire risk, production in the forest industry is impacted with reduced water availability for tree growth, losses particularly in young trees and lower quality timber during drought.

From a manufacturing perspective, lower capital investment results in lower demand for timber. This results in lower production and/or stockpiling.

For all industries, changes in climate have the potential to increase pest plants and animal numbers, as well as creating seasonal conditions that increase or introduce plant and animal diseases.

Water security landscape

Declines in rainfall at crucial periods of the primary production calendar are likely to increase the pressure on groundwater use. At the same time, recharge of the aquifers is reduced, causing double the impact on the region's water resources. Groundwater monitoring has highlighted some areas of the Limestone Coast that are showing signs of groundwater stress, with increased salinity and lower water tables. These impacts are exacerbated in drought conditions. The region has limited access to surface water for primary production, which would be further reduced in drought conditions.

Access to groundwater can also be compromised, with lower water levels requiring new or re-drilling of bores.

Increased rainfall variability is projected for the region, with high rainfall intensity events predicted to rise. The impacts on water infrastructure will be significant, as will the impact on crops. High intensity rainfall events can lead to increased soil erosion, particularly during or immediately after drought conditions or dry times. There is also increased risk of flooding and damage to buildings. There is some risk that during periods when the region receives 'too much' rainfall, individuals may undertake maladaptive practices such as drainage infrastructure to remove water from the landscape.

From an environmental water perspective, reduced rainfall has a significant impact on wetland ecosystems and increases the risk of saline waters entering into estuaries and aquifers. Water quality is impacted by increased salinity and algal blooms, as well as the amount of water available.

Social and community landscape

The impacts of drought and dry times cause significant strain on farmers and their families, as well as their broader communities. Drought can result in lowered social participation and connection, exacerbating mental health impacts, and compounding risks of isolation. These impacts are particularly amplified within lower socioeconomic populations, who have a reduced capacity to access support services, may rely on a single income, and are vulnerable to fluctuating costs of living (NFF, 2023).

Other social and community impacts of drought and dry times (based on independent evidence review and stakeholder engagement) include:

- Children taking on extra responsibilities, attempting to take on 'adult' roles to ease parent's worries, with school attendance reduced
- Increased cost of living and prices for food
- Burnout and compassion fatigue, leading to other physical health issues such as headaches, difficulty sleeping, and exacerbation of existing health issues
- Self-medication and uptake of excessive alcohol consumption, or other 'risky' behaviours
- Potential for increased anxiety or depression due to financial and/or family pressures.

Reduced spending by primary producers due to drought conditions or dry times can combine with higher cost of living for the general community. This places financial strain on small businesses and can lead to redundancies and business closures, further exacerbating the impacts on community.

Access to healthcare, including mental health services can be difficult in the region due to limited availability of providers, distance to travel, long wait times and cost. The potential stigma associated with mental health can also be greater in smaller communities. During drought and dry times, the financial burden can be too high. In addition, an initial request may be met with significant delays, knocking confidence or motivation at the beginning of the process.

Future outlook and trajectory for the region

Climate projections indicate that the Limestone Coast will spend 40% more time in drought by 2030 (DEW, 2022).

Rainfall

Historical monthly, seasonal, and annual rainfall totals are highly variable across all parts of the region. Within each season, there can be substantial differences between the rain received in one year and what is received in the next. The table below shows decadal average rainfall, over time and compared to the Millennium drought, demonstrating the regional variance.

	Decade Average (mm)					Long term average	Modern average	Millennium drought
	1940s	1980s	1990s	2000s	2010s	1940-2017	1985-2017	2001-2009
Keith	470	473	463	433	425	466	436	443
Frances	547	537	523	459	511	527	506	453
Lucindale	688	609	527	510	581	596	550	496
Millicent	795	721	662	720	746	732	705	708
Mount Gambier	777	695	697	695	740	711	712	717

Figure 4: Annual Average Rainfall Values Reported via Decadal Averages

Predicted changes in rainfall are more pronounced. For Keith, monthly rainfall is projected to decrease in the months of February, April, May, October, and November. For Naracoorte, monthly rainfall is projected to decrease from historical averages in March, April, October, and November. For Millicent, rainfall variability from one year to the next, for a given month, is smaller than that of Naracoorte, and Keith. However, declines in rainfall are still projected for April, July, October, and November.

The severity of the impact of these changes will depend on the type of activity being undertaken. For example, February rainfall is important for pasture growth, and contributes to water for lucerne seed crops, which are harvested in March and April. April and May rainfall is important for pasture growth to sustain livestock over the cooler months, and for providing sufficient soil moisture for winter cropping. October and November rainfall is important for pasture growth coming out of the cooler months when pasture growth is constrained, and for fruit set to veraison in grapes. For crops, reductions in growing season rainfall can lead to less crop biomass that would otherwise protect soils from erosion (DEWNR, 2013). Impacts will also be dependent upon the soil type and moisture holding capacity of an individual's soil.

As noted within the South East Drainage and Wetland Strategy (SEWCB, 2019), flooding of creek floodplains as a result of episodic high intensity rainfall events should also be expected under increased climate change scenarios. Simultaneously, reduced aquifer recharge due to rainfall declines and reduced runoff are also expected, altering freshwater inflow availability. Given the significance of habitats for birds, frogs, and other plant and animal species found across the region, protecting existing environments from surface water diversion, increased pollutant levels, groundwater declines, and sea level intrusion within freshwater ecosystems as a result of these changing rainfall patterns must be considered.

These projected changes should be considered in the context of the confidence in the climate models being able to replicate the multitude of processes which influence rainfall generating weather patterns. There is high confidence that winter, spring, and annual rainfall are projected to decrease. Autumn and summer rainfall changes are less clear (Hope, 2015). While changes may occur, caution is recommended given that many of the weather systems that generate heavy rainfall, such as intense frontal systems and severe thunderstorms, are poorly resolved in the climate models.

In the future, the dominant trend is the continuation of interannual variability, but for rainfall declines to potentially occur at critical points in the agricultural calendar. These changes are projected to occur in the context of rising temperatures and potential evapotranspiration, which could lead to a given rainfall total being less effective in producing pasture, crop, vegetables, or vine growth or soil moisture improvement than would historically have been the case.

Evapotranspiration

Potential evapotranspiration is the maximum amount of water that could be evaporated and transpired from soils and plants from the landscape (BOM, 2010). This climate variable is not crop specific. High level data for the different zones in Limestone Coast Region is shown in Table 1,with seasonal increases in potential evapotranspiration relative to a baseline of 1964–1993 for three separate locations. The data indicates increases in the order of 3% in the short-term (2030), 5% in the medium-term (2050) and approximately 10% in the long-term (2090).

Table 1: Potential Evapotranspiration by Season

Timeframe	Baseline (1964-1993)				2030's				2050's				2070's			
Season / Location	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring
Keith	618	311	171	416	635	320	175	443	646	325	180	453	653	333	184	464
Naracoorte	593	296	163	389	609	303	164	413	620	308	168	423	629	315	172	434
Millicent	535	267	149	358	550	275	153	381	560	278	156	390	568	285	159	400

Higher rates of evapotranspiration will increase the rate of water loss from above ground storage such as farm dams, moisture loss from vegetation such as pasture, crops, vegetables, vines, and native vegetation, as well as from soils, particularly when soil cover is minimal. It is recommended that these changes are read in conjunction with the projected changes in rainfall, as increases in evapotranspiration will exacerbate declines in rainfall.

The projections for increased potential evapotranspiration are modelled with high confidence, but magnitude of change is projected with medium confidence (Hope, 2015).

Hot Days

Hot conditions can exacerbate droughts and dry times, which can amplify impacts including:

- Low soil moisture reduces the ability of evaporation to moderate air temperatures, potentially leading to longer or more extreme heatwave conditions
- Periods of high heat increase evaporation, intensifying soil moisture loss and drought conditions
- Hot dry conditions have a major influence on bushfires by driving up the likelihood of high or extreme fire danger weather, can lead to 'megafires', reduce the effectiveness of fire suppression activities and create conditions which have health and safety impacts on fire-fighting staff (Papari, 2021).
- Heatwaves in combination with extended drought conditions have been observed to cause algal blooms in water bodies, increase invasive species, and affect forest productivity (Steffan, 2014).
- Heat stress can affect grain yield and productivity, with potential losses equal to or greater than that resulting from drought or frost. Field data suggests yield losses in the order of 190 kg/ha for every one degree increase in average temperature. Extreme temperatures during the flowering stage (September/October) have an even greater detrimental impact, with reductions of yield in the order of 379 kg/ha for every additional day over 30°C, and a reduction of 837 kg/ha for every additional day over 35°C (GRDC, 2013).

A substantial increase in the temperature reached on the hottest days, the frequency of hot days and the length of warm spells is projected with very high confidence. A substantial decrease in the frequency of frost events is also expected (CSIRO, 2017). The impacts of heat can be further magnified when successive days of extremely hot weather are experienced. The maximum temperature reached can also be a critical factor for agricultural, people or infrastructure, and can represent a tipping point where severe degradation or failures may occur. These temperature extremes can therefore magnify drought impacts. The table below shows the predicted increase in temperature, hot days and hot nights.

Table 2: Hot Day Temperature Predictions for Limestone Coast (DEW, 2024)

Climate Variable	Baseline (1986–2005)	2030 (RCP 8.5)	2050 (RCP 8.5)	2070 (RCP 8.5)
Average Daily Maximum Temperature (°C)	18.8	+1.1	+1.6	+2.3
Average Number of Hot Days Per Year (>35°C)	12	+4	+6	+9
Average Number of Hot Days Per Year (>40°C)	2	+1	+3	+3
Average Number of Hot Nights Per Year (>20°C)	4	+2	+3	+5

Source: Department for Environment and Water 2024.

Drought

The impacts of drought events will likely become more frequent, more severe, or last for longer durations. Heat, bushfires, and other disasters such as floods, will compound these impacts before, during, and after drought periods (CSIRO, 2017). Potential impacts include:

- Increased hot conditions, including increased heatwaves, hot nights, and days over 35 or 40 degrees will make it harder for people to stay cool during the day, sleep at night, and perform daily tasks. This will reduce individuals' mental and physical resilience.
- Extreme heat leading to degradation of sporting fields, which otherwise provide outlets of relief and community cohesion, boosting physical and mental wellbeing.
- The impacts on primary production are significant, and as the major contributor to the local economy, the flow on effects for local businesses and communities are also high.
- Increased disaster frequency and durations impacting more people, locations, infrastructure, and industries, meaning fewer 'good times' and reduced buffer periods to rehabilitate, 'get back on your feet', and cope during droughts.

Cross Border Impacts

Primary production doesn't stop at State borders, with many farmers owning land in both SA and Western Victoria. Similarly, the vast forest estate in the southern part of the region is owned, managed and harvested as a collective "Green Triangle" by timber companies.

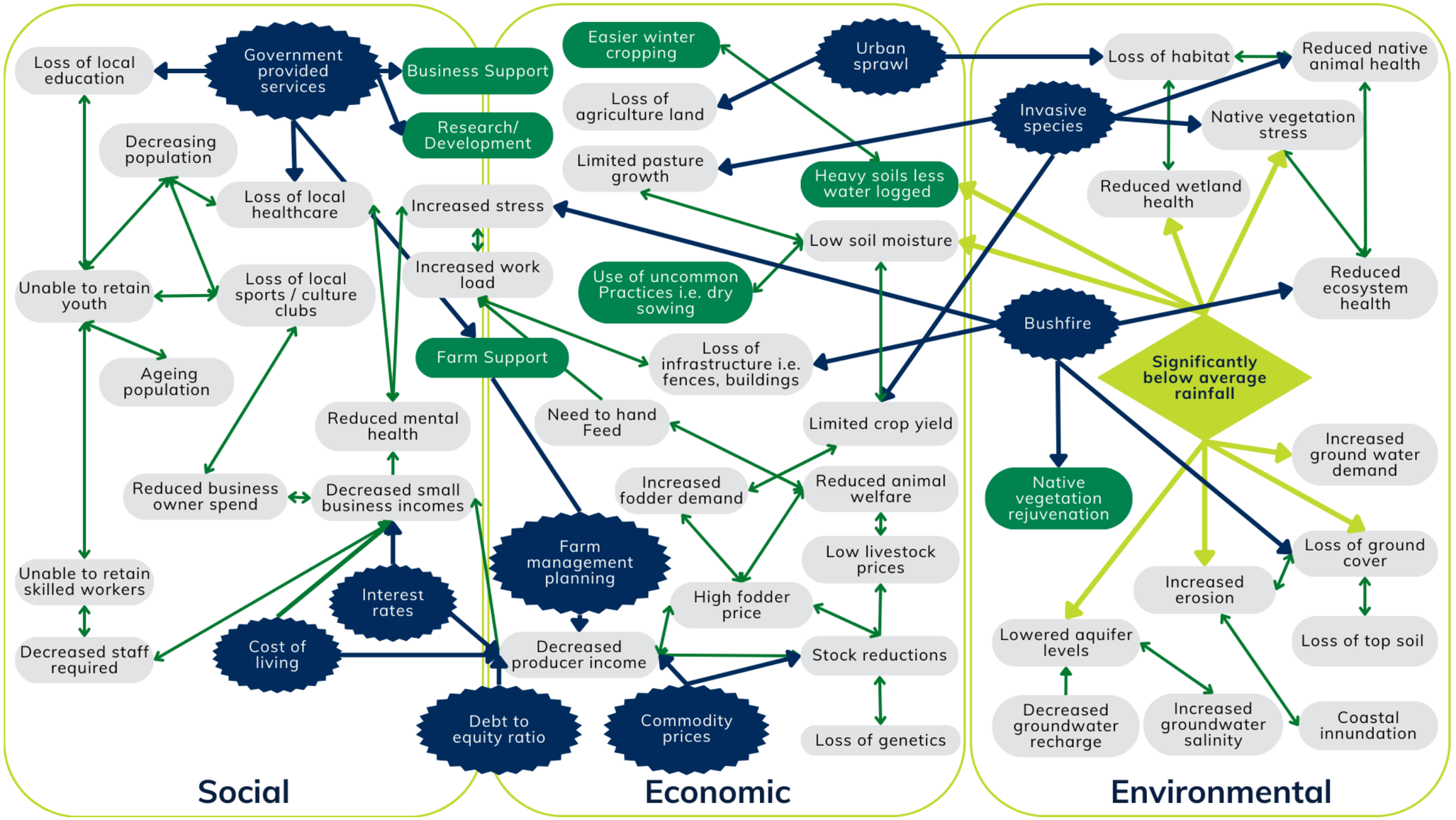
It is recognised that the impacts of drought and dry times in Victoria also impacts on the severity and response in the Limestone Coast. With some shared water resources, as well as common markets for product, shared service industries and combined communities, the impacts of seasonal conditions are felt by all.

2.3. Systems mapping Limestone Coast

An initial evidence review (WSP, 2024) and engagement informed the development of two systems maps for the Limestone Coast. Due to the broad diversity of industry and high number of additional external impacts, the maps are extremely complex and do not cover every element.

Figure 5 shows the major impacts of significantly below average rainfall on primary producers, their communities and the environment. One strength of this Plan is the co-design with community through the engagement processes and the Project Reference Group. The weakness of this co-design approach was that the cropping and livestock sectors were well represented, while other industries such as viticulture and forestry were underrepresented. This is reflected in the content of the system map. Future updates to the plan could seek broader coverage of industries and different community sectors.

