Goulburn Mulwaree Council
and Wingecarribee Shire Council

REGIONAL DROUGHT RESILIENCE PLAN

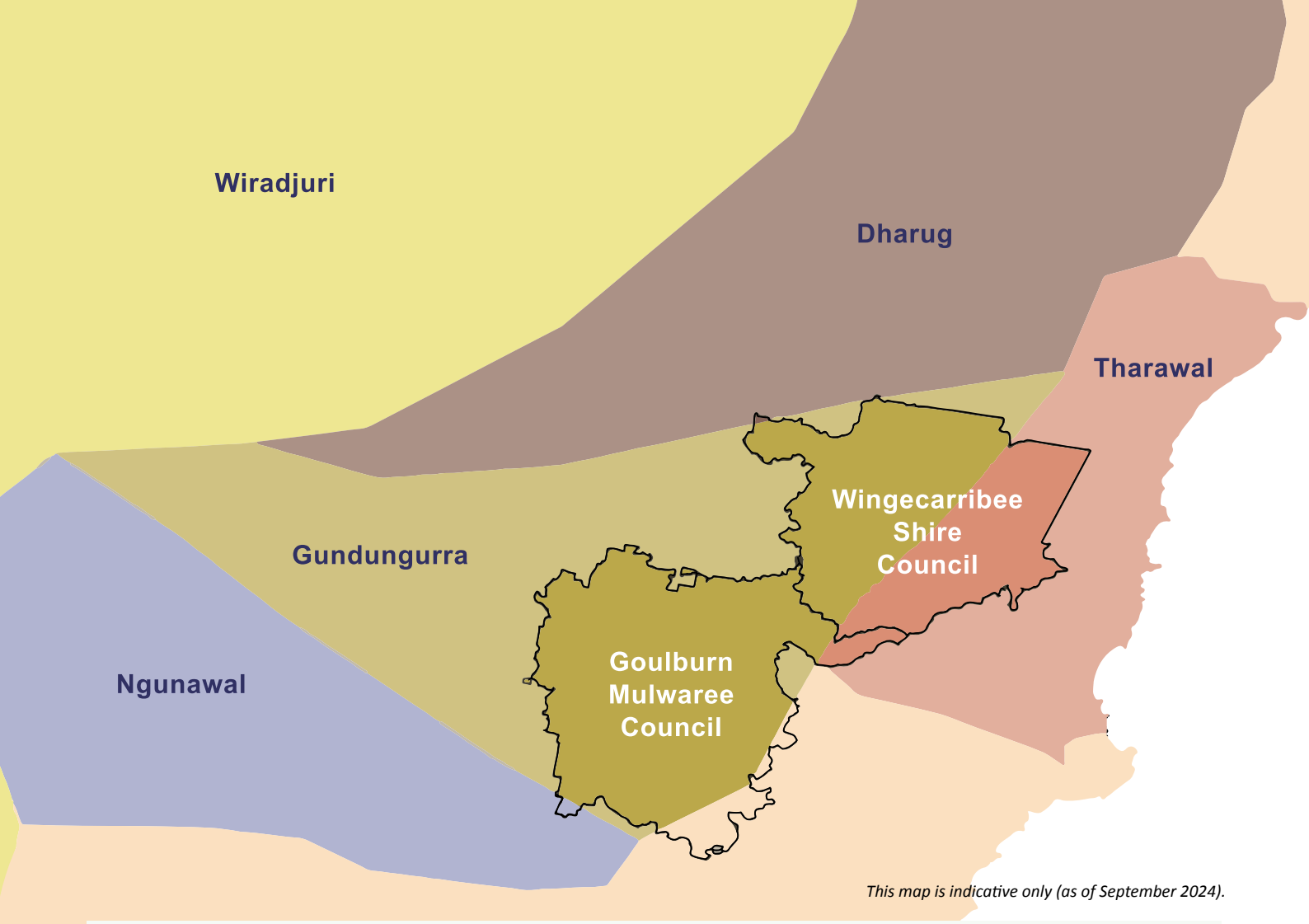
Australian Government
Department of Agriculture, Fisheries and Forestry

Future Drought Fund

NSW

Goulburn Mulwaree Council

Wingecarribee Shire Council



This map is indicative only (as of September 2024).

ACKNOWLEDGEMENT OF COUNTRY

Goulburn Mulwaree Council and Wingecarribee Shire Council acknowledges and pays our respects to the Aboriginal elders both past and present and acknowledge the traditional custodians of the land on which we all live. We acknowledge, in particular, the Gundungurra, Ngunawal, Tharawal and Dharug peoples as the traditional custodians of the lands that are addressed within this report.

This project received funding from the Australian Government's Future Drought Fund and the NSW Government.

Front Cover Image Source: AzmanJaka, iStock, 2024

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KEY TERMS AND ACRONYMS

KEY TERMS

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 a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, take advantage of opportunities or cope with the consequences.
Climate change	Large-scale, long-term shift in the planet's weather patterns and average temperatures.
Drought	Refer to page 28.
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.
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.
Hazard	The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
Hazard, exposure, vulnerability, and resilience	Terms commonly used among practitioners in the disaster and risk management and climate resilience communities; however, they can have different interpretations. This report uses definitions provided by the Intergovernmental Panel on Climate Change (IPCC) and, when applicable, the United Nations International Strategy for Disaster Reduction (UNISDR).
Intervention options	Alternative or complementary actions, projects, programs, policies, initiatives and investments that are planned to bring about change.
Local Knowledge	Local knowledge and First Nations knowledge incorporate elements of lived experience within 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.
Preparation	Action to prepare for and protect against natural hazards and reduce impacts when events occur.
Prevention	Action to understand and mitigate natural hazard risk.
Recovery	Action to assist communities, organisations and other stakeholders to recover from natural hazards and reduce future risk.
Resilience	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.
Risk	The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems.