Figure 6 shows the opportunities for the Limestone Coast to benefit when there is average rainfall in this region and drought conditions experienced elsewhere.



KEY

SYMBOL	DESCRIPTION
	Trigger
	Co-stressor
	Negative impacts
	Positive impacts
	Trigger correlation indicator
	Co-stressor correlation indicator
	Impact correlation indicator
	Pillar

Figure 5: Trigger of Significantly Below Average Rainfall Mapped Against Primary Production

Drought beyond our region

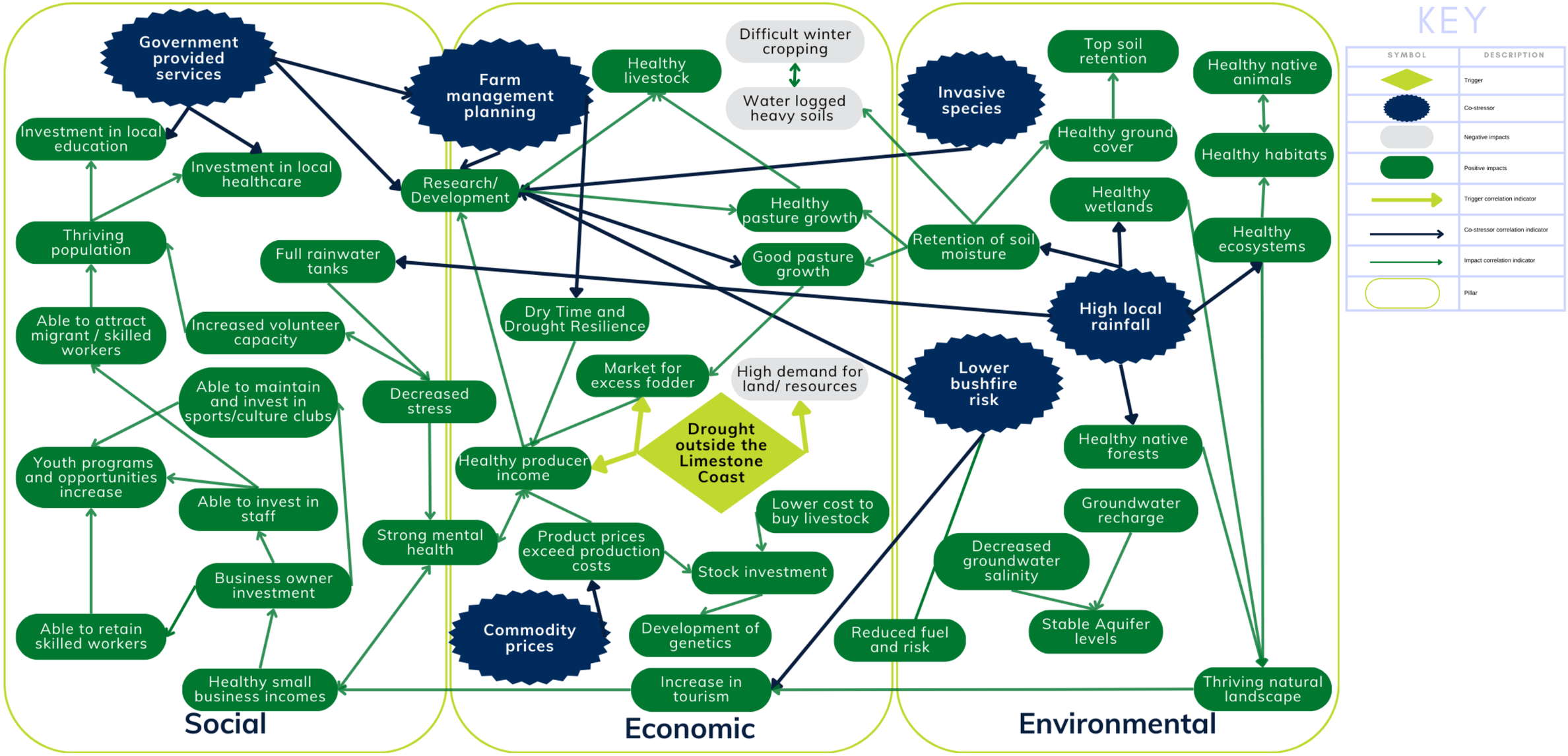


Figure 6: Trigger of Drought Outside the Limestone Coast Mapped Against Primary Production

3. Strengths, Challenges and Opportunities

The Limestone Coast is a unique region boasting diversity in almost every aspect of everyday life. We are a large region, with multiple possibilities.

3.1. Strengths

- Regional Diversity: A common theme across all engagement activities was the region's diversity. From soil and climate, to products and practices. The region's existing diversity is a core strength because when one industry has a bad year, others may be ok. This strengthens the region's economic resilience.
- Enterprise Diversity: In addition to regional diversity, many primary producers in the Limestone Coast have diverse enterprises at the farm-scale. With many mixed farming enterprises, this region is better placed to respond to drought and dry times than those who rely solely on a single enterprise such as cropping or viticulture.
- Connectedness: Our communities support each other. When someone is having a rough time, their neighbours, friends and community will support them. Part of this connectedness is supporting local clubs and groups. These social networks provide residents with outlets and a sense of community.
- Volunteering: The engagement activities identified that many services and clubs were provided by volunteers. Whilst this is generally considered to be a strength, it was also noted that often the same people held multiple roles. In dry times, this could put significant strain on volunteers and services.
- Professionals: Decision making looks different now to 50 years ago with technical experts being widely accepted into the primary production community. There is also generally a higher level of education on-farm, building on generational knowledge.
- Economy: Across all primary production areas, the Limestone Coast contributes billions of dollars into the State and National economies.

3.2. Challenges

- Healthcare: Steep decline in local service providers, especially across health and wellbeing providers. Since Covid in 2020, there has been a perceived reduction of services provided in the region. In some cases, there are still shopfronts, however they are largely understaffed or covered by administrators only. This has resulted in long waiting lists for mobile service providers or requires long distance travel to Adelaide or Victoria to seek assistance.
- Youth retention: The region has a large geographical footprint and relatively low population.Similar to many regions, retention of young working age people is challenging..
- Housing: There are significant opportunities to grow the manufacturing sector, in particular value-add for agricultural products. The Healthcare sector is also one of the fastest growing industries in the region. , However there is no housing available to accommodate workforce growth. Wastewater disposal, potable water sources, and electricity supply are key elements preventing housing and industry growth across the Limestone Coast.

3.3. Opportunities

- Planning: Longevity planning is already normal practice in the Upper South East. From engagement we know farmers teaching farmers is a preferred learning style. This means we have a strong base to expand longevity planning and resilience across primary production networks.
- Migration: There is a strong history of migrant workers in some parts of the region, which could be continued to meet skills and worker shortages.

- Strategy: During consultation there was a clear desire for farm-level dry season strategy and best practice resources. It was noted that the information is available but was clearly not accessible to people seeking it. This challenge highlights the importance of communicating and promoting resources and services to their target audience.
- Tourism: The Limestone Coast has a diverse landscape, with significant State, National and Internationally recognised natural features offering world class visitor opportunities. These include bushwalking, cave tours, diving, fossil and shipwreck trails as well as renowned coastal beaches and townships. There are also opportunities for expansion of agricultural tourism enterprises building a visitor economy that contributes to the prosperity of the region.

3.4. Strategic Framework

Vision

Based on the evidence review (WSP, 2024) and community engagement (WSP, 2024), a vision for drought resilience in the Limestone Coast has been developed:

A resilient community, economy and environment informed and prepared for drought and dry times.

Strategic Priorities

This vision is supported by the three Strategic Priorities of Economic Resilience, Environmental Resilience and Social Resilience. The Limestone Coast Strategic Priorities have been adapted from the Australian Government's Future Drought Fund (FDF).

The FDF's three inter-connected strategic objectives (DAFF, 2025) seek to build:

- economic resilience by growing the productivity and self-reliance of the agricultural sector
- environmental resilience by improving the function of agricultural landscapes through effective management of the natural resource base
- social resilience by strengthening the social capital, wellbeing and connectedness of rural, regional and remote agricultural communities.

Goals

One goal has been developed for each of the strategic priority areas to describe what resilience looks like in this region. Each goal contributes to the vision and guides the actions required. These relationships are further examined in the Theory of Change. The three goals are:

Economic Resilience	Ensuring primary producers and their supply chains have the resources and skills to capitalise on good years and successfully navigate dry times.
Environmental Resilience	Established systems are in place to replenish our waterways, wetlands and landscapes ensuring a sustainable future for our environment and industry.

Social Resilience	Enhanced community well-being and mental health resilience by creating stronger networks, community collaboration and equitable access to healthcare and education.

Impacts

To ensure that the goals and vision can be achieved, the actions and outcomes in this plan must have a clear impact. The detail of expected outcomes in the short, medium and long term is described in Section 9.2 - Program Logic. The desired impact that will contribute to each of the goals are:

Economic Resilience	Primary production businesses and their communities are self-reliant, productive and profitable.
Environmental Resilience	Primary production landscapes are functional and sustainable, with healthy natural capital.
Social Resilience	Primary production communities are resourceful, adaptable and thriving.

Summary of Strategic Framework

Figure 7 shows the connection between each of the elements of the Strategic Framework. Section X includes further discussion on how each of the elements fits together and the interactions with the implementation pathways,

Vision		
A resilient community, economy and environment informed and prepared for drought and dry times.		
Strategic Priorities		
Economic Resilience	Environmental Resilience	Social Resilience
Goals		
Ensuring primary producers and their supply chains have the resources and skills to capitalise on good years and successfully navigate dry times.	Established systems are in place to replenish our waterways, wetlands and landscapes ensuring sustainable future capacity for our environment and industry.	Enhanced community well-being and mental health resilience by creating stronger networks, community collaboration and equitable access to healthcare and education.
Impacts		
Primary production businesses and their communities are self-reliant, productive and profitable.	Primary production landscapes are functional and sustainable, with healthy natural capital.	Primary production communities are resourceful, adaptable and thriving.

Figure 7: Strategic Framework for Improving Drought Resilience in the Limestone Coast

4. Intervention Options and Pathways

With a history of infrequent, albeit severe drought, the options and pathways identified by stakeholders and primary producers for this plan focus on building a solid foundation (Stafford-Smith, 2019). As the first plan addressing drought in the Limestone Coast, engagement with the community (WSP, 2024) and review of existing strategic documents (WSP, 2024) demonstrated this need.

The actions focus on preparedness and recognise that as shown in the systems mapping, there are many external factors that impact on enterprise success and regional resilience. The proposed pathways provide an opportunity to bring people along, build trust and give confidence before stretching into the unknown. The proposed pathways will also reduce reliance on external support in the longer-term.

Unlike regions who regularly experience prolonged drought, the lived experience of drought in the Limestone Coast leads towards actions that help to maintain the status quo rather than seeking to transform at this stage.

Resilience Assessment Process

The Resilience Assessment in Table 3 was determined by the Project Reference Group based on the likely significance of change from the current system. A basic qualitative assessment was undertaken due to the maturity level of this plan. The approach was also conservative, given the lack of data available. In future updates, a more data driven approach may be possible, building on the baseline offered by this Plan.

While there are detailed definitions available in the Glossary, the basic definition of the terms used for the Resilience Assessment are:

Maintain:	keep the region the same
Modify:	adapt the system to meet newly defined goal/s
Transform:	radically change or build a new system

Prioritisation

In this first Drought Resilience Plan, all pathways shown in Table 3 are considered to be worthy of investment. Within each pathway, outputs for each pathway have been sequenced where they show a number next to each action.

Some actions identified by stakeholders and participants (see Section 7.1 What we heard) were not included in Table 3 due to a range of factors including:

- External drivers
- Clear responsibility of an agency or organisation
- Key strategy in another document e.g. Regional Growth Strategy
- Not strongly related to drought.

These actions have been captured in Appendix 1 Supporting Pathways to ensure that they are not lost. Future updates of the plan could include some of these external elements into a more mature adaptation pathways approach (Stafford-Smith, 2019).

The delivery of priority actions will be dependent on uptake by partner organisations and community, investment from all three levels of government and changing impacts from external factors.

Pathways Approach

Intervention pathways have been based on the CSIRO Resilience Adaptation Pathways and Transformation Approach (RAPTA) (O'Connell, 2019). The below options, pathways, and interventions have been designed in consultation with the Limestone Coast community and plan partners. By using the RAPTA approach we have taken diverse views of participants and designed responsive pathways to meet community needs and expectations.

As recognised above, this Plan is the first of its kind for the Limestone Coast. As such, the triggers listed in Table 3 are based on the information and feelings of those who participated in the engagement phase of co-design (WSP, 2024). Future updates of this plan could include quantitative triggers for action, as well as longer term priorities, reflecting a more mature adaptation pathways approach.

4.1. Pillar Pathways

Table 3: Pillar Implementation Pathways and Actions

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment	Triggers
During consultation we heard retail stores without a business plan were struggling, whilst those with plans could implement strategies such as moving old stock or had diverse revenue streams to assist whilst primary producers weren't spending.	Promote greater awareness of tools, techniques and approaches to assist primary producers and small business survive a downturn in trade.	**1. Business Support - Enhancing the Small Business Support Program to Build Business Resilience for Future Dry Times**	Develop new resources for small and medium enterprises to manage periods of reduced trade. Specifically reduced trade caused by dry times and/or drought reducing primary producer spending. Existing small business program could be expanded for efficiency.	1. Increased awareness of drought resilience information, practices and opportunities. 2. Increased information sharing and knowledge building. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 5. Increased networking and relationship building. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify	The 2024 late autumn break highlighted the challenges faced by businesses and primary producers who had not planned for alternative operating conditions. There were increased mental health, animal welfare, and business sustainability concerns.
During consultation we heard that some businesses, retail and primary production, were not saving and planning during the good years to provide a buffer for poor years. It was noted this was because they hadn't considered the inevitability of poor years. especially younger, or less experienced business owners.	Improving the financial viability of small business during the good times (to provide a buffer during dry times) .		Create a map of available support services (in a variety of formats) promoting available services (financial, relevant rebates/incentives, farm advice/outreach, Mental Health etc. website with linked services maintained by a lead agency.		Modify	
			1. Develop a program focussing on Agriculture/Primary Production business support. To assist these businesses, engage with best practice principles. 2. Appoint a Project Coordinator for an Agri Business Development Program.		Modify	

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment	Triggers
During consultation we heard that seasons are more variable and harder to predict. An example was that a lot of lower SE farmers were caught unprepared in 2024 due to a wet January followed by the late break. Farms without a drought management plan were struggling and needing to make decisions whilst emotions were high, whilst farms that had plans in place were able to make decisions earlier and benefit as a result.	Encourage greater uptake of Farm-Level Drought Plans that address short term seasonal conditions as well as long term financial and on-farm strategies.	**2. Farm-Level Drought Plans – Supporting Primary Producers to Manage Seasonal Conditions and Develop Longer Term Strategies**	Supporting primary producers to make multi-year cash flow projections for informed decision making. Short term seasonal management as well as longer term options for adaptation or diversification	2. Increased information sharing and knowledge building. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 6. Increased resilience for local businesses by securing and strengthening income streams. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify	The 2024 late autumn break highlighted the challenges faced by businesses and primary producers who had not planned for alternative operating conditions. There were increased mental health, animal welfare, and business sustainability concerns.
			Promote access to climate science and tools to broaden the awareness of more variable and unpredictable local conditions in the future.	1. Increased awareness of drought resilience information, practices and opportunities. 2. Increased information sharing and knowledge building. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify	
			1. Create resources for farmers to develop personalised Drought Management Plans to pre-plan what steps to take in late breaks, dry times and drought. 2. Promote and educate community of benefits in planning and maintaining plans.	1. Increased awareness of drought resilience information, practices and opportunities. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify	

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment	Triggers
During consultation we heard there were too many competing priorities for community time. We also experienced scheduling issues when planning engagement workshops with industry bodies and support agencies having workshops or events during the same period, targeting the same communities.	Improving collaboration and cross promotion of events and resources to streamline availability and reduce confusion and disengagement.	**3. Industry Collaboration - Fostering Collaboration Between Industry Bodies and Agencies**	1. Appoint a Project Coordinator for Industry Collaboration. 2. Develop a steering committee across Limestone Coast based primary production bodies to share information and as appropriate program and resources. 3. Create a calendar of events around key production periods for engagement and networking.	1. Increased awareness of drought resilience information, practices and opportunities. 7. Improved collaboration and strengthening of relationships. 8. Reduced duplication of services and reduced consultation fatigue, providing better outcomes for agencies and farmers. 9. Increased utilisation of existing drought resilience knowledge and information. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify	The 2024 late autumn break highlighted the disconnection between industry bodies and agencies. Several support and engagement activities were planned, however the duplication of content, and competing locations and timeframes often lead to greater confusion and stress for the target audiences.
During consultation we heard that not all farmers want to be trailblazers. Some know they need to change but want to be able to make informed decisions on what could work and if they can make small changes each year to achieve better resilience in a 5-10 year plan.	Promote greater awareness of tools, techniques and approaches to assist primary producers survive dry seasons	**4. Sustainable Practices - Increase Engagement in Drought Resilience Farm Management and Economic Diversification Projects**	1. Conduct a gap analysis of the current research and extension programs with Primary Producers. 2. Encourage co-design research and extension programs with primary producers, SA Drought Hub and Industry Bodies.	1. Increased awareness of drought resilience information, practices and opportunities. 2. Increased information sharing and knowledge building. 4. Improved business outcomes and long-term sustainability. 7. Improved collaboration and strengthening of relationships. 9. Increased utilisation of existing drought resilience knowledge and information. 10. Increased understanding and awareness of available support and services. 11. Increased use of support and services thereby increasing preparedness, and future funding. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Maintain	The SA Climate Change Act is currently being amended to include ambitious statewide targets. To assist primary producers meet the targets, we need to make the existing and continuing research accessible to end users.
	Promote drought resilient practices demonstrated to be effective in the South East. Upper, Lower and coastal practices in addition to whole of region.		Develop case studies to promote drought resilient farm management techniques		Maintain	
			Host field days to showcase available technology, research and production improvements and how they could be implemented.		Modify	
			Develop a multimodal program to identify and promote drought resilience at farm level resources and options.		Modify	
			Identify and implement demonstration sites which show benefits of drought resilient practices.		Modify	
During consultation we heard primary producers wouldn't look to PIRSA or LCLB for advice on research and technology. They would however take advice from their trusted specialists (agronomists, animal dieticians, vets etc) and their networks.	Promotion of latest drought resilience farm management research and emerging income streams.		1. Development of drought resilience farm management research and emerging income stream advice. 2. Promotion of material to primary industry supply chains. 3. Maintain resources and up to date research/funding opportunity information.		Modify	
			Development of Primary Producer facing drought resilience farm management research and emerging income stream advice.		Modify	

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment	Triggers
The short timeframe between engaging a consultant and when a draft plan was due to be submitted for independent review did not allow for meaningful engagement with First Nations representatives. Whilst some meetings did occur and the RDRP added to the agenda, formal discussions had not commenced at the time of completing this plan. The action was derived from the existing strategic priorities of the SEAFG.	Co-design a Caring for Country plan that identifies activities to improve the health of Country and increase regional drought resilience	**5. First Nations Co-design - Empowering First Nations' Caring for Country**	Develop a holistic Caring for Country plan and deliver on-ground activities. a) Recruit and appoint a project manager to work closely with partner corporation (Burrandies Aboriginal Corporation) throughout the project b) Develop an engagement plan that effectively captures the needs of the region's First Nations people c) Perform a desktop review of current Caring for Country activities in the region and identify gaps d) Identify future on-ground Caring for Country activities that will support First Nations vision e) Develop a Caring for Country plan f) Engage local First Nations peoples to deliver on-ground Caring for Country activities identified in the plan that will increase regional drought resilience g) Deliver any required training to First Nations peoples	15 Holistic planning of Caring for Country activities with the understanding that activities on Country are interconnected. 16 Increased social and economic participation of First Nations; co-design emphasises self-determination, projects, and activities important to First Nations peoples to make up the plan, new fee-for-service opportunities. 17 Increased drought resilience. 18 Support biodiversity outcomes. 19 Reduce the risk and impact of bushfires.	Transform First Nations cultural knowledge and customs are typically not considered in drought resilience. First Nations people are not consistently empowered to determine on ground activities and decision making	Acknowledgement that there are deficiencies in environmental management when the input of First Nations cultural knowledge is not respected or included in decision making.
During consultation we heard that the loss of wetland areas was negatively impacting on water availability in the landscapes and not allowing for ground water recharge to sustainable levels following dry seasons. The availability of quality groundwater for irrigation is also a significant concern.	Advocate for the exploration of alternate water resources and determine the feasibility of Managed Aquifer Recharge.	**6. Alternative Water - Retaining water in the landscape and encouraging the use of alternative water sources**	Undertake a review of alternative water sources within the region. Would need to include use cases, treatment requirements, economic viability, storage, disposal considerations, and risk assessments for each source/use case. Create water use profiles for regional industries. Undertake a Managed Aquifer Recharge Feasibility Study building on pre-feasibility study and current actions. Ground truthing of predicted managed aquifer recharge sites identified in pre-feasibility study and engagement with landholders to identify future demonstration sites for managed aquifer recharge trials.	18 Support biodiversity outcomes. 19 Reduce the risk and impact of bushfires. 20 Decrease pressure on groundwater resource so recovery after drought is possible. 21 Determine feasibility of storing drain and alternative water sources in the aquifers using managed aquifer recharge (managed aquifer recharge could increase the supply of groundwater available during drought). 22 Identify alternative water sources that can be used during drought. 23 Assist in carbon sequestration. 24 Increase the total volume of water available in the region	Transform This approach seeks to instil a completely new approach to managing water resources in the region to ensure economic and environmental resilience.	The Limestone Coast is facing a long-term climate trend of drying and warming. The region is already experiencing declining groundwater levels and increasing water quality issues. Managing these resources sustainably now and for future generations is critically important.

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment	Triggers
During consultation we heard that supply chain industries felt unprepared to respond to customers who expressed physical, financial, and/or mental stresses associated with dry periods.	Reduce the stigma associated with mental health and capitalise on impromptu conversations within trusted local networks.	**7. Mental Health - Improve awareness and remove barriers to mental health and well-being resources**	Mental health first aid for primary production facing service providers.	2. Increased information sharing and knowledge building. 7. Improved collaboration and strengthening of relationships. 10. Increased understanding and awareness of available support and services. 11. Increased use of support and services thereby increasing preparedness, and future funding. 12. Increased awareness of mental health information, practices and opportunities. 13. Local industry focused program to provide accessible mental health training and services. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify	The 2024 late autumn break highlighted the regions long wait list for mental health support, and limited knowledge by general community members in appropriate options and resources to support family and neighbours.
			1. Appoint a Project Coordinator for Mental Health Program. 2. Implement a steering committee with relevant health and social stakeholders. 2. Undertake a desktop review of existing literature resources, gaps and access barriers. 3. Create a map of available services/resources. 4. Create a gap analysis with recommendations.		Modify	
			Encourage investment in popular local initiatives i.e. 'In the Head of a Country Bloke' podcast.		Maintain	
During consultation, we heard that isolation was an issue during dry times due to increasing workloads (on farm and in small business), combined with reduced cashflow. Groups wanted to help, but needed small amounts of funding with low administrative burden.	Provide opportunities for communities to connect locally during dry times.	**8. Community Connection – Create Connection in Communities in Good Times and Dry Times**	1. Promote low-cost opportunities for people to gather. 2. Provide seed funding for community groups to gather on local issues or with local interests.	2. Increased information sharing and knowledge building. 7. Improved collaboration and strengthening of relationships. 10. Increased understanding and awareness of available support and services. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify	The challenging 2023-24 season saw previously active members of the community withdraw and become isolated. Already stretched volunteers sought to provide events, however the audit and admin requirements for grants outweighed the benefits.

5. Our Region

This section is based on a detailed evidence review (WSP, 2024), as well as the learnings from community engagement (WSP, 2024) undertaken to inform the development of the Plan. It is intended to give an overview of the diversity of the region as it relates to drought, rather than a comprehensive description of all economic, environmental and social features.

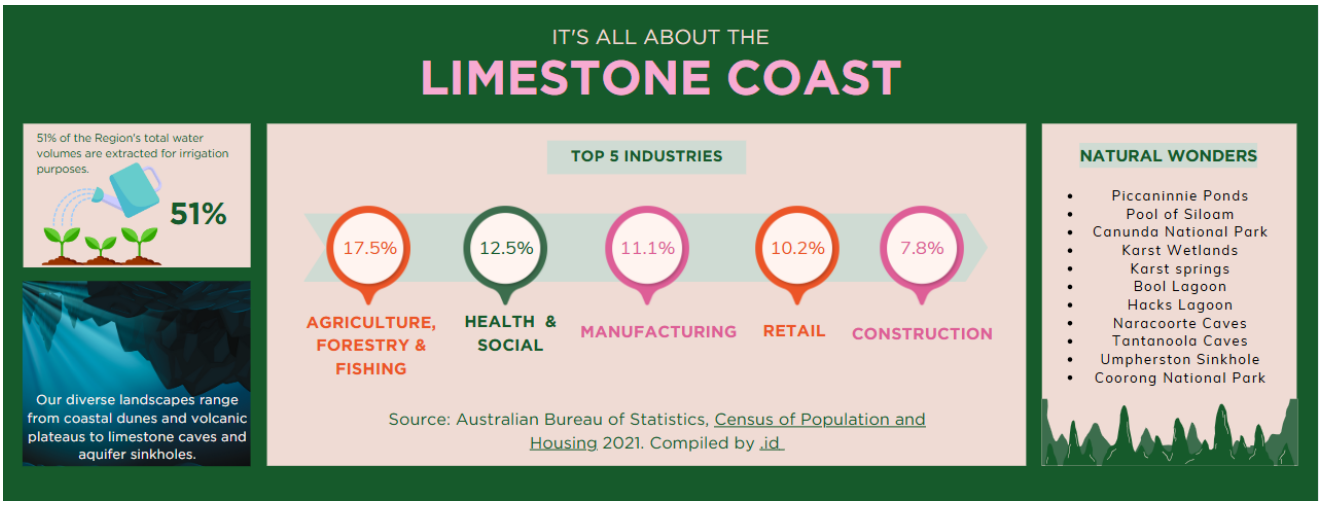


Figure 8: Limestone Coast Regional Snapshot

5.1. Primary Industries

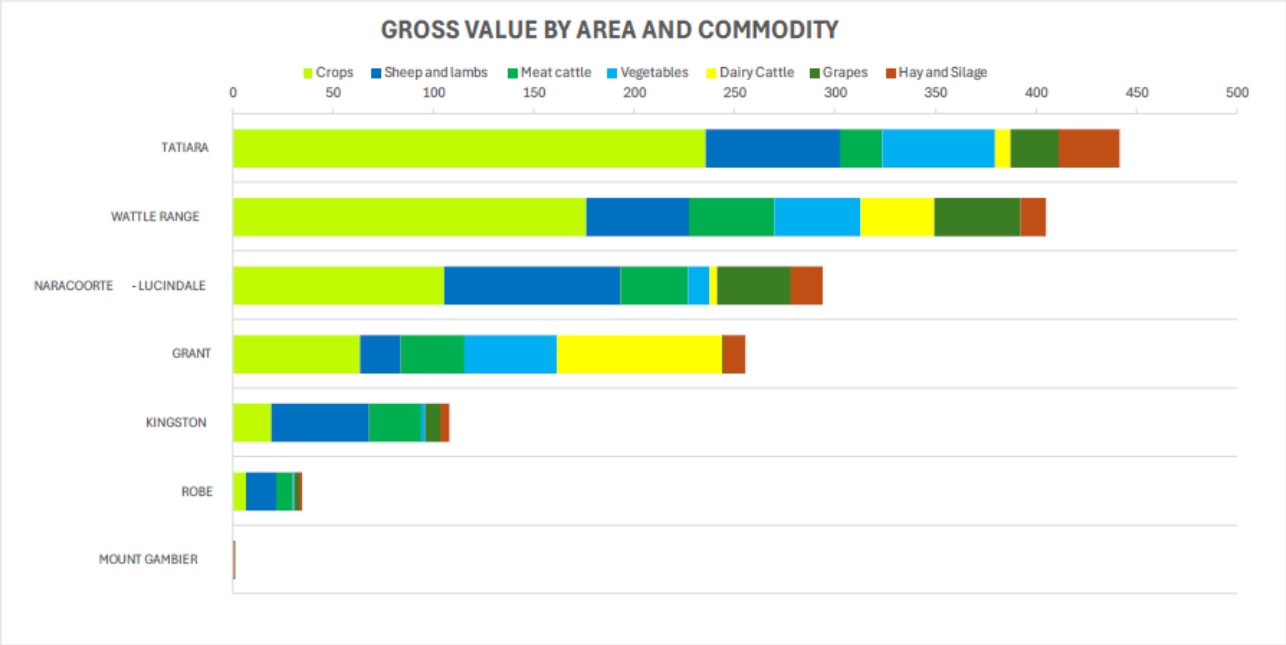
The Limestone Coast is a vital economic hub, with primary producers generating over $2.5 billion in regional output (RDALC, 2022). National leaders in lucerne, canola, and small seeds, the region produces 83% of Australia's lucerne seed (Tourism SA, 2025). This is further supported by grains including wheat, barley, legumes and other crops.

The region provides significant economic benefit to local communities, State Gross Domestic Product and the country more broadly. Specialising in agriculture and food manufacturing, the Limestone Coast boasts a robust economy and well-established primary production industries. Agriculture, forestry, and fishing employ 17.5% of the workforce (.id, 2024), with 94% of South Australia's dairy herd located here. In seasons with high vegetative growth, hay and silage are sold to other regions or stockpiled, while in poor seasons, it is utilised on farm or sold within the Limestone Coast (Prance, 2023).

Many of the farms across the region are mixed-farming enterprises, with a combination of two or more crops, livestock, viticulture, farm forestry and other sources of income.

The region's fertile soils, historically reliable rainfall, and significant groundwater also support diverse crops such as potatoes, carrots, and onions (PIRSA, 2022). Commercial forestry plantations cover around 2.6% of the land area in the region, contributing 83% of the State's forestry and logging output (Tourism SA, 2025). There are some boutique industries and isolated farms that produce poultry, eggs and specialty pigs, as well as larger enterprises supplying pork to the national market. Fishing, including southern rock lobster, abalone, rainbow trout, salmon, and barramundi, also adds economic diversity.

Food and beverage manufacturing is also significant, with meat, wine and milk products making up the majority of this industry.



Source: ABARES data reproduced by WSP.