Shock	Sudden, short-term events that threaten a city or region. Examples include major storms, floods, bush fires, heatwaves, disease outbreaks, terrorism.
Social Resilience	The ability of human society to cope with diverse range of shocks and stressors, while maintaining existing social and community functions.
Standardised Precipitation Index	Uses precipitation only; can characterise drought or abnormal wetness at different time scales which correspond with the time availability of different water resources (e.g. soil moisture, snowpack, groundwater, river discharge and reservoir storage).
Stressor	An event that occurs gradually over a timeframe that causes an adverse effect.
Succession planning	The term succession planning refers to a strategy to pass leadership roles down to another employee or group of employees within a business. Succession planning ensures that businesses continue to run smoothly and without interruption, after important people move on to new opportunities, retire, or pass away.
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.
Transform	The process of radically changing or building a new system with different structure, functions, feedback and identity.
Trigger point	A pre-agreed situation or event, that when met, activates a management intervention.
Vulnerability	The propensity or predisposition to be adversely affected by hazards. Vulnerability encompasses multiple elements including exposure to risk, sensitivity or susceptibility to harm, and differential patterns of capacities to cope and adapt. It is the opposing definition of Resilience characterising system weaknesses as opposed to its strengths.

ACRONYMS AND ABBREVIATIONS

ABS	Australian Bureau of Statistics
BoM	Bureau of Meteorology
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DRR	Disaster Risk Recovery
EPA	Environmental Protection Authority
FDF	Future Drought Fund
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
GMC	Goulburn Mulwaree Council
KPI	Key Performance Indicators
IPCC	Intergovernmental Panel on Climate Change
LLS	Local Land Services
LGA	Local Government Area
NGO	Non-Government Organisation
NSW	New South Wales
NSW DPIRD	NSW Department of Primary Industries and Regional Development
RDRP	Regional Drought Resilience Plan
WSC	Wingecarribee Shire Council

INTRODUCTION

Source: Goulburn Australia Website, 2024

Goulburn Mulwaree Council (GMC) and Wingecarribee Shire Council (WSC) have been jointly funded by the Australian Government's Future Drought Fund and the NSW Government to prepare a Regional Drought Resilience Plan (RDRP) for the region.

The RDRP is focused on empowering our communities to be resilient to the impacts of drought; effectively preparing in advance so that when drought does occur its impacts during are minimised as are the time and costs associated with recovery. A drought resilient community is one that has the capacity to resist, absorb, accommodate, recover, transform and thrive in a timely and effective manner in response to the effects, shocks and stressors of drought, and in doing so enable positive economic, social, environmental and governance outcomes.

Achieving resilience needs to start by recognising two key factors:

- **Drought is not simply low rainfall;** if it was, much of inland Australia would be in almost perpetual drought. Drought is typified by abnormal periods of dryness, but the definition of "abnormal" and "dryness" varies across communities and with their associated land use and economies.

- **Drought is not simply an agricultural issue.** While farmers often feel its impacts most directly, drought is unique amongst natural hazards as it is typically a slow onset disaster that permeates through communities as it develops, affecting not only agricultural productivity, but upstream and downstream supply chains, individual and community health and wellbeing, and the condition and quality of the natural environment and community places. As it is slow onset, it is also often slow in recovery, with the scars of drought on communities often lasting long after its incidence.

The RDRP approach recognises the multi-dimensional impacts and significance of drought to communities and seeks to provide a holistic planning framework to prepare communities for future droughts through building economic, environmental, and social resilience.

A key element of the RDRP is that it is a community responsive and community integrated plan. Ultimately, it is the practices of individuals and communities that will define their level of resilience to drought and the actions recommended within this plan are focussed on enabling behavioural and cultural change regarding drought within the two LGAs (hereafter 'the region'). The actions themselves have been identified through an engagement program across our region, focussed on understanding the lived experience of drought in all its dimensions, and how this experience can be improved into the future.

OUR REGION

The Goulburn Mulwaree and Wingecarribee Shire Local Government Areas cover a combined area of 5,900 square kilometres, encompassing large portions of both the Southern Tablelands and Southern Highlands regions of NSW.

The Southern Tablelands is located west of the Great Dividing Range and is geographically characterised by high, flat country that has been extensively grazed since European settlement in the early 1820's. The Southern Highlands is located to the south-west of Sydney and sits on a plateau of the Great Dividing Range, between 500 – 900 metres above sea level. Distinct from the intensively grazed Southern Tablelands region, the Southern Highlands has a high percentage of mountainous nature conservation land including the Morton National Park.

Just as the two LGAs are distinct in their geography and landform, they have distinct land uses, demographics, economies and communities (Figure 1). The combined population is approximately 86,600 people, with the major urban centres of Moss Vale, Mittagong, Bowral and Goulburn hosting approximately 60% of this population.

This plan primarily seeks to address commonalities in drought vulnerabilities between the two LGAs while recognising and responding to their differences where practicable.