Figure 9: Gross Value of Production by Local Government Area and Commodity for 2020-2021

5.2. Water security landscape

The Limestone Coast has limited reliable surface water due to the porous nature of soils and the generally flat topography. This makes the Limestone Coast heavily groundwater dependent. Groundwater supports primary production, industry, town water supply and recreational facilities, and is iconic in how it has shaped the region including globally significant wetlands. The quality and quantity of groundwater available is important to environmental, social, cultural and economic values in the region.

There are two main groundwater systems: the upper unconfined Tertiary Limestone Aquifer (the unconfined aquifer) and the underlying Tertiary Confined Sand Aquifer (confined aquifer). These two aquifers are generally separated by a confining clay layer. The unconfined aquifer, recharged locally through rainfall, is used for 90% of groundwater extraction, mainly for pasture irrigation (ABARES.). The confined aquifer, considered old water, recharges from a site located in the Dundas Plateau in Victoria. Access to the confined aquifer is limited with a precautionary approach to consumption due to the inability to recharge.

Water resources are managed through five water allocations plans (four groundwater and one surface water) and a Water Affecting Activities Control Policy. Water allocation plans set out the rules for the allocation, take, use and transfer of water. The Water Affecting Activities Control Policy regulates activities that can impact the health and condition of water resources, the ecosystems that depend on them and other water users. Water resources have been monitored in some parts of the region since the 1970s.

Water quality in the unconfined aquifer varies across the region, and water quality often influences the uses currently dependent on it. The unconfined aquifer is fresh and shallow to the south but becomes increasingly salty towards Kingston and the southern coast. Towards the Victorian border and to the north, the groundwater is much deeper, and the water tends to be more saline. This has resulted in different irrigation practices in the Padthaway, Tatiara and Tintinara-Coonalpyn area.

Groundwater provides a potential buffer against dry periods, however, not all landowners have access to groundwater for irrigation. The timing of rainfall is particularly important for the autumn and spring breaks. Below-average rainfall, or inappropriate timing can increase irrigation extraction, increasing stress on the water resource and potentially raising soil salinity.

The majority of water supply to townships in the Limestone Coast is managed by SA Water, who draw from groundwater and also work within an allocation. The condition of infrastructure is a key factor in improving sustainability for future needs, including preventing loss of water through leaking pipes and ensuring town water supplies can be met.

The area of land available for agriculture in the Lower South East was significantly increased from the mid 1800s due to extensive drainage works to remove inundation. Drainage in the Upper South East from the 1990s focused on reducing dryland salinity by lowering the water table. The majority of this water has historically flowed to sea; however, investigations have been undertaken to look at options to retain water in the landscape.

Figure 10: South East Drainage System Map

5.3. Social and community landscape

The Limestone Coast offers a diverse range of lifestyles, from a vibrant regional city to charming coastal towns, from stunning natural wonders to luxurious cellar door experiences. The region hosts cultural and food festivals, celebrating local produce and community spirit. There is also a strong focus on sport and recreation, bringing local people together, as well as attracting State and National level competition. As the population ages and dependency rates rise, the region has expanded its community, aged care, and disability services, creating employment opportunities in healthcare and social assistance.

The region's road infrastructure is crucial for productivity, connecting it to major freight routes including Adelaide, Portland, Melbourne and the East Coast. Car dependency remains high across the region, with limited availability of public transport services, and long distances that prevent walking and cycling for most people.

Youth retention is a significant issue for the region, from both a social and economic perspective. Partnerships with educational institutions provide some opportunities for supporting local talent development. In Mount Gambier, the education precinct hosts TAFE and tertiary institutions, with plans in place for a forestry centre of excellence and a technical college. However vocational and tertiary training opportunities are limited outside of the regional centre.

Regional community groups foster social activities and networking opportunities across agricultural industries and eco-based tourism. They also provide access to social infrastructure, including sports and recreational centres, cultural, spiritual, and art facilities.

Statistic	Limestone Coast Average	Regional South Australia Average
Workforce Particpation	59.3%	54.1%
Unemployment Rate	3.7%	4.8%
Employed in Agriculture, Forestry and Fishing	17.5%	14%
Median Weekly Household Income	$1,311	$1,133
First Nations Population	2.4%	4.7%
Median Age	44 years	47 years
Population Born Overseas	11%	12%
Population with one or more long-term health condition	34.6%	37.5%
Population with one or more long-term health condition	9.1%	9.9%
Population with and education of Year 12 equivalent or higher.	37.7%	37.6%

Figure 11: Regional Social Profile

5.4. First Nations water focus

The Limestone Coast region is comprised of the lands of the Bunganditj (Boandik), Meintangk (Moandik), Potaruwutij, Tatiara/Ngarkat, Tanganekald (Southern Clans), Marditjali and Ngarrindjeri First Nations Peoples. First Nations corporations and groups in this region include the South East Aboriginal Focus Group (SEAFG), Burrandies Aboriginal Corporation, Ngarrindjeri Aboriginal Corporation, and Ngarrindjeri Lands and Progress Aboriginal Corporation.

Connection to, and caring for, Country is vital to the physical, spiritual, emotional, and cultural wellbeing of First Nations Peoples. Country includes all physical and spiritual wellbeing connections of First Nations peoples.

Under colonisation, the land of the Limestone Coast region has been intensely modified over a relatively short period of time, with much of the land now being used for primary production purposes. The below figure shows the impact that land clearing and draining programs have had on the abundance of wetlands in the Limestone Coast; from 44% of the landscape pre-European settlement to 1.5-2.5% in 2016.

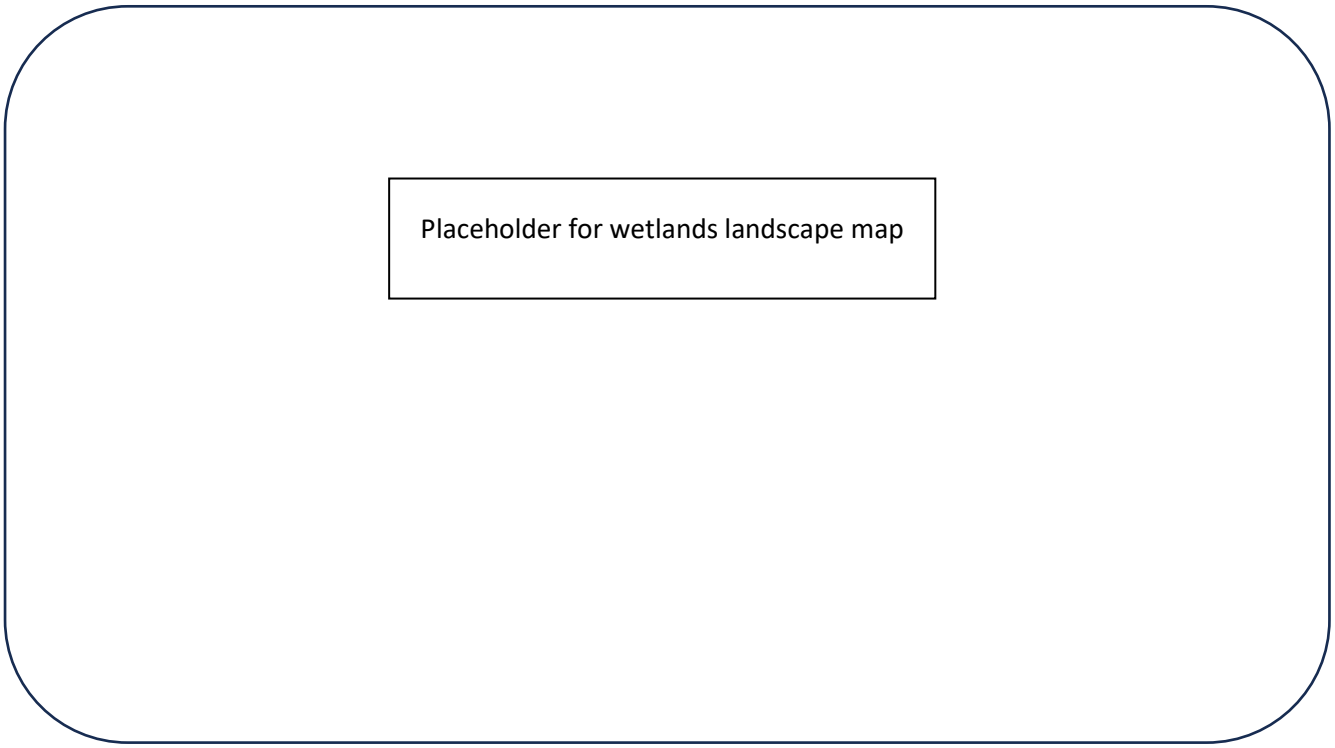


Figure 12: Limestone Coast Wetlands Areas

While many of these landscape modifications are complex and irreversible, it is important to carry out activities that Care for Country and restore the landscape where possible.

The SEAFG vision for Country is that South East Aboriginal people will maintain and respect the natural resources of Mother Earth and surrounding waters to establish sustainable resources for everyone. This vision will be delivered through on ground activities that prioritise self-determination, cultural knowledge revival of First Nations water and land management practices, increased economic participation, and walking together with the Limestone Coast (LC) Landscape Board.

The LC Landscape Board (previously the SE NRM Board) has maintained a close working relationship with First Nation groups in the region for over 20 years. The Lartara-Wirkei Cultural Governance Framework, developed by the SEAFG in 2008, underpins LC Landscape Board's strategic documents.

5.5. Environmental landscape

The Limestone Coast features diverse natural landscapes, from coastal plains to highlands, promoting ecotourism, recreation, and environmental protection. These landscapes provide significant economic and amenity value, supported by water availability, productive soils and a mild, wet climate (LCLB, 2024). The region benefits from abundant water, but as populations grow and the climate changes, landscape-scale water management has become crucial. Sustainable management of these environments, including First Nations sites, is essential to preserving their values. Achieving sustainable water and energy use is vital in protecting against the worsening impacts of climate change and future changes to dry times. Effective water retention landscape-wide will enhance environmental longevity, benefiting both industries and the community in years to come.

5.6. Economic landscape

The Limestone Coast, historically rooted in traditional industries such as primary production, forestry, fishing, and manufacturing, is now experiencing significant growth in tourism and service sectors, particularly health and aged care. This transition is driven by population growth and increasing demand in education and government policy for healthcare. The region is also well-positioned to expand in the renewable energy sector, especially in power infrastructure, to harness opportunities from Australia's energy transition trends.

Contributing $5 billion to the South Australian economy, the Limestone Coast is a dynamic and diversified region (.id, 2024). Long term economic prosperity will depend on maintaining agricultural cost-efficiency, while supporting growth in other industries, and accommodating an ageing population. Ensuring robust freight connectivity will be essential for future success. Overall, the Limestone Coast is poised for a prosperous future, leveraging its rich history and embracing new opportunities in various sectors provided that it can adapt to a changing climate.

5.7. Outlook and trajectory for the region

The Limestone Coast Region's future is bright, with a strategic focus on economic and population growth, agribusiness, healthcare, and tourism. Efforts to attract and retain a working-age population will support vibrant communities, while leveraging competitive advantages in agribusiness and capturing employment opportunities in healthcare and social assistance. Enhancing regional collaboration in tourism and securing infrastructure investments are also key priorities, all driven by a shared commitment from regional leaders.

Key future trends for the region are:

- Adapting to climate change
    - Protecting livelihoods, infrastructure, and people's quality of life as our region's climate continues to change.
    - Key impacts to primary production including fluctuating commodity prices, transformed landscapes and business models, increasing compound risks.
- Net zero and the energy transition
    - Global push to reach net zero, protecting biodiversity and managing resources efficiently.
    - Rapid transition to a low-carbon economy, transitioning from fossil fuels by adopting renewable energy sources like solar and wind, and increasing the use of electric and low-emission vehicles.
    - Key impacts to primary production include adopting carbon offsets, carbon farming, and reducing greenhouse emissions from livestock and other agricultural activities.
- Promote health and wellbeing
    - Rising healthcare demands from demographic changes, emerging diseases, and unhealthy lifestyles requires healthy, sustainable products.
    - Health, nutrition, and food safety will become increasingly important for food and agricultural production.

    - Key impacts to primary production include new technologies for monitoring food quality, promoting circular economy nutrients, reducing pesticide use, tracking food quality and health implications, and improving access to diverse foods. Transitions to sustainable food production systems and innovative food technologies such as lab-grown meat and seaweed-fed cattle to accommodate changing customer demands.
- Geopolitical shifts
    - Increased efforts to ensure global stability, trade, and economic growth.
    - Key impacts to primary production: Despite global uncertainties and inequalities, there is potential for enhanced global trade and agricultural exports, as well as growth in domestic markets. Australia's reputation as a high-quality, ethical supplier for sustainably produced products will become increasingly important.
- The digital age
    - The rapid growth of the digital and data economy could exacerbate inequalities, but also create new jobs and alter the labour market. Advances in automation, genetics, and synthetics are transforming food and fibre production.
    - Key impacts to primary production include better decision-making, technological advances like drone seeding and AI fire detection, labour automation, and improved pest and disease control.
- Human Diversity and Inclusion
    - The importance of diversity, equity, and transparency in decision-making is increasing. Economic planning now considers diverse systems, cities, and economies based on human differences.
    - Key impacts to primary production include more agile and interconnected customer engagement, a growing expectation for diverse workforces, and changing values of workers.
- Supply chains vulnerabilities
    - Global and regional supply chains are interconnected but vulnerable to disruptions. Increased extreme weather events will cause community and supply chain disruptions, material scarcity, and higher freight costs
    - Key impact to primary production: greenhouse gas emissions disclosure, buyer-supplier collaboration, adoption of new business models, software security and planning to reduce labour strikes and cyberattacks.
- Circular economy
    - Consumer behaviour is shifting towards reducing waste and supporting circular consumption patterns.
    - Key impacts to primary production include improved farm management for wastewater and waste reduction, energy and compost generation from materials, use of repurposed materials, and adoption of regenerative farming techniques.
- Valuing natural capital
    - Producers are increasingly expected to protect biodiversity and invest in natural resources, maintaining healthy ecosystems and water quality while avoiding habitat and species loss. This enhances environmental stewardship.
    - Key impacts to primary production include aligning with nature-disclosures, carbon sequestration, market drive for biodiversity/ecosystem resilience, greater recognition of landholder knowledge, drought and climate-resilient farming practices, preparation for environmental volatility.

6. About this Regional Drought Resilience Plan

6.1. What is resilience?

The ability of a system to absorb a disturbance and reorganise so as to maintain the existing functions, structure and feedback. Also see general resilience, specified resilience, economic resilience, environmental resilience, and social resilience.

Droughts are a recurring challenge, and future droughts in the Limestone Coast are expected to be more severe and frequent. To tackle this, we must enhance our drought resilience. We want to avoid chronic stresses and episodic shocks degrading the performance of our community, our economy, and our natural environment.

The International Consortium of Organizational Resilience identifies five areas of focus to build community resilience. Each area can be strengthened or weakend impacting on community resilience and vulnerability. For best community resilience outcomes, the system as a whole needs to be strong and flexible. This Plan works on aspects from across the areas to build the Limestone Coast community's resilience. By targeting pathways across the areas of Healthy Environment, Strong Economy, Responsible Governance and a Prepared System, our Regional Stakeholders can strengthen the community's foundations to build a more resilient future.

Figure 13: Community Resilience Framework

The ICOR model of Community Resilience was chosen as the five areas align well with this Plan's three strategic Priorities as demonstrated below.

Figure 14: Plan Strategic Priorities Aligned to ICOR Community Resilience Areas

A Healthy Environment (ICOR, 2016)

- Protects and restores the natural resource base upon which life depends
- Seeks to reduce climate impacts through adaptation and mitigation efforts and increased resource efficiencies

Responsible Governance

- Provides community services
- Enforces laws humanely
- Protects its community members
- Manages its finances under changing conditions

Strong Economy

- Produces necessary resources
- Has a diversified economy
- Has access to financial and physical resources
- Maintains the value of its currency

A Prepared System

- Risk reduction activities are planned and funded
- Networks and partnerships exist
- Community members are preparedness educated
- Organisations resilience initiatives are recognised

High Quality of Life

- Access to education and information
- Access to affordable housing and quality healthcare
- The existence of social freedoms

Economic Resilience

- Essential operations resume quickly after onset of drought
- Diversity of production across regions and organisations
- Profitable businesses and stable cashflows
- Increased productivity and healthy livestock, soils and flora
- Minimal Price Shocks

Environmental Resilience

- Improved water quality and quantity
- Increased ground cover
- Thriving native species and eradication of invasive species
- Caring for Country practices well implemented and respected

Social Resilience

- Rapidly adjust to and successfully navigate difficult periods
- Connected commuinty with healthy wellbeing mental resilience outlets
- Committed to conserving water and implementing environmental strategies
- Prepared for periods of reduced rainfall

Figure 15: What Resilience looks like for each Strategic Priority

6.2. Theory of Change

The Theory of Change for this Plan (Figure 16) seeks to demonstrate the relationships between the proposed intervention pathways, the likely outcomes and impacts, how the impacts will create change towards the three goals, and ultimately, to achieving the vision. The Theory of Change tests the assumptions that underpin the Plan and offer an opportunity to discuss the limitations in the theory (Stafford-Smith, 2019).

In this case, the Theory of Change is broad, with limited depth, identifying the problem, goals and basic design of interventions (Stafford-Smith, 2019). The approach is based on the Future Drought Fund Theory of Change (DAFF, 2020) and is presented in a similar format, with the shared Strategic Priorities of Economic Resilience, Environmental Resilience and Social Resilience. Future versions of the plan are likely to have greater detail, based on more intensive engagement and more quantitative measures.

Situational Analysis

As outlined in this Plan, the frequency and severity of drought is predicted to increase by 40% by 2030 – a prolonged, abnormally dry period when the amount of water available is insufficient to meet our normal use, There is likely to be greater variation in the timing and amount of rainfall, combined with more hot days and more extreme weather.

Logic narrative

The vision of this plan is a resilient community, economy and environment informed and prepared for drought and dry times. The plan focuses on foundational activities that will increase preparedness and connectivity across three priority areas. Nine causal pathways have been identified as necessary and sufficient to address the three goals.

Assumptions

Key assumptions in this Theory of Change include:

- When people have more knowledge, they act differently
- Preparedness for drought will be prioritised over other risks
- First Nations people in the Limestone Coast want to drive biodiversity and water outcomes
- Investment in additional resources will be available
- People and organisations want to connect

Limitations

External factors are the most significant limitation of this Theory. Despite extended dry seasonal conditions at the time of writing, engagement with primary producers and other stakeholders was challenging due to the number and impact of other issues they were facing including rising interest rates, low commodity prices, high input costs, poor mental health, access to skilled workers and increased isolation.

Funding of actions will also determine the success of the theory, with long-term, stable income required to build trust, relationships and results. Short bursts of funding have limited impact, particularly when there is a lack of continuity for skilled staff.

The timeframe and scale of change required to achieve resilience across all three strategic priorities is decades. However, there is a direct connection between the pathways and desired results. Monitoring, evaluation and learning will inform the success of these pathways, with the development of continuous active learning and adaptive governance processes (O'Connell, 2019).

	IF	THEN	HAS THE PATHWAY IMPACT	TO CREATE CHANGE TOWARDS GOALS	WHICH CONTRIBUTES TO THE VISION OF
Economic Resilience	If primary producers and businesses in their communities have access to business support services...	Then more primary producers and businesses will build skills in business planning, financial literacy and risk management, increasing resilience and profit.	Primary production businesses and their communities are self-reliant, productive and profitable.	Modify - Working to adapt part of the system to meet the newly defined goal of: Ensuring primary producers and their supply chains have the resources and skills to capitalise on good years and successfully navigate dry times.	A resilient community, economy and environment informed and prepared for drought and dry times.
	If primary producers had enhanced understanding and tools available to manage changing drought and associated risks for this region...	Then more primary producers have the capacity to develop farm level drought plans that address short term seasonal conditions as well as long term financial and on-farm strategies			
	If industry bodies and agencies work together...	Then there will be greater uptake and efficiency in services for communities with clear communication and reduced duplication of effort.			
Environmental Resilience	If primary producers have access to R&D for drought management and sustainable farming practices...	Then more primary producers will implement best practice techniques, reducing impacts on soils, water, biodiversity and pests.	Primary production landscapes are functional and sustainable, with healthy natural capital.	Transform – radically changing the system with a new structure, function, feedback and identity to meet the goal of: Established systems are in place to replenish our waterways, wetlands and landscapes ensuring a sustainable future for our environment and industry.	
	If First Nations people co-design activities that improve the health of Country...	Then First Nations people will be empowered to improve biodiversity, reduce bushfire risk and increase connection with Country.			
	If there is research into alternative water sources and retaining water in the landscape...	Then reliance on groundwater for irrigation will be reduced, alternative water supplies will be available during drought and the health of production and natural landscapes will improve.			
Social Resilience	If community members have greater understanding of mental health and well-being resources...	Then there will be increased uptake of mental health and well being services, building individual and collective resilience.	Primary production communities are resourceful, adaptable and thriving.	Modify - Working to adapt part of the system to meet the newly defined goal of: Enhanced community well-being and mental health resilience by creating stronger networks, community collaboration and equitable access to healthcare and education.	
	If gaps in mental health and well-being services are understood...	Then investment can be made to ensure adequate services are available for to support communities to be more resilient.			
	If individuals, groups and communities have greater opportunities for connections...	Then communities can foster relationships, share knowledge and build networks.			

Figure 16: Theory of Change for Limestone Coast Drought Resilience Plan (to be formatted as a diagram in final plan)

7. Engagement

To meet the Australian Government's requirements for Drought Resilience Plans, the content was co-designed with stakeholders and the wider community. The Engagement Outcomes Summary Report (WSP, 2024) provides a detailed description of the engagement undertaken. Table 4 provides a summary of the different methods of engagement, the number of participants and the sectors represented.

Overall, engagement from livestock and cropping producers and their supporting industries were most strongly represented. This has influenced some of the plan content, including the systems mapping and pillar pathways.

Due to the timeframes for development of the plan, there were limited opportunities to capture underrepresented industry sectors or communities. There is an opportunity in future planning processes to identify and target sectors of the community and industry that are vulnerable to drought.

Table 4: Engagement Summary

	Location(s)	Numbers Engaged	Groups, Organisations, or Sectors Present
Have Your Say Survey	Online.	22	Primary producers, retail stores, hospitality venues, tourism providers, health and social service providers, construction, mining, retired, education, other.
Street Walk Conversations	Keith, Bordertown, Naracoorte, Penola, Coonawarra, Mount Gambier, Millicent, Beachport, Robe, Kingston.	109	Primary producers, primary producer suppliers, vets, livestock agents, retail stores, hospitality venues, tourist information centres, travel agents, health and social service providers, mechanical services, grocery stores, financial institutes, trades people, volunteer organisations.
Targeted Interviews	Online and telephone.	17	Primary producers, primary producers, suppliers, industry bodies, health and social service providers, emergency services, government agencies.
Workshops	Bordertown, Naracoorte, Mount Gambier, Kingston.	52	Primary producers, primary producer suppliers, vets, livestock agents, retail stores, health and social service providers, financial institutes, trades people, volunteer organisations, emergency services, government agencies.
Online Workshop	Online	0	No registrations were received for this workshop.

7.1. What we heard

Overall, the plan reflects the messages that we heard during the early engagement. In particular, the details and priority of actions or interventions is reflected in Section 4.1 Pillar Pathways. The supporting actions that are important and may be subject to external or other factors, have been captured in Appendix 1 Supporting Pathways. The lists below provide more information about the common themes for action that the community would like to see.

Strategic Priority: Economic Resilience

Conduct a gap analysis of the current research and extension programs with primary producers

To address the challenges faced by primary producers, particularly in the context of drought resilience, it is essential to conduct a comprehensive gap analysis of the current research and extension programs. This analysis should identify the existing knowledge gaps and areas where additional information is needed. By collaborating with local primary producers, a series of tailored recommendations can be developed to bridge these gaps. One significant issue highlighted by multiple stakeholders is the lack of knowledge around dry sowing, which has become a critical concern due to the unusual lack of moisture. This situation underscores the importance of addressing these knowledge gaps promptly. This emphasised the need for localised research and tailored recommendations that are crucial to effectively support the primary producers.

Establishing a one-stop-shop portal of drought resilience resources

This initiative aims to create an online one-stop-shop portal of resources to help primary producers improve their drought resilience. The portal would include seminars, case studies, demonstration plots, and a library of resources provided by multiple agencies.

Raising awareness of available financial assistance and resources

This action aims to raise awareness of available financial assistance and resources. It is envisaged a third party could produce a booklet or series of one-page information sheets outlining available resources and providing basic facts and figures around services and who/what they are designed for.

Empowering farmers to develop and adopt personal drought plans

Recent dry periods have prompted many farmers to develop or reassess their personal drought plans. This initiative involves workshops to support primary producers and empower them to develop, refine, and implement their plans. By determining trigger points for specific activities in their own operations (e.g., reducing stocking levels, sourcing feed, or foregoing a winter crop), primary producers will be better placed to make informed decisions.

Supporting primary producers to make multi-year cash flow projections

Feedback from accountants, bankers, and others indicated the value of multi-year cash flow projections for informed decision making. This can be used to run scenarios of co-stressors (e.g., changing input costs, commodity prices, etc.) and identifying potential pinch points in cash flows. Development of a toolkit of collateral (e.g., case studies, fact sheets, where to find information, webinars, YouTube videos, links to existing resources) supported by a multi-modal promotional campaign is recommended.

Facilitating a formal Young Farmers Network

Younger workshop participants have highlighted the success of young farmer networks in other regions. While informal networks exist, establishing a formal network with broad regional coverage would help these groups become self-sustaining and foster cohesive knowledge sharing and morale.

Adapting the current Limestone Coast Leaders program to include primary producer elements

To enhance the personal leadership skills of primary producers, this initiative proposes adapting the existing Limestone Coast Leadership Program to include a primary producer stream. This would further develop soft skills and networking opportunities for primary producers.

Establishing a mentorship program for young farmers

There is a need for a mentorship program that pairs young farmers (mentees) with more experienced farmers (mentors). Young farmers would benefit from learning from their more experienced counterparts, especially regarding dry times. Conversely, experienced farmers could gain insights into newer and emerging technologies.

Mapping available support services to increase awareness and uptake

Engagement has revealed significant confusion about available support services, including mental health support, financial counselling, relevant rebates/incentives, and farm advice/outreach. This initiative aims to map these support services in various formats that can be promoted widely and increase access to services.

Conducting an agritourism gap analysis to support next steps

Agritourism offers a potential additional income source for some primary producers. This initiative involves conducting a gap analysis, surveying tourists to identify activities of interest, mapping existing agritourism ventures, understanding barriers to adoption (e.g., complex planning regimes, increased workload, new skills), and gauging interest among primary producers. The goal is to identify next steps to address gaps and realise opportunities.

Advocating for a fairer deal from supermarkets for farm produce

Primary producers are significantly impacted by the market shares and pricing tactics of large supermarkets, which reduce profit margins and financial buffers needed to survive dry times. Actions could involve making regional submissions to inquiries into supermarket pricing/market shares or establishing a collective of local industry groups to advocate together.

Promoting and increasing capacity of Rural Business Support Financial Counsellors

Engagement showed that many people had not heard of the services provided by the Rural Business Support Financial Counsellors. In future dry times, it would be beneficial to provide a surge capacity in the workforce, coupled with wide promotion of their existence and service offerings.

Leading an advocacy piece to address skilled and unskilled labour shortages

Feedback from various town businesses highlighted the challenge of attracting and retaining staff, which constrains businesses from capitalising on prosperous times and building financial buffers. This action involves leading an advocacy effort to lobby for increased incentives to attract workers to the region. Workforce planning at the regional scale is also required.

Progress circular economy opportunities aligned with drought resilience

Circular economy practices can significantly enhance drought resilience by promoting sustainable resource management and reducing dependency on finite resources. This initiative focuses on advancing specific opportunities 1, 2, 3, 4, and 9 within the Limestone Coast Circular Economy Opportunities discussion paper. These opportunities align with drought resilience:

1. Value-adding reject fruit and vegetables

2. Value-adding food waste from food processing for human consumption

3. Converting food waste to high-quality animal feed

4. Adopting regenerative agricultural practices

9. Better management of commonly recyclable materials locally

Encouraging and planning major work by tradespeople to be conducted during dry times

Engagement has revealed that the recent lack of rainfall has significantly slowed business for local tradespeople, including fencing contractors, electricians, and builders. Many tradespeople and primary

producers have observed that on-farm construction projects make up a significant component of work for these construction businesses. In contrast, during prosperous times, the demand for tradespeople can be so high that wait times become lengthy, which in turn drives up prices.

Given this dynamic, there are clear benefits to implementing programs that rely on tradespeople during dry periods. For instance, offering grants for projects such as fencing off remnant biodiversity areas or upgrading community facilities could be highly advantageous. These initiatives would not only provide much-needed cash flow for tradespeople, it would also support the suppliers of their materials. This could help to mitigate the financial downturn that typically accompanies dry periods, ensuring a more stable economic environment.

Investigating rental availability and the housing market in the region

Feedback indicates the shortage of rental properties is hindering small and medium enterprises (SMEs) from attracting workers. Without adequate housing options, these businesses may find it difficult to hire new employees, which in turn affects their profitability during prosperous times. This profitability is crucial as it provides a financial buffer during less favourable periods, such as dry times.

Strategic Priority: Environmental Resilience

Expanding the network of demonstration sites to promote increased groundwater recharge

Groundwater underpins primary production, industry, mining, and residential water supplies. Improving groundwater recharge and aquifer management is necessary to support community and biodiversity co-benefits. Expanding the network of demonstration sites to include diverse soil types, rainfall zones, and farming enterprises will help develop an evidence base of benefits and outcomes while quantifying costs.

Encouraging adoption of efficient water use practices across primary industries

This supporting action aims to encourage primary industries to adopt more efficient water use practices. Interest in implementing water use efficiencies across multiple demographics was raised by community members, encouraging maximum use of a scarce, declining resource. A study to assess the feasibility of improving water use would enable primary industry users to do more with less.

Improving access to reputable climate science

This supporting action aims to enhance access to climate science, broadening awareness of increasingly variable and unpredictable conditions and providing options to mitigate these risks. It could include a checklist for primary producers to identify if variable conditions are affecting their enterprise. Complementary information to support adaptation to a changing climate is recommended.

Promoting greater fire preparedness

Major fire events often follow dry periods. Fire preparedness is crucial for both communities and primary producers to avoid compounding impacts. This initiative could involve collaborating with the local Country Fire Service to leverage existing fire preparedness resources and conducting targeted promotions as fire seasons approach.