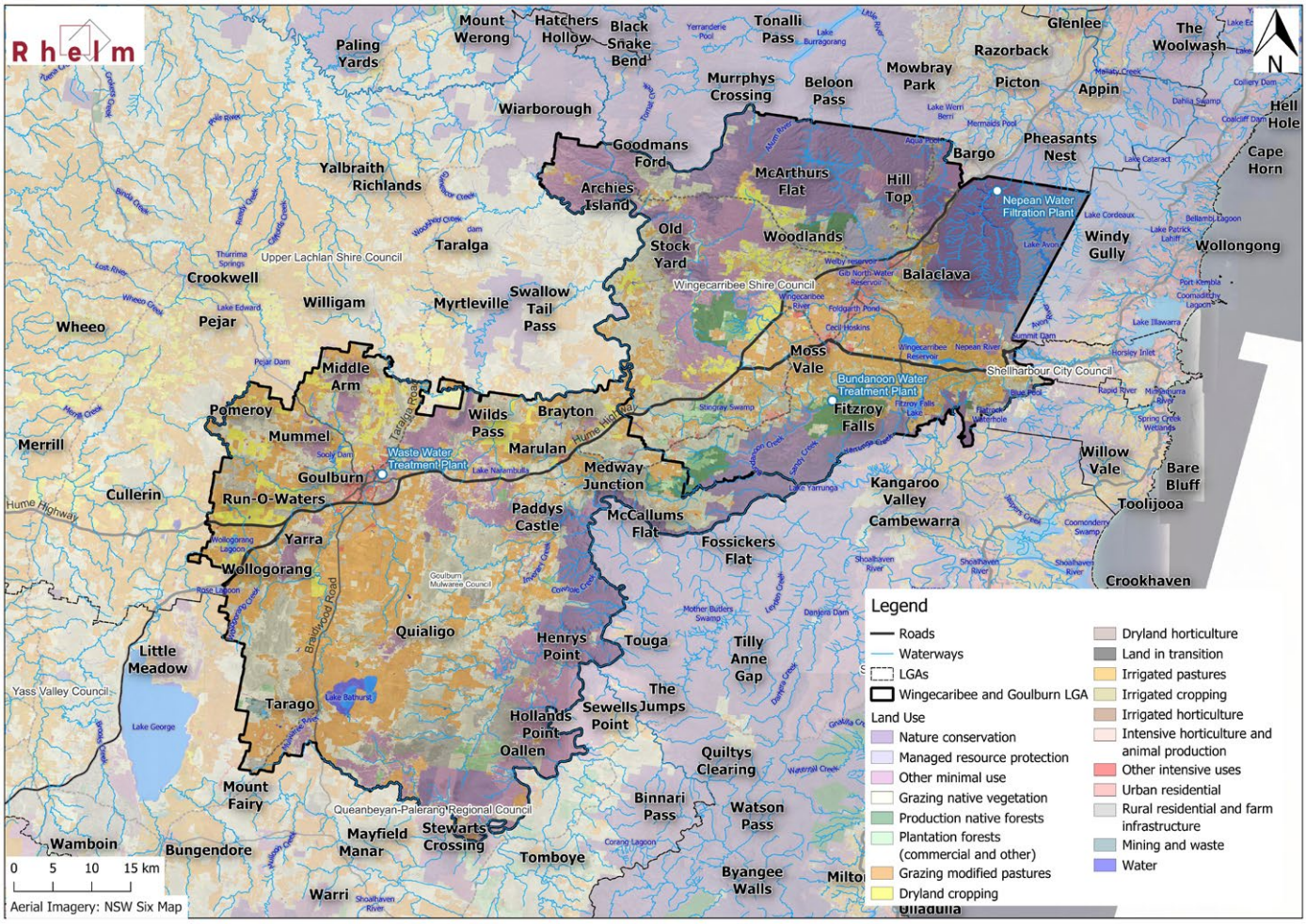


Figure 1: Goulburn Mulwaree Council and Wingecarribee Shire Council RDRP Area

This diversity across the LGAs is mirrored in its First Nations stewardship. The traditional custodians of the Goulburn Mulwaree and Wingecarribee Shire region are the Gundungurra, Ngunawal, Tharawal and Dharug peoples. The Goulburn Mulwaree region is also a traditional meeting place for many First Nations groups, having cultural significance to a number of Aboriginal peoples beyond its local custodians.

It is important to note for a drought planning document, that water is not merely a resource for our Aboriginal peoples; it is a living entity intertwined with their existence, spirituality, and cultural heritage. There are numerous locations of high importance across the region used by our communities that have a strong connection with water, such as the Wollondilly River, Wingecarribee River and Mulwaree Flats.

Our Aboriginal peoples possess a wealth of traditional knowledge that can contribute to drought resilience strategies, including a deep understanding of sustainable natural resource management. This knowledge and their demonstrable perpetual commitment to the good stewardship of Country makes their ongoing involvement within this RDRP of first order importance.

VISION

Our vision for drought resilience was informed by community views on the need for drought awareness in the context of a shifting demographic; the importance of community-led support and cooperative action; and an acknowledgement of the experience-based knowledge of our agricultural and land care communities in building drought resilience.

Our vision is that the communities of our region:

- Are aware of the drought hazards to the region and the many ways it impacts upon our people, our environment and economy
- Integrate and implement drought responsive actions in the way they carry out their work, live their lives and plan their futures
- Foster social cohesion through taking personal responsibility for the management of water resources, while recognising water is a common resource shared within a community
- Are aware of, and have access to, an array of public and private support networks that can be called upon before, during and after drought events.

Ultimately, we seek to develop communities that are aware, active and structured in such a way that, when under the stress of drought, our economies remain prosperous, our communities remain connected, and our environment is protected.

The actions earmarked within this RDRP and developed through consultation with the affected communities seeking to progress the region towards this vision. Just as the frequency and magnitude of drought continues to shift with forecast climate change impacts, so too the nature and composition of our communities is shifting in response to broader cultural, economic and development drivers. The achievement of this resilience vision will be incremental and adaptive over time and its proposed actions will need to be reviewed, updated and expanded to respond to this resultant evolving landscape of drought exposures, sensitivities and vulnerabilities.