Providing assistance to adopt more efficient irrigation practices

Providing assistance to adopt more efficient irrigation practices can reduce resistance to Water Allocation updates and help primary producers maintain production levels if allocations are reduced. This action could include personalised assessments, farm tours or demonstration plots to provide firsthand experience and is best timed with prosperous periods (e.g., a bumper season) due to the associated cash influx.

Publishing real-time and historic data on aquifer levels, recharge, salinity, and extraction

This supporting action involves the provision of making up-to-date data on groundwater levels, salinity, recharge, and extraction publicly accessible in an easy-to-understand format. This allows regional stakeholders, primary producers, and others to gain a better understanding of groundwater dynamics. For

example, providing graphs that display water levels or salinity over time, alongside rainfall data, can help create a more informed community. This increased awareness can lead to greater support for necessary changes to water allocations.

It is noted that a significant increase in groundwater monitoring would be required for this initiative to be successful.

Advocating for the adoption of recycled water infrastructure

This initiative is crucial due to the region's heavy reliance on groundwater, where demand often exceeds supply. By utilising wastewater from both industrial and residential sources, the region can significantly augment its water supply. However distance between users is the key challenge.

This initiative could start with mapping out industries that produce high volumes of wastewater and identifying high-water users within the region. This mapping would help pinpoint localised areas where wastewater recycling would be most feasible and beneficial. Implementing such infrastructure would not only alleviate pressure on groundwater resources but also promote sustainable water management practices. Where these arrangements already exist, consideration could be given to higher or highest value use.

This approach could involve collaboration with local industries and residential communities to develop efficient recycling systems. By demonstrating the environmental and economic benefits of recycled water, stakeholders can be encouraged to support and invest in these systems. Ultimately, this would lead to a more resilient and sustainable water supply for the region, ensuring long-term water security.

Strategic Priority: Social Resilience

Incentivising additional medical staff to support the region

Towns under-serviced by doctors and pharmacists face greater challenges during dry times when mental and physical health declines. This action aims to determine and provide incentives to attract additional medical staff to provide health care services in the region, particularly to Penola, Bordertown, Kingston, and Millicent.

Leading advocacy to retain and attract young people back to the region

Engagement feedback highlights recurring difficulties in retaining and attracting young people to the region, who could fill apprenticeship roles in local businesses. This challenge constrains businesses from capitalising on prosperous times and building financial buffers to cope with downturns. This initiative involves leading an advocacy effort to lobby for increased incentives to attract young people to stay, or return to the region.

Providing incentives to encourage adoption of larger residential rainwater tanks

While towns in the region are well-serviced by reticulated water, many people rely on rainwater for home use. Incentives such as co-contributions or rebates would encourage residents to augment their rainwater storage, allowing them to catch more water when it rains for use in dry times.

Understanding the challenges and opportunities for the local volunteer workforce

A consistent theme during the engagement period was the difficulty that volunteer organisations face in attracting members, particularly younger members. Feedback also indicated that administrative processes are burdensome for volunteers. This initiative involves conducting a detailed analysis of the key challenges faced by volunteer organisations and identifying opportunities through a strengths, weaknesses, opportunities, and threats (SWOT) analysis. The goal is to identify ways to reduce or consolidate administrative processes and enhance volunteer engagement, while appropriately managing risk.

8. Strategic Alignment

A review of existing strategies and plans with relevance to drought and/or resilience was completed to inform the development of this Plan. The purpose was to avoid any duplication of effort, identify gaps, challenges, opportunities and synergies between existing efforts and drought resilience outcomes (WSP, 2024). The information was used to support the development of this Plan, particularly Section 3 Strengths, Challenges and Opportunities and Section 5 Our Region.

Given the history of drought in the region and the purpose of these documents, it was not surprising that overall, the review found very few references to drought. However, many of the documents acknowledged or sought to address climate change more broadly.

Table 5: Local, Regional, State, National and International Plans Considered.

Local	**Regional**
City of Mount Gambier Strategic Plan 2020-2024	South East Drainage and Wetlands Strategy 2019
District Council of Grant Strategic Management Plan 2020-2030	Limestone Coast Regional Landscape Plan 2021-2026
District Council of Robe Draft Strategic Plan 2024-2028 Community Engagement Strategy	Limestone Coast Region (Landuse) Plan
Kingston District Council Strategic Plan 2023-2027	Regional Water Allocation Plans (Padthaway, Tatiara, Tintinara, Coonalpyn, Morambro Creek, Lower Limestone Coast)
Kingston District Council Community Plan 2019-2029	Lower Limestone Coast Prescribed Wells Area - Groundwater Level and Salinity Status Report 2009-10
Naracoorte Lucindale Council Strategic Plan	Limestone Coast Destination & Tourism Marketing Plan 2025
Tatiara District Council Strategic Plan 2020-30	Limestone Coast Regional Growth Strategy 2018
Wattle Range Council Climate Change Adaptation Plan 2022	Limestone Coast Regional Climate Change Adaptation Plan and Regional Values and Climate Change Report 2015
Wattle Range Council Strategic Plan 2023-2027	Local Government Emergency Management Framework
State	**National**
Response to Drought in South Australia: A Case Study in Adaptive Management	The Second National Action Plan to Implement the National Disaster Risk Reduction Framework Australia's Tinderbox Drought (2017-2019)
Tracking Changes in South Australia's Environment: summary of our approach to trend and condition report cards 2020	National Drought Agreement 2018

Tracking Changes in South Australia's Environment: 51 trend and condition report cards 2023	National Climate Resilience and Adaptation Strategy 2021-2025
State of the Environment Summary Report 2023	National Climate Risk Assessment First Pass Assessment Report
Carbon Farming Roadmap for South Australia	Australian Government Drought Response, Resilience, and Preparedness Plan 2019
South Australian Government Response to National Drought Policy Review: Productivity Commission	**International**
SA Government - Drought Management and Recovery for South Australian Pastoralists 2020-21	United Nations Sustainable Development Goals
SA Government – Water Security Statement	
Guide to Climate Projections for Risk Assessment and Planning in South Australia 2022	
New Climate Projections for South Australia Maps and Key Findings 2022	
South Australian Guide for Drought Assistance	
SA Drought Resilience Adoption and Innovation Hub – Node Co-Design Workshops Report	
SA Drought Hub Annual Report 2022-23	
Climate Change Science and Knowledge Plan for South Australia 2022	

9. Monitoring, Evaluation and Learning

9.1. Planning Process and Program Logic Overview

Figure 17 shows the largely linear process used to develop this Plan, incorporating the information collected through the initial Evidence Review, testing and adding value through community and stakeholder engagement, influencing the content of the Plan.

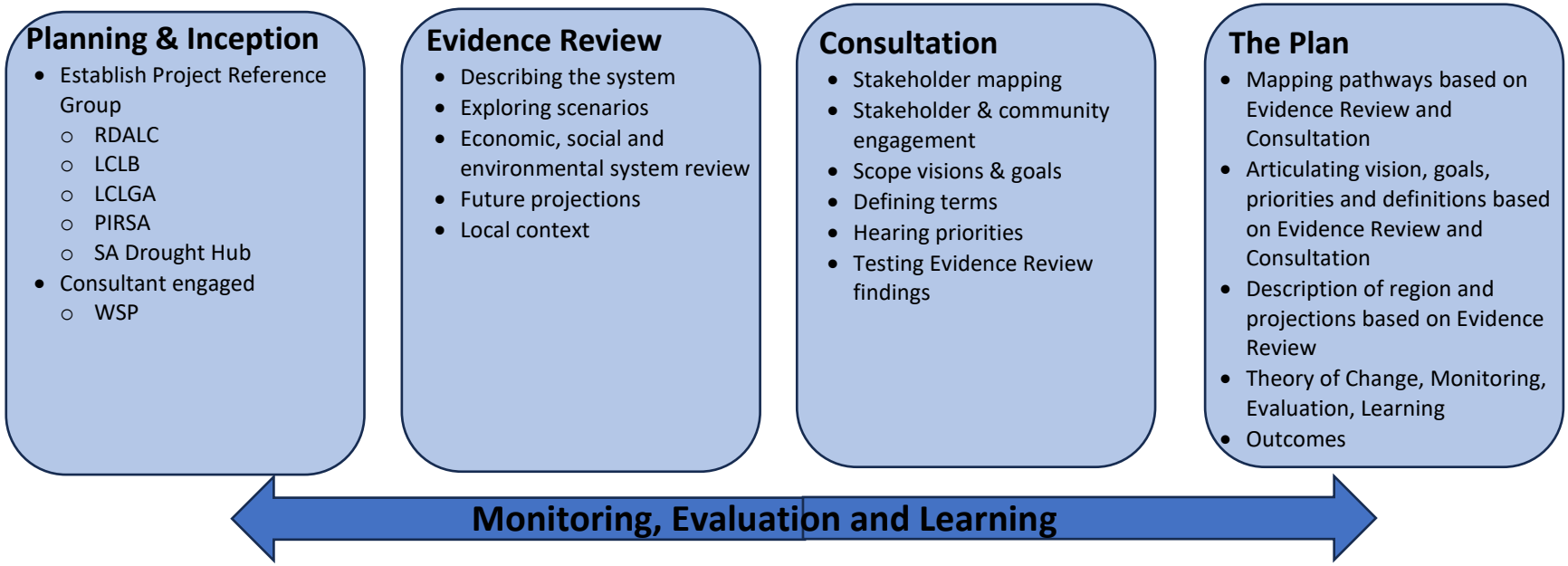


Figure 17: Development of the Plan - Process Pathway

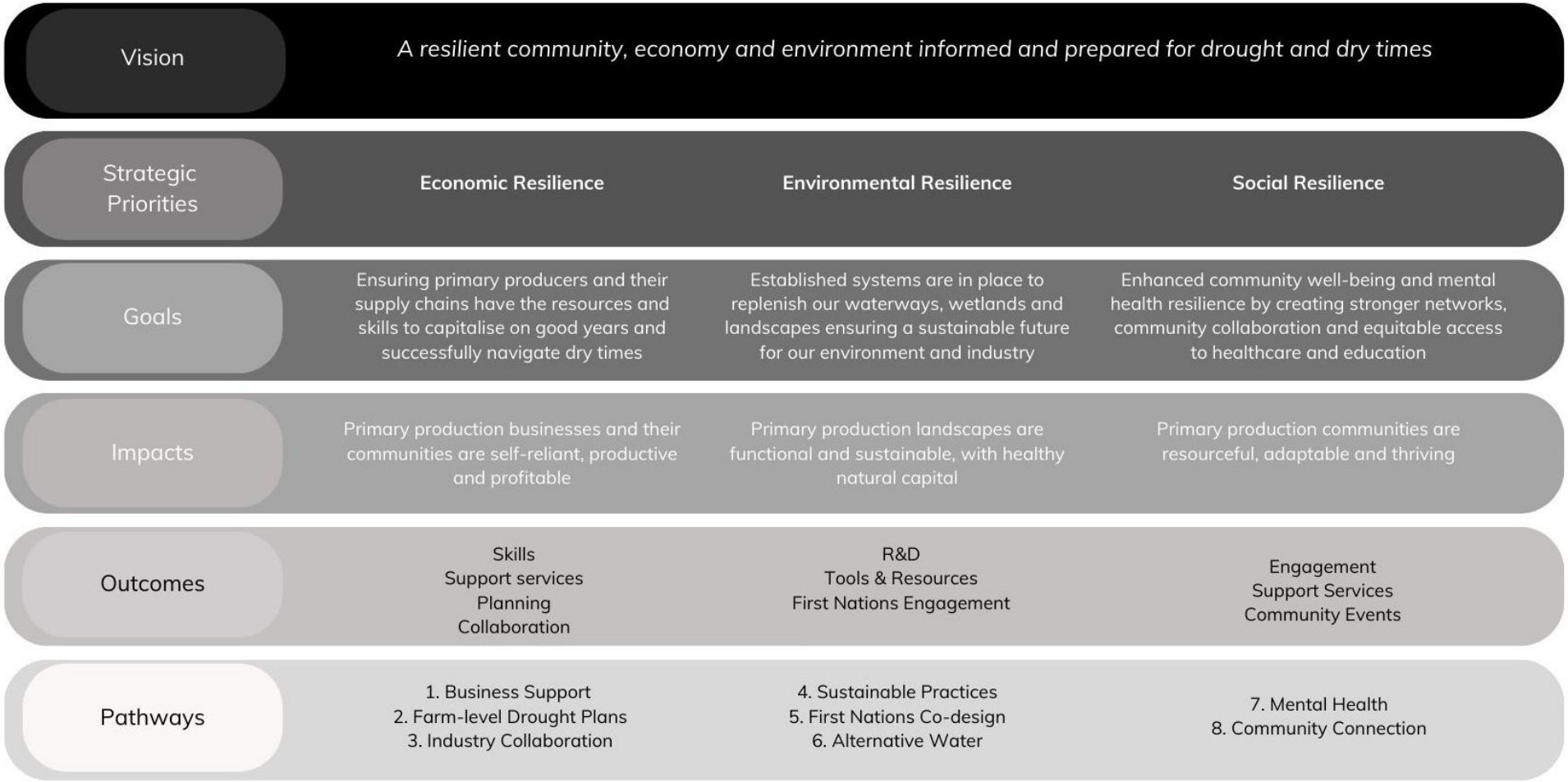


Figure 18 Overview of Program Logic

9.2. Program Logic

Table 6: Program Logic

Inputs	Pathway	Short-Term Outcomes	Medium-Term Outcomes	Long-Term Outcomes	Impact
Strategic Priority: Economic Resilience	**Goal:** Ensuring primary producers and their supply chains have the resources and skills to capitalise on good years and successfully navigate dry times.				
1. Funding 2. Staffing 3. Stakeholder participation	**1. Business Support -** Enhancing the Small Business Support Program to Build Business Resilience for Future Dry Times.	1. More primary producers and businesses engaged in strategic business planning, financial projecting and risk assessment.	1. Primary producers and businesses have built skills in business planning, financial literacy and risk management.	1. More primary producers and small businesses adopt business planning, financial literacy and risk management to improve their drought sustainability and resilience.	Primary production businesses and their communities are self-reliant, productive and profitable.
1. Funding 2. Staffing 3. Stakeholder participation	**2. Farm-level Drought Plans –** Supporting Primary Producers to Manage Seasonal Conditions and Develop Longer Term Strategies	1. More primary producers and businesses engaged in farm-level drought planning to address short-term seasonal conditions and plan for longer term options for adaptation or diversification,	1. Primary producers include drought and climate risk in their planning	1. More primary producers are empowered to successfully navigate dry times.	
1. Funding 2. Staffing 3. Stakeholder participation	**3. Industry Collaboration -** Fostering Collaboration Between Industry Bodies and Agencies.	1. New partnerships are formed between industries and agencies to share knowledge, collaborate and partner more often to build drought resilience.	1. More drought resilience innovative approaches and technologies are being developed and adopted.	1. Industry networks collaboratively promote and implement transformative activities that improve their resilience to drought.	
Strategic Priority: Environmental Resilience	**Goal:** Established systems are in place to replenish our waterways, wetlands and landscapes ensuring a sustainable future for our environment and industry.				
1. Funding 2. Staffing 3. Stakeholder participation	**4. Sustainable Practices -** Increase Engagement in Drought Resilience Farm Management and Economic Diversification Projects	1. More primary producers are engaged in the co-design of natural resource management related research, development and extension activities. 2. A monitored central portal to access new and existing resilience practices is accessible to the community.	1. Improved collaboration between natural resource management bodies, governments, communities and primary producers. 2. More primary producers have the skills, data and support to apply better practices.	1. More primary producers have implemented best practice techniques increasing their businesses productivity and / or profitability.	Primary production landscapes are functional and sustainable, with healthy natural capital.
1. Funding 2. Staffing 3. Partner/First Nation right holder participation 3. Stakeholder participation	**5. First Nations Co-design -** Empowering First Nations' Caring for Country	1. Strengthen existing relationships with First Nations peoples of the region. 2. Holistic strategic planning of Caring for Country activities important to First Nations peoples of the region.	1. The community respects and values Caring for Country priorities and practices. 2. Increased opportunities for First Nations to deliver Caring for Country activities.	1. Community respects and values Caring for Country priorities and practices and seeks opportunities to engage with First Nations 2. Improved wellbeing and health of Country and increased connection of First Nations to Country	
1. Funding 2. Staffing 3. Stakeholder participation	**6. Alternative Water -** Retaining water in the landscape and encouraging the use of alternative water sources	1. Identification of industry water needs. 2. Verification of pre-feasibility study	1. Establishment of managed aquifer recharge trial sites. 2. Identify alternative water sources that can be used by industry during drought	1. Determination on the viability of managed aquifer recharge in the region.	

Inputs	Pathway	Short-Term Outcomes	Medium-Term Outcomes	Long-Term Outcomes	Impact
Strategic Priority: Social Resilience	**Goal:** Enhanced community well-being and mental health resilience by creating stronger networks, community collaboration and equitable access to healthcare and education.				
1. Funding 2. Staffing 3. Stakeholder participation	**7. Mental Health -** Improve awareness and remove barriers to mental health and well-being resources.	1. Improved access to, and greater utilisation of local community mental health and wellbeing services. 2. Improvement in the capacity of the regional communities to deal with mental health challenges.	1. Sustainable community led initiatives to deal with mental health issues implemented.	1. Permanent infrastructure and services available for the community in times of drought.	Primary production communities are resourceful, adaptable and thriving
1. Funding 2. Staffing 3. Stakeholder participation	**8. Community Connection – Create Connection in Communities in Good Times and Dry Times**	1. Increased number of local events to connect primary producers and their communities.	1. Sustainable community led initiatives to build networks, share knowledge and reduce isolation.	1. Community groups are self-sustaining.	

9.3. Program Measures

Table 7: Program Measures

		Outcomes identified in Program Logic	Indicators/Measures	Monitoring and Evaluation Approaches
		Short Term		
		Economic Resilience		
Short Term	1. Business Support	More primary producers and businesses engaged in strategic business planning, financial projecting and risk assessment.	Number of program events organised. Number of primary producers who participated in the business planning, financial literacy and risk assessment events. Number of farms and businesses who signed up to the program with implemented drought/financial management plans. Feedback of the participants about the usefulness and value of the events/agencies.	Program participants can be surveyed to get their opinion of whether the activities enabled them to increase their awareness, knowledge and skill levels as a result of their participation. In order to see the change in their awareness, knowledge or skill level it is recommended to conduct a pre-/ post-activity survey. The number of events held, and participant/business numbers can be recorded by the implementing regional stakeholder.
Short Term	2. Farm-level Drought Plans	More primary producers and businesses engaged in farm-level drought planning to address short-term seasonal conditions and plan for longer term options for adaptation or diversification,	Number of program events organised. Number of primary producers who participated in the business planning, financial literacy and risk assessment events. Number of farms and businesses who signed up to the program with implemented drought/financial management plans. Feedback of the participants about the usefulness and value of the events/agencies.	Program participants can be surveyed to get their opinion of whether the activities enabled them to increase their awareness, knowledge and skill levels as a result of their participation. In order to see the change in their awareness, knowledge or skill level it is recommended to conduct a pre-/ post-activity survey. The number of events held, and participant/business numbers can be recorded by the implementing regional stakeholder.

3. Industry collaboration	New partnerships are formed between industries and agencies to share knowledge, collaborate and partner more often to build drought resilience.	Number of projects and programs started in collaboration between industries and agencies. Feedback of the participants about the usefulness and value of the projects or programs.	The number of projects and programs offered in collaboration between industries and agencies. Program participants can be surveyed to get their opinion of whether the projects or programs were beneficial.
	Environmental Resilience		
4. Sustainable practices	More primary producers are engaged in the co-design of natural resource management related research, development and extension activities.	Number of first time participants/businesses signed up to projects and programs, along with details of repeat partners.	Use of simple survey devices i.e. Smilie face push buttons at field days/on websites to allow capture of resource and information access. More in-depth surveys could be accessed by QR codes/links at event/on sites and/or emailed out post event to attendees. The number of requests for information or event attendees can be recorded by the implementing regional stakeholder.
	A monitored central portal to access new and existing resilience practices is accessible to the community.	Feedback of the participants about the usefulness and value of the events/programs, and resources.	
5. First Nations Co-design	Strengthen existing relationships with First Nations peoples of the region.	Engagement plan developed with First Nation partner organisations (SEAFG and Burrandies Aboriginal Corporation) to ensure that First Nation groups in the region are invited to contribute to the development of the Caring for Country plan.	A comprehensive engagement plan is co-designed by partner organisations.
	Holistic strategic planning of Caring for Country activities important to First Nations peoples of the region.	Number and distribution of engagement events held with First Nations groups and individuals.	The number of attendees at engagement events across the regions can be recorded.
6. Alternative Water	Identification of industry water needs.	Number of participants at engagement events	Number of participants and industries represented at engagement events recorded.
	Verification of pre-feasibility study	On-ground verification of predicted Managed Aquifer Recharge sites.	Record of the accuracy of the prediction model developed in the pre-feasibility study to determine sites suitable for managed aquifer recharge
	Social Resilience		
7. Mental Health	Improved access to, and greater utilisation of local community mental health and wellbeing services.	Number of people accessing the mental health first responders training.	Program participants can be surveyed to get their opinion of whether the program increased their awareness, knowledge and skill levels as a first responder. In order to see the change in their awareness, knowledge or skill level it is recommended to conduct a pre-/ post-activity survey. The number of activities (sessions/ events/ training programs) implemented can be recorded by the implementing regional stakeholder.
	Improvement in the capacity of the regional communities to deal with mental health challenges.	Number or participants trained from each Local Government Area.	
	Increased number of local events to connect primary producers and their communities.	Number of community events hosted Number of participants at community events	The number of events held, and participant/business numbers can be recorded by the implementing regional stakeholder.

		Medium Term		
		Economic Resilience		
Medium Term	Small business support	Primary producers and businesses have built skills in business planning, financial literacy and risk management	Proportion of participants who self-reported an improvement in their business planning, financial literacy and risk management (against a rubric). Proportion of participants who intend to bring change into their business as a result of their participation in the program.	Results captured in consultative sessions or focus group discussions with the regional stakeholder. The data collected (participants' surveys, registrations, and feedback data) against the short-term outcomes can also be used to respond to and support the medium-term outcomes.
	2. Farm-level Drought Plans	Primary producers include drought and climate risk in their planning	Proportion of participants who self-reported the inclusion of drought and climate risk in their planning Proportion of participants who intend to bring change into their business as a result of their participation in the program.	Results captured in consultative sessions or focus group discussions with the regional stakeholder. The data collected (participants' surveys, registrations, and feedback data) against the short-term outcomes can also be used to respond to and support the medium-term outcomes.
	Industry collaboration	More drought resilience innovative approaches and technologies are being developed and adopted.	Number of projects and programs developed and trialled in collaboration between participating industries and agencies.	Results captured in Case studies, or Most Significant Change approach by the regional stakeholder.
		Environmental Resilience		
	Knowledge and best practice	Improved collaboration between natural resource management bodies, governments, communities and primary producers.	Feedback from farm group and industry body members.	Results captured in consultative sessions or focus group discussions with Regional Stakeholders The data collected (participants' surveys, registrations, and feedback data) against the short-term outcomes can also be used to respond to and support the medium-term outcomes.
		More primary producers have the skills, data and support to apply better practices.	Number and type of stakeholders engaged per region.	
	Caring for Country	The community respects and values Caring for Country priorities and practices.	Increased engagement of First Nations to provide Caring for Country activities or cultural advice.	Longitudinal study to determine how First Nations perceive the level of respect for cultural knowledge and practices in the community.
		Increased opportunities for First Nations to deliver Caring for Country activities.	Number of Caring for Country activities delivered, and the number of fee-for-service contracts created for Caring for Country activities.	Record of the number of Caring for Country activities delivered. Record of the number of fee-for-service contracts to deliver Caring for Country activities created.

	Water in Landscape	Establishment of managed aquifer recharge trial sites.	The number of managed aquifer recharge trial sites established on private land.	Record of the number of landholder agreements entered to establish managed aquifer recharge trial sites. The metered volume of water returned to aquifer via managed aquifer recharge.
		Identify alternative water sources that can be used by industry during drought	Adoption of alternative water sources by industry.	Report from local stakeholders on new/alternative water sources used and volumes (where possible).
		Social Resilience		
	Mental Health and Wellbeing	Sustainable community led initiatives to deal with mental health issues implemented.	Number of community led initiatives implemented and/or seeking grant assistance.	Results captured in consultative sessions with the regional stakeholders. The data collected from Grant Guru access data.
	8. Connected Communities	Increased number of local events to connect primary producers and their communities.	Number of community led initiatives implemented and/or seeking grant assistance.	Results captured in consultative sessions with the regional stakeholders. The data collected from Grant Guru access data.
		Long Term		
		Economic Resilience		
Long Term	Small business support	More primary producers and small businesses adopt business planning, financial literacy and risk management to improve their drought sustainability and resilience	Number of primary producers and businesses with current financial management planning documents, updated within previous 2 year period.	These long-term outcomes are best captured at national level by the federal government through separate evaluation studies and other national statistics.
	2. Farm-level Drought Plans	More primary producers are empowered to successfully navigate dry times.	Number of primary producers who self-report confidence in preparing for and responding to drought.	
	Industry collaboration	Industry networks collaboratively promote and implement transformative activities that improve their resilience to drought.	Stability and number of cross agency network programs.	
		Environmental Resilience		
	Knowledge and best practice	More primary producers have implemented best practice techniques increasing their businesses productivity and / or profitability.	Number of profitable primary production enterprises. Decreased number of failed primary production enterprises.	These long-term outcomes are best captured at national level by the federal government through separate evaluation studies and other national statistics.
	Caring for Country	Community respects and values Caring for Country priorities and practices and seeks opportunities to engage with First Nations.	Number of on ground activities undertaken by First Nations.	Record of the number and range of Caring for Country activities undertaken per year.

		Improved wellbeing and health of Country and increased connection of First Nations to Country	Increased resilience of Country to drought and climate issues.	Ongoing reports on the wellbeing of Country by First Nations partners.
	Water in Landscape	Determination on the viability of managed aquifer recharge in the region.	Delivery of a report on managed aquifer recharge effectiveness in the region.	Economic feasibility study of managed aquifer recharge for different water sources and systems.
		Social Resilience		
	Mental Health & Wellbeing	Permanent infrastructure and services available for the community in times of drought.	Surge capacity of programs and services can meet increased demand during drought events. Reduced instance of primary producer suicides.	These long-term outcomes are best captured at national level by the federal government through separate evaluation studies and other national statistics.
	8. Connected Communities	Community groups are self-sustaining.	Number of community groups self-reporting confidence in continuing their purpose.	

9.4. Evaluation Framework

The Evaluation framework is designed to translate across any of the pillars, to allow consistent evaluation and benchmarking of results.

Note: Target stakeholders are the people the pathway is designed to impact, participants are the people who took part in a particular pathway project/program.

Table 8: Evaluation Framework

Key evaluation questions	Sub-questions	Measures	Proposed measurement methods	Who/what and when
How effective was the pathway in achieving its intended outputs and outcomes?	To what extent has the pathway improved the resilience and wellbeing of regional communities? Is there any change in the target stakeholders towards sustainable resilience? Did the program improve the social connections and networks between the target stakeholders?	Participant's opinion of whether the activities enabled them to increase their economic, environmental, and/or social resilience as a result of their participation. Number of pathway outputs and outcomes achieved at 12 month intervals post implementation. Sustainability of the achieved outputs and outcomes to provide ongoing benefit to the target stakeholders and the community. Sustainability of resultant social connections and networks to provide ongoing benefit to the target stakeholders and the community.	Data from individual pathway 'Program Measures' (9.3) can be used to respond to these measures – it is pertinent to collect data from the start of any intervention or program. Case studies can be used to demonstrate results against some of the evaluation questions. Gap analysis can be undertaken to review; - Target stakeholder's vs participants - Proposed impact vs achieved impact Program reference group to undertake 6 monthly review meetings to discuss and record implementation progress.	The Project Reference Group intend to appoint a Project Manager to oversee the initial implementation of the Regions Drought Resilience Plan. It is expected a part time 12 month position would manage to keep the program tracking until the pathways begin to generate their own momentum. The position would be responsible for monitoring, evaluation and learning data collection and reporting to the Project Reference Group. Funding for this position will need to be considered outside of this plan.
How appropriate was the implementation process?	Was the implementation process clear and well received by the targeted stakeholders? Did the implementation process engage the target stakeholders? Were any target demographics missed in implementation?	Satisfaction level of participants regarding the overall implementation process of each pathway. Feedback of participant regarding the overall implementation process of the program. If all target demographics were represented in pathway participants.		
To what extent did the pathway achieve its intended impact?	To what extent did the pathway improve the economic, environmental and social conditions of the target stakeholders? To what extent do the target stakeholders believe they have improved resilience to any kind of climate change incidents (i.e., droughts, bushfire etc.)	Participant's opinion of whether the activities enabled them to increase their economic, environmental, and/or social resilience as a result of their participation. Examples of economic, environmental, and/or social benefits experienced by the target stakeholders. Sustainability of the achieved outputs and outcomes to provide ongoing benefit to the target stakeholders and the community.		
What helped or hindered the pathways meet their desired outcomes?	What aspects of the implementation and delivery were successful in achieving the desired impacts? What aspects of the implementation and delivery impeded progress towards the desired impacts?	Project reference group's opinion of what elements helped or hindered the pathways achieve their outputs and outcomes.		

Glossary

Key Term	Definition
Absorptive Capacity	The ability of individuals and groups to continue without adapting or changing their behaviour in respond to environmental and socioeconomic changes.
Adaptation	Adjustment or modification in natural and/or human systems in response to actual or expected shocks and stresses to moderate harm, reduce vulnerability and/or exploit beneficial opportunities.
Adaptive Capacity	The ability of individuals and groups to adjust and respond to environmental and socioeconomic changes.
Adaptive Governance	Adaptive governance is defined by a focus on decentralised decision-making structures and procedurally rational policy, supported by intensive natural and social science. Decentralised decision-making structures allow a large, complex problem like global climate change to be factored into many smaller problems, each more tractable for policy and scientific purposes.
Adaptive Pathways	A planning approach which the addresses uncertainty and challenges associated with climate change decision-making. This approach allows for decisions that must be made now, whilst identifying those that can be made in the future, providing strategic, flexible, and structured decision-making.
Co-Design	The process of partnership to develop and formulate project delivery and agreed objectives and needs, using participatory methods. A process of working together utilising generative and explorative processes.
Community Led	An approach where the local and regional community work together to identify goals that are important to them, develop and implement plans to achieve those goals, and create collaborative relationships internally and with external actors - all while building on community strengths and local leadership.
Drought	Drought in general means acute water shortage. Drought is a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use.
Drought (Limestone Coast Context)	For the Limestone Coast, the timing of rainfall is as important as the amount. The cumulative effects of weather are also a contributing factor. Each industry and geographic location have different rainfall and timing requirements.
Drought Resilience	Drought resilience is a measure of a system's ability to absorb, respond and recover to drought risks.
Dry Times	In the Limestone Coast Region, a lack of rainfall at crucial times in the season, or a failure of a season to break are the terms used by primary producers when describing rainfall deficit seasons. Key differentiation is Dry Times are short, partial-one season in duration, whereas Drought is an extended, multiyear event.
Economic Resilience	The ability of the economy to absorb the economic impact of shocks and stressors without changing the economic status or outcomes.
Environmental Resilience	The ability of the natural environment to cope with a diverse range of shocks and stressors while maintaining natural processes and ecosystem services.