A PLAN FOR DROUGHT RESILIENCE

Australia is recognised as one of the driest continents and countries on earth. So much so that living amidst drought and harsh conditions has now formed part of our culture, heritage and international standing. Yet, the economic, social and environmental impacts of drought are far-reaching, complex and often disastrous at a personal, local, regional and even national level. The forecast climate change trajectory for the country (and for our region) is one of both increased frequency of drought and increased intensity of drought (AdaptNSW, 2024).

The impacts of such increases will flow through to the households and communities of our region. Those businesses with high water dependency and those households with limited access to water, will be the first to be affected, resulting in a decline in productivity and personal financial and emotional stresses. Ultimately, the increased exposure to drought as a result of climate change may lead to the closure of currently viable businesses or incidence of associated mental health issues and self-harm. From such localised impacts, the impacts of drought can flow out into a myriad of interdependent social, environmental and economic systems through various pathways. For example:

- Loss of environmental amenity where a browning environment decreases tourism and affects the viability of tourism-based industries
- Reduced local feed/water availability requires purchasing of feed/water from other regions; affecting local transport, logistics and supply chains and associated costs, as well as the introduction of invasive weeds and insects with imported feed
- Limited rainfall increases demand for lower quality water sources, elevating health risks particularly within ageing populations
- Limited water availability for public space maintenance diminishes community wellbeing
- Financial restrictions and familial stresses encourages anti-social behaviour, or increased truancy amongst school children, leading to lowered educational outcomes
- Dry conditions contribute to higher risk of bushfire and associated direct and indirect damages
- Drought conditions encourage pest and weed migration at a time in which individuals and councils have limited resources for control.

In recognition of this increasingly significant issue, the Australian Government's Future Drought Fund (FDF) was established in September 2019 to provide continuous funding for drought resilience initiatives, seeking to build drought resilience in Australia's agricultural sector, the agricultural landscape and communities. The FDF (2020-2024) has four priority focus areas:

- Better climate information – enabling farmers, businesses and communities to better understand climate risk
- Better planning – helping Australian farmers and agricultural regions plan for drought
- Better practices – Promoting the adoption of farming and natural resource management (NRM) practices and technologies to improve drought resilience
- Better prepared communities – enabling and empowering community leaders, networks and organisations that reinforce community resilience.

The NSW Regional Drought Resilience Planning Program (The Program), delivered under the 'Better planning' priority, represents a joint initiative between the NSW Government and the Australian Government to support agricultural regions in the development of Regional Drought Resilience Plans that can be implemented by councils and their communities to manage future drought risk. The resulting plans seek to focus on innovative ways to build regional drought resilience, taking steps to plan now to stem the impact of future drought on our region.

The overarching purpose of The Program is to delivery RDRPs which:

- Create stronger connectedness and greater social capital within communities, contributing to wellbeing and security
- Empower communities to implement transformative activities that improve their resilience to drought
- Support more primary producers to adopt whole-of-system approaches to natural resource management to improve the natural resource base for long-term productivity and landscape health.

The Program recognises that drought is not solely an issue for the agricultural sector, and takes a triple-bottom line approach to deliver against three inter-connected strategic priorities:

- Economic resilience of the regional economy and an innovative and profitable agriculture region
- Environmental resilience for sustainable and improved functioning of farming landscapes
- Social resilience for resourceful and adaptable communities.

The RDRPs focus is on the community as a system to enhance economic, built, environmental, and social capacity to endure, respond and evolve to current and changing drought conditions.

Source: Russell102 , iStock 2024

PURPOSE OF THE GMC AND WSC RDRP

A drought resilient region is one that is prepared, active and structurally resourced to respond to drought if and when it occurs, so that our economy remains prosperous, our communities remain connected and our environment is protected. This plan seeks to support realisation of our drought resilience vision by:

- Directly preparing our communities by providing a useful starting point for the understanding of drought and its impacts
- Supporting an active and engaged community to be encouraging participation in the development of the plan and identifying actions and responsibilities for the community to take up into the future
- Supporting development of structures and services to strengthen drought resilience in the region by identifying existing short-comings or opportunities for improvement.

THE PROCESS

To achieve these aims, a three-phase approach has been adopted, including:

1

PHASE ONE:

a desktop review of key regional strategic plans, drought impact literature and regional data to inform a preliminary assessment of local economic, social and environmental drought resilience.

2

PHASE TWO:

stakeholder consultation to encourage community co-design and RDRP ownership, as well as identify priority resilience themes and actions.

3

PHASE THREE:

development of an action plan to enhance the drought resilience of the local economy, community and environment, as well as the monitoring and evaluation framework to support implementation.

Source: Lauren McLaughlin Photography

Figure 2 provides an overview of the process adopted. The critical component to the entire process has been the community engagement activities to extract drought lived experience, issues and concerns, and community suggestions for how resilience may be improved.

The overall development of the RDRP was guided by the Project Control Group, comprised of representatives from Goulburn Mulwaree Council, Wingecarribee Shire Council, and NSW DPIRD.

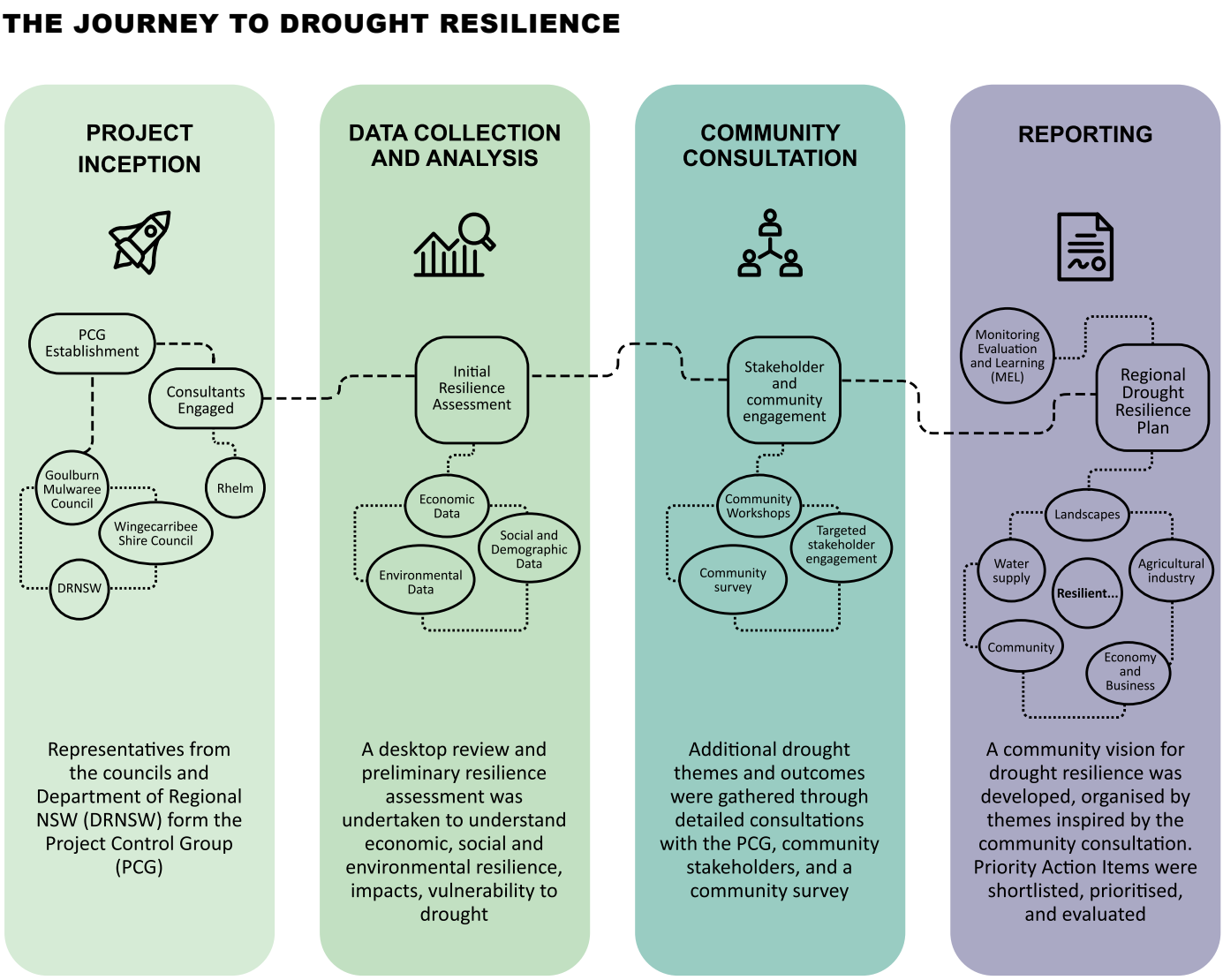


Figure 2: RDRP development process

Community Engagement

A fundamental premise in the preparation of the report has been the understanding that drought is ultimately experienced most deeply at the individual and community level, and that the nature of that experience varies greatly between, and even within, communities. Any RDRP that is not based upon the experience and knowledge of the communities it seeks to address, risks misguided application and planning.

Accordingly, this RDRP has considered community and stakeholder feedback (including feedback obtained from other previous and ongoing projects) to help understand and respond to the key community concerns and already identified opportunities to improve the preparedness and resilience of the community to drought. For example, following the 2020 droughts and fires WSC has established community integrated planning groups to advance Southern Highlands Farming Community Resilience and Preparedness, which have periodic workshops to advance resilience, including activities such as the Response Recovery and Resilience Expo in 2021. The results of this engagement provided key stakeholder insights and contacts from the community, agricultural industry, and government partners which has contributed to the engagement approach for this RDRP.

To inform the engagement program design a stakeholder list was prepared followed by an analysis of the methodology appropriate for the engagement with key stakeholders using the International Association for Public Participation (IAP2) spectrum.

Various stakeholders have shared their perspectives on how the drought has impacted them and has influenced their local environment and their livelihood. A complete list of organisations engaged is provided at Appendix A. The community has been engaged through various approaches, including:

- **Project Control Group (PCG) and Community Leaders meeting –** project direction meeting held in April 2024 to discuss local drought impacts, opportunities and barriers for enhancing regional resilience and potential resilience actions. Attendees included:
  - Representatives from GMC and WSC
  - Representatives from NSW DPIRD
  - Tablelands Farming Systems
  - Agribusiness and Equine Strategic Working Group, Wingecarribee
  - Goulburn Chamber of Commerce & Industry
  - Marulan Region Chamber of Commerce.

- **Community survey -** seeking broad community feedback from across both LGA's via the online drought resilience survey open for feedback during April and May 2024. The survey was also circulated to over 150 stakeholders from community and industry groups and organisations, government agencies, and media outlets and through both Council's Facebook pages and shared on LinkedIn.

- **Targeted stakeholder meetings** (six) with key community groups and organisations, including:
  - Local Land Services
  - Water NSW
  - Business representative groups
  - Southern NSW Local Area Health District
  - NSW Health Rural Adversity Mental Health Program (RAMHP)
  - Goulburn Mulwaree Sustainability Hub
  - Community Voice for Hume
  - Landcare Goulburn Mulwaree – Regenerative Grazing and Framing Group
  - The Southern Highlands Farming Community Resilience and Preparedness Working Group
  - The Interagency Group.

- **Community Focus Groups** (two) were held in May 2024 for interested community members and invitations were extended to village representatives from across both Councils. The participants at these sessions included the members of the Wingecarribee Community Reference Panel (including representatives from the community in the Climate Change and Environment, Community, and Economy sectors) and from the Southern Highlands Landcare Network.

The survey was distributed to

162
DISTRIBUTION LISTS

67
SURVEY RESPONSES

9
STAKEHOLDER MEETINGS

3 WORKSHOPS,
40 PARTICIPANTS

4 FACEBOOK POSTS
by both Goulburn Mulwaree and Wingecarribee Shire Councils promoting the opportunity to provide feedback through the survey

3,123 REACH

3,371 IMPRESSIONS

11 LIKES

3 SHARES

2
MEDIA ARTICLES

1
E NEWSLETTER ARTICLE
distributed, 27 link clicks, 3596 recipients, 2019 newsletter opens

Learnings from community engagement

The engagement activities focused on capturing learnings from the Millennium Drought and the 2017-19 Drought. The engagement sessions were broadly targeted at understanding stakeholders:

- Lived experiences during the previous drought periods
- Perceptions of the region's drought resilience
- Experiences of drought support mechanisms
- Ideas for, and barriers to, increasing drought resilience of the region in the future
- Perceptions on the outcomes of effective drought management planning.

Community Focus Group Meeting, Wingecarribee Shire Council, 16 May 2024

The engagement sessions were structured to capture stakeholder groups across the RDRP pillars of social, economic and environmental resilience. The engagement sessions were also timed to suit relevant stakeholder groups, for example business representative sessions were held out of business hours (6:00pm). Of the six targeted stakeholder group meetings and two Community Focus Groups, three targeted stakeholder meetings and one Community Focus Groups were well attended, with the remaining sessions having low attendance. To capture the input of stakeholders not attending the planned sessions a series of one-on-one conversations were held virtually. A small number of stakeholders were also engaged via email correspondence.

In total, more than 100 individuals, and community, agency, and industry organisations and groups contributed their feedback in the development of the actions and recommendations of this RDRP.

A Snapshot of Key Stakeholder Insights on the RDRP

“ Each drought, or the longer drought goes on, diminishes one’s ability to thrive - it can seem hopeless, and we just survive and get through, frustrated that we weren’t able to better prepare. “

Community member

“ We need to be pragmatic and look ahead at the weather. We need to be positive and proactive and look 6-12 months ahead. If it says it will be a horrific period of drought ahead then you need to start selling sheep, you don’t suddenly get drought, you have time to plan.’

I like the word resilience; you need to be resilient mentally, but you also need to plan and take steps. “

Local Farmer

“ Things like water restrictions and watching the area become drier and drier made me and my family anxious over an extended period and made us question whether we should live in a regional area. “

Community member

“ Drought affects farmers mentally, it puts stress on the brain, and diminishes good decision making as drought progresses. Therefore, access to help is critical and can assist farmers so they are not making decisions when under the pump. “

Health Representative

“ Habitat resilience is important to the community through preservation and tree planting on properties to prepare for drought. Also, protecting the habitats of our iconic animals such as the platypus and Rakali (Australian otter) so they can survive drought “

Landcare Representative

“ Feeding stock was a challenge as hay and silage was in short supply, poor quality and very expensive “

Local farmer

“ Farmers are not necessarily social people, and this contributes to their isolation and poor mental health. Especially during droughts when the going gets tough “

Farming representative

Managing perspectives

Community engagement encountered a diverse range of perspectives on drought in the region and appropriate actions to build the resilience of the community, economy and environment. The diversity of views was both a strength and challenge for plan development. A diverse range of perspectives has resulted in a broad array of complementary actions which aim to build the resilience systems of the region. Conflicting perspective on individual themes and actions were resolved by referring to the RDRP Program objectives and vision, where conflicts were resolved by refocusing towards achieving common outcomes. Ultimately, all stakeholders consulted were united in a desire to increase the overall resilience of the region and conflicting perspectives were rare.

Impact on Local Economies

Community Information and Support

Feed Supply for Livestock

Water Supply and Management

Depth of engagement

In terms of depth of engagement with key stakeholder groups, Table 1 summarises the level of engagement with key stakeholder groups and resulting recommendations for future updates of the RDRP.

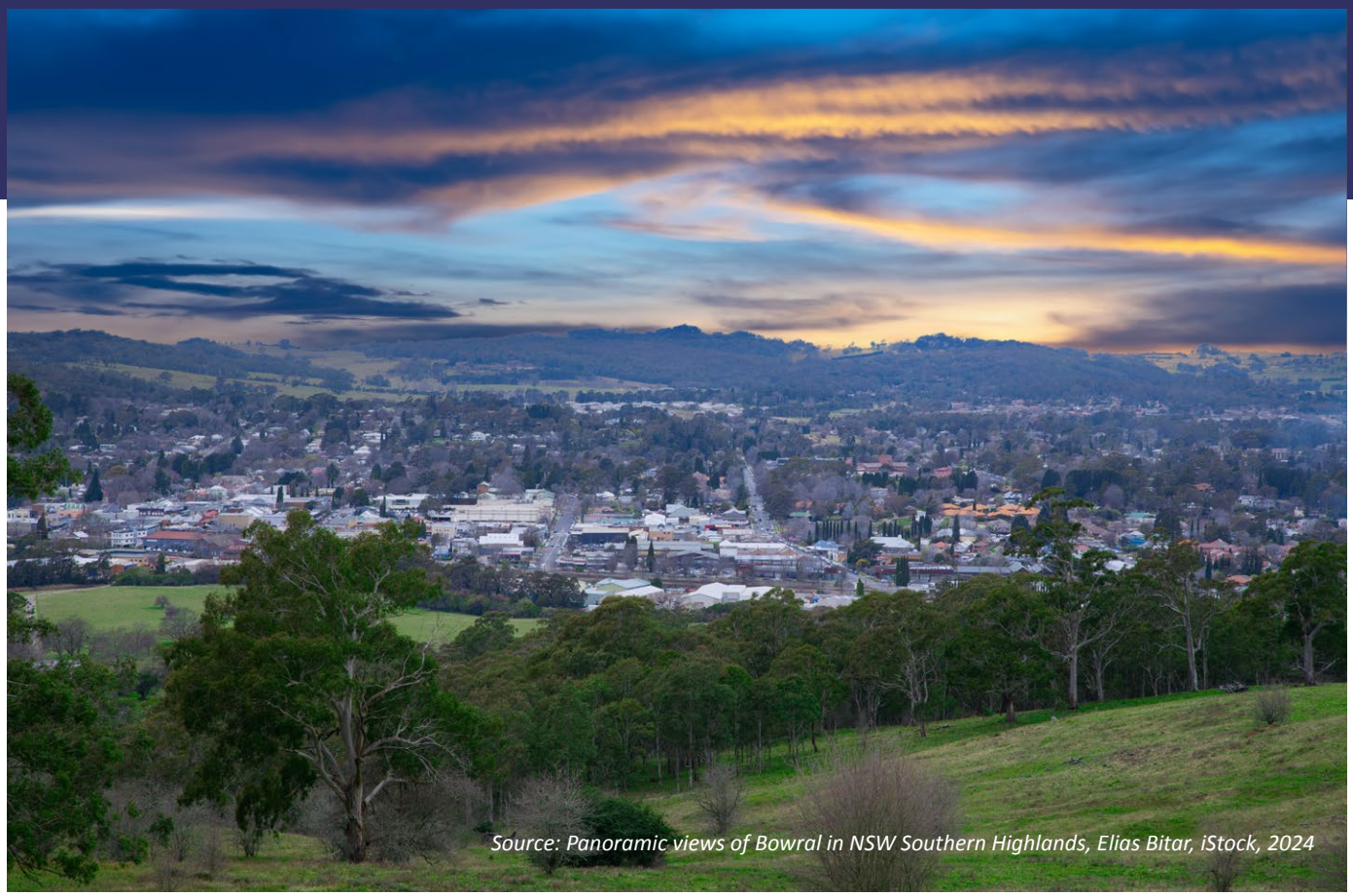
Table 1: Depth of engagement

NO.	STAKEHOLDER	ATTENDANCE	ENGAGEMENT LEVEL	WHY?	RECOMMENDATIONS FOR FUTURE ENGAGEMENT
1	Environmental Representatives	7	High	Representation from this group was high due to their high interest in the outcomes and actions to be included in this report. Feedback was provided through the stakeholder meetings, workshops and survey. These stakeholders possess local knowledge of landholder and property owners land management practices and the impact of drought on the local environment.	Engage these representatives early to ensure identification of the appropriate key environmental representatives and methods for engagement.
2	Health Representatives	4	High	Representation from this group was high due to their high interest in the outcomes and actions to be included in this report. Feedback was provided through the stakeholder meetings, workshops, and survey. Participation by various health representatives has provided valuable feedback on the impact of drought on the health and wellbeing of farmers and property owners in both Council areas. In addition, we have a greater understanding of the local services and programs available to support the community.	Engage these representatives early to ensure identification of key health representatives and methods for engagement.
3	Business Representatives	4	Moderate	Representatives from the business community were interested in providing their feedback during the engagement program, and we tailored our program to ensure we were providing accessible opportunities to engage with the business community. We received feedback from business representatives through the workshops, stakeholder meetings, and survey.	Identify alternate methods for engagement in consultation with the business community to increase the participation and ownership of the actions for inclusion with the RDRP.
4	Farmer Representatives	3	Moderate	Farmers and NSW Farmers were interested in providing their feedback through the engagement program however were limited in their capacity to provide this feedback. Farmers provided their feedback over the phone and at stakeholder workshops.	Engage with farmers and NSW Farmers early to identify the preferred approach for engagement with other farmers and the method of engagement. This may include stakeholder interviews and/or attendance at key events that farmers attend to solicit greater participation.
5	Government Agencies	3	Moderate	There was moderate interest from those representing various Government Agencies, and this could be attributed to their capacity to provide feedback. We received feedback from these representatives through the workshops, stakeholder meetings, and survey.	Increase the timeframe for consultation to allow for increased review time for Government Agencies.
6	Village Representatives	2	Low	Various attempts were made to engage with village representatives to ensure their feedback was captured. We received lower engagement from these groups, this could be attributed to some village representatives being members of various groups and providing their feedback as a representative of an alternate group.	Identify key community leaders who can indicate their level of interest in the outcomes of the RDRP report and provide feedback throughout the engagement program in consultation with key community leaders.
7	First Nations Representatives	1	Low	Feedback was sought from both the Pejar and Illawarra LALCs and assistance was provided by Aboriginal Partnerships Managers who sought feedback from the LALCs on the RDRP, with the Pejar LALC consulted through their board, however, no detailed feedback from either LALC was received.	Engage earlier with the Aboriginal Partnerships Managers and allow for an extended timeframe for feedback to be gathered from the Local Aboriginal Land Council's (LALCs).

FOLLOWING FOOTSTEPS

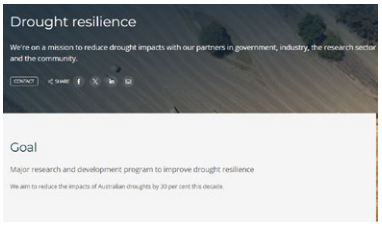
It is important to note that the RDRPs and FDF, while bringing focus and activity to the issue, are the latest but not the first piece of planning in response to drought and its impacts. This is true at a local, regional level and at a national level. Table 2 summarises the key local, regional and national strategies into which the GMC and WSC RDRP will integrate, while Table 3 summarises some of the significant literature, tools and studies undertaken that have informed the understanding of current and future drought hazard to the region and potential actions in response. It is important that the RDRP, where possible, seeks to find synergies with the regional strategic plans, to enhance drought resilience while simultaneously contributing to the broader economic, environmental, and social objectives of the region.

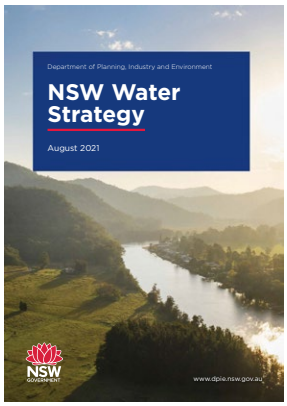
It is recognised that several drought specific studies have recently been undertaken within the region, including the Baselining Drought study undertaken by the Southern NSW Drought Resilience Adoption and Innovation Hub (2022). This broad and consultation intensive study sought to describe and define the experience of drought across southern NSW and form the basis for assessing changes required, barriers to overcome and potential opportunities to improve drought resilience within the farming community. This RDRP is not seeking to rework ground previously covered, but rather supplement previous contributions to regional drought resilience (e.g. whereas the Baseline Drought study is focussed on farmer impacts, this RDRP seeks to expand out the application across the broader economic, environmental and social disciplines). Where potential actions/recommendations identified as part of this RDRP have been/will be addressed as part of other initiatives, the relevant actions were not taken forward for further implementation.

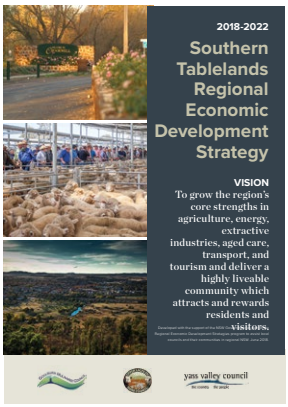


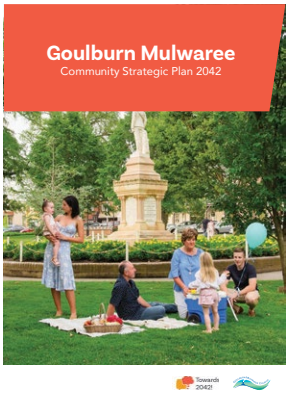
Source: Panoramic views of Bowral in NSW Southern Highlands, Elias Bitar, iStock, 2024

Table 2: Strategic alignment

STRATEGY/PLAN	ALIGNMENT AND RELEVANCE TO THE RDRP
National/State Drought Plan	
National Drought Agreement  	In December of 2018, the Council of Australian Governments signed the current National Drought Agreement (NDA). The NDA sets out a joint approach to drought preparedness, responses and recovery, with a focus on accountability and transparency. The NDA identifies the need to support farming businesses and farming communities to manage and prepare for climate variability and strengthen risk management practices to enhance long-term preparedness and resilience. The current NDA expires on 30 June 2024 and is being reviewed ahead of the implementation of the next intergovernmental agreement on drought. Key NDA objectives supported by this RDRP are: • Enable farming businesses, farming families and farming communities to manage and prepare for drought, climate change and variability, by supporting their long-term sustainability and resilience, the adoption of robust risk management practices and sound natural resource management. • Increase the adoption by farming businesses and the farming sector of self-reliant, sustainable and resilient approaches to manage business risks, through improved skills and business decision-making, and the adoption of new knowledge and tools from research and development. • Ensure services to mitigate the effects of drought on health and wellbeing are accessible to farming families and farming communities. • Ensure support measures are accessible and clear information is available for those in need, in collaboration with relevant stakeholders. • Provide decision makers, industry and the public with access to common sources of quality, drought-related data to improve policy and business decision making.
CSIRO Drought Resilience Mission  	In September 2021, the CSIRO launched three “missions” to guide the investment of $150 million in research and development collaborations targeted at tackling Australia’s biggest agriculture and food challenges, including: drought resilience; trusted agrifood exports; and future protein. The CSIRO Drought Resilience Mission (Mission) is *to reduce the impact of Australian droughts by 30 per cent by 2030.* The aim of the Mission is to protect jobs and agricultural profitability, strengthen the economic resilience and water security of regional communities, and improve environmental outcomes. This RDRP seeks to support the Mission by identifying practical and measurable solutions to reduce the impact of drought on our communities, primary producers, and the environment by 2030.

Water Security Strategy/Plan	
The NSW Water Strategy 	The NSW Government has developed the NSW Water Strategy, a 20-year, state-wide strategy to improve the security, reliability and quality of the state's water resources over the coming decades. The