Key Term	Definition
Exposure	The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected.
Feedback Loop	Feedback loop is a process where the output of a system is fed back into the input, resulting in circular cause and effect that can either amplify or diminish the effects of droughts. It is used to visualise the interdependencies and interrelations of causes and effects across different systems
Governance	Governance is the structures and processes by which individuals, groups and agencies in a society share power and make decisions. It can be formally institutionalised, or informal.
Green Drought	Green droughts refer to when the fields are green but there is insufficient rainfall to saturate soils and generate run-off into dams or groundwater recharge. In the Limestone Coast, this can be caused by early rain without sufficient follow up for the season to break, limiting vegetation growth.
Groundwater Recharge	Groundwater recharge occurs via two mechanisms: 'river recharge', where water leaks from the base of a river, lake, wetland or reservoir, and 'rainfall recharge' where water permeates downwards once the soil profile is saturated.
Groundwater Salinity	The process whereby salts stored below the surface of the ground are brought close to the surface by the rising watertable. The accumulation of salt degrades the upper soil profile, with impacts on agriculture, infrastructure and the environment.
Independent Review	CSIRO Assessment of this Plan and supporting documents against guidelines to determine alignment with Future Drought Fund requirements.
Intervention Options	Alternative or complementary actions, projects, programs, policies, initiatives, and investments that are planned to bring about change in the system.
Local Knowledge	Local knowledge and First Nations knowledge incorporate elements of lived experience within a landscape, bearing witness to the operation of systems. It includes aspects of people, landscape, culture – how people interact with surroundings and as part of communities and processes.
Maintain	Preserving the system refers to efforts to keep the region (as it currently exists) the same.
Modify	Efforts working to adapt part of the system to meet newly defined goals.
Primary Production	Primary production includes the following sectors: aquaculture, commercial fishing, grains and crops, food and beverage, forestry, grape and wine, horticulture, livestock, wool, and dairy.
Project Reference Group	Made up of representatives from Regional Development Australia Limestone Coast, Limestone Coast Landscape Board, Department of Primary Industry and Regions South Australia, South Australia Drought Hub, and Limestone Coast Local Government Association.
Resilience	The ability of a system to absorb a disturbance and reorganise to maintain the existing functions, structure and feedback. Also see economic resilience, environmental resilience, and social resilience.
Risk	The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems.

Key Term	Definition
Salinity	Total Dissolved Solids (TDS) grams of salt per litre, measuring the amount of salt dissolved within water.
Shock	Shocks are sudden and immediate events causing immediate damage and impact. Examples include disease pandemic, bushfires, water crisis, cyber-attack, and extreme heat.
Social Resilience	The ability of the human society to cope with a diverse range of shocks and stressors while maintaining existing social and community functions.
Stressor	An event that occurs gradually over a timeframe that causes an adverse effect, e.g., drought.
System	The interaction of processes, networks, and inter-dependencies across a complex 'whole'.
Theory of Change	Refers to theories, causal mechanisms and assumptions that explain how and why outcomes and impacts will be achieved through use, implementation and production of proposed inputs, activities, and outputs.
Threshold	The point at which a change in a level or amount a controlling variable causes a system to shift to a qualitatively different regime. Also referred to as a tipping point.
Transform	Radically change or build a new system.
Transformative Capacity	The process of radically changing or building a new system with different structure, functions, feedback, and identity.
Transitions	Transitions involve incremental changes to systems, slowly altering a situation.
Trends	Major global or regional influences that have driven change in the past and are expected to shape change into the future.
Trigger Point	A pre-agreed situation or event, that when met, activates a management intervention. Trigger points are usually defined in the planning phase.
Triple Bottom Line	An approach which seeks to equally focus on economic, social, and environmental outcomes.
Vulnerability	The propensity or predisposition to be adversely affected.

Abbreviations

Abbreviation	Meaning
$	(in) Australian Dollars
%	Percent
°C	Degrees Celsius
BOM	Bureau of Meteorology
COVID	Coronavirus disease
e.g.,	For example,
FDF	Future Drought Fund
kg/ha	Kilogram per hectare
LCLB	Limestone Coast Landscape Board
LGA	Local Government Area
LCLGA	Limestone Coast Local Government Association
PIRSA	Department of Primary Industries and Regions, South Australia
RAPTA	Resilience, Adaptation Pathways, and Transformation Assessment
RCP	Representative Concentration Pathway
RDALC	Regional Development Australia Limestone Coast
SA	South Australia
SEAFG	South East Aboriginal Focus Group
SENRM	South East Natural Resources Management Board
TAFE	Technical and Further Education
the Plan	Limestone Coast Regional Drought Resilience Plan
THI	Temperature-Humidity Index

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Appendix 1 Supporting Pathways

Table 9: Supporting Implementation Pathways and Actions

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment
During consultation we heard primary producers are significantly impacted by the commodity price shifts and pricing tactics of large supermarkets, which reduce profit margins and financial buffers needed to survive dry times.	Advocate for fairer deals on farm produce.	Supporting fairer practices towards primary producers.	1. Establishing a collective of local industry groups to advocate together. 2. Make regional submissions to inquiries into supermarket pricing/market shares.	2. Increased information sharing and knowledge building. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 5. Increased networking and relationship building. 6. Increased resilience for local businesses by securing and strengthening income streams. 7. Improved collaboration and strengthening of relationships. 10. Increased understanding and awareness of available support and services. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify
			Review local government restrictions and regulations for farm gate sales, artisan, and small business with a view to remove unnecessary red tape across the region.		Modify
During consultation we heard no one could afford non-essential spending leaving tradies (i.e. fencers, electricians, builders and plumbers) with reduced demand. An example given was no longer having waiting lists where previously they were six months long.	Support local labour businesses during a downturn in trade caused by dry times.	Advocate for stimulus funding during significant dry times.	1. Develop and maintain a Limestone Coast database of infrastructure work on public buildings/spaces, and key nature corridors that could be funded during dry times/EOFY budgets. 2. Release funding for additional public maintenance work during dry times as requested by the Local Government Association. 3. Release funding for additional environmental priority programs during dry times as requested by the Local Landscape Board.	3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 6. Increased resilience for local businesses by securing and strengthening income streams. 7. Improved collaboration and strengthening of relationships. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify
During consultation we heard businesses are struggling to attract and retaining staff, which constrains businesses from capitalising on prosperous times and building financial buffers. They can't keep young people because there are no opportunities or resources for training or personal and professional development. They cannot encourage migration to fill jobs as there is limited housing available.	Retaining and attracting young people back to the region.	Encouraging sustainable growth of our region.	Undertake research in how to keep and/or attract young people to the Limestone Coast.	1. Increased awareness of drought resilience information, practices and opportunities. 2. Increased information sharing and knowledge building. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 5. Increased networking and relationship building. 7. Improved collaboration and strengthening of relationships. 9. Increased utilisation of existing drought resilience knowledge and information. 10. Increased understanding and awareness of available support and services. 11. Increased use of support and services thereby increasing preparedness, and future funding. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify
			Develop a Limestone Coast Primary Production Leaders program.		Modify
			1. Advocate for accredited training programs within the region so young people have the option to stay local. 2. Focus on in-region training for tomorrows technologies/ jobs.		Modify
	Increasing medical and professional service access across the region.		Lead an advocacy piece to address skilled and unskilled labour shortages		Modify
			1. Advocate for increased medical services across the region. 2. Incentivising medical staff to reside in the region		Modify
	Increase housing availability across the region.		1. Identify businesses and spaces capable of providing affordable worker accommodation. 2. Identify township specific barriers to population growth such as water and wastewater services.		Maintain

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment
During consultation we heard the lasting effects of historic bushfires such as Ash Wednesday but also more recent ones including at Keilira in 2020. Fire preparation was noted as a crucial activity following dry seasons due to the lack of moisture and reliance on stored fodder.	Reduction of unnecessary flammable fuel (fuel load) sources in the region.	Encourage fire preparedness in our communities to prevent future catastrophic events.	1. Decrease unmonitored vegetation areas within the region. 2. Establish partnerships between First Nations initiatives and industry bodies. 3. Increase the business community awareness of responsibility during dry times. 4. Support increased industry training such as Forestry Fire Crew.	1. Increased awareness of drought resilience information, practices and opportunities. 2. Increased information sharing and knowledge building. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 5. Increased networking and relationship building. 10. Increased understanding and awareness of available support and services. 11. Increased use of support and services thereby increasing preparedness, and future funding. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify
During consultation we heard there is significant waste across industry. Whether it was using unattractive fruit or food waste or finding ways to recycle agricultural plastics, the region could and should be doing more to lead a circular economy.	Progress Opportunities identified in the Limestone Coast Circular Economy Opportunities discussion paper.	Encourage investment in Circular Economy initiatives	1. Value-adding reject fruit and vegetables, finding a use for the estimated 77% SA food produced that is not harvested.	3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 6. Increased resilience for local businesses by securing and strengthening income streams. 7. Improved collaboration and strengthening of relationships. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify
			2. Value-adding food waste from food processing for human consumption, using potato, onion and wine grape seeds for nutraceutical and bulk food properties.		Modify
			3. Converting food waste to high-quality animal feed.		Modify
			4. Adopting regenerative agricultural practices.		Modify
			9. Better management of agricultural plastics and commonly recycled materials locally.		Modify
During consultation we heard the need to be proactive in attracting government funding and investment into the region. This will provide opportunities for the region to diversify business opportunities and be prepared to meet State and Global Legislation changes.	Raise awareness of manufacturing income stream diversification opportunities.	Support Industry Transition for a Sustainable Tomorrow.	Link organisations to opportunities such as component manufacture for defence	3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 6. Increased resilience for local businesses by securing and strengthening income streams. 7. Improved collaboration and strengthening of relationships. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify
	Coordination of the Limestone Coast Net Zero Transition.		1. Appoint a Project Manager to lead a regional transition program. 2. Review existing renewable energy supply chains and opportunities in SA/Vic. 3. Strengthen industry understanding and resilience of Net Zero requirements.		Modify
	Raising awareness of state, national and international regulations.		Provide advice and resources to businesses on complying with legislation and regulations such as. • State and National Net Zero Targets • International EU Carbon Border Adjustment Mechanism (CBAM).		Modify
During consultation we heard that farmers want to learn from other farmers, not government bodies. Historically industry bodies led local networks and programs that naturally led to knowledge sharing across generations, as well as disciplines.	Implement programs to support Farmers teaching Farmers	Develop Farmer teaching Farmer opportunities	1. Appoint a Project Coordinator to develop and run a Farmer teaching Farmer Program. 2. Establish a mentorship program to facilitate information sharing between farmers. 3. Establish a Young Farmers Network. 4. Establish a primary producers leadership program.	3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 6. Increased resilience for local businesses by securing and strengthening income streams. 7. Improved collaboration and strengthening of relationships. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Modify

Option Origination	Option	Pathway	Outputs	Outcomes	Resilience Assessment
During consultation we heard that some industries required greater water allocation and resources than is sustainable for a resilient future.	Advocate for planning regulations and zones to exclude inappropriate industry uses, as well as protect crucial environmental corridors.	Develop consistent planning zones and overlays	Review land use regulations for appropriateness across the seven local government areas. Advocate for required changes.	3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 7. Improved collaboration and strengthening of relationships. 10. Increased understanding and awareness of available support and services. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought. 15. Better future planning and development for the region.	Modify
During consultation we heard that Rural Business Support Financial Counsellors did not advertise the service because they are only able to meet existing demand without seeking new referrals.	Advocate for the growth of Rural Business Support Services.	Expand the Rural Business Support Program to Increase Accessibility	Increase available Rural Business Support Officer resources and staff.	2. Increased information sharing and knowledge building. 3. Increased sustainability of local businesses preparedness for drought. 4. Improved business outcomes and long-term sustainability. 6. Increased resilience for local businesses by securing and strengthening income streams. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.	Maintain
			Secure a surge capacity of Rural Business Support Financial Counsellors for deployment during bad seasons.		Modify
During consultation we heard that local volunteers wear many hats in good times and get burnt out during dry times. The same people often volunteer for several committees and organisations, which is not sustainable whilst also dealing with business and family concerns.	Improving support for community volunteers.	Streamline volunteer process to increase participation.	Undertake a gap and opportunity analysis for pinch points faced by volunteers.	1. Increased awareness of drought resilience information, practices and opportunities. 2. Increased information sharing and knowledge building. 5. Increased networking and relationship building. 14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought. 16. Increased sustainability of community club/service preparedness for drought. 17. Improved community club/service outcomes and long-term sustainability.	Maintain
			Identify where red tape could be removed or reduced from LGA requirements.		Modify
			Create grant writing toolkits for volunteers and clubs including acquittal processes.		Modify

Appendix 2 Master List of Outcomes

Each pathway described in Table 3 of Section 4.1 - Pillar Pathways contains a numbered list of the Outcomes expected to result from the proposed activities. The full list of outcomes is provided for reference below.

Table 10 Master List of Outcomes

1. Increased awareness of drought resilience information, practices and opportunities.
2. Increased information sharing and knowledge building.
3. Increased sustainability of local businesses preparedness for drought.
4. Improved business outcomes and long-term sustainability.
5. Increased networking and relationship building.
6. Increased resilience for local businesses by securing and strengthening income streams.
7. Improved collaboration and strengthening of relationships.
8. Reduced duplication of services and reduced consultation fatigue, providing better outcomes for agencies and farmers.
9. Increased utilisation of existing drought resilience knowledge and information.
10. Increased understanding and awareness of available support and services.
11. Increased use of support and services thereby increasing preparedness, and future funding.
12. Increased awareness of mental health information, practices and opportunities.
13. Local industry focused program to provide accessible mental health training and services.
14. Increase in resilient individuals to prepare for, cope with and recover from adverse events such as drought.
15. Holistic planning of Caring for Country activities with the understanding that activities on Country are interconnected.
16. Increased social and economic participation of First Nations; co-design emphasises self-determination, projects, and activities important to First Nations peoples to make up the plan, new fee-for-service opportunities.
17. Increased drought resilience.
18. Support biodiversity outcomes.
19. Reduce the risk and impact of bushfires.
20 Decrease pressure on groundwater resource so recovery after drought is possible.
21 Determine feasibility of storing drain and alternative water sources in the aquifers using managed aquifer recharge (managed aquifer recharge could increase the supply of groundwater available during drought).
22 Identify alternative water sources that can be used during drought.
23 Assist in carbon sequestration.
24 Increase the total volume of water available in the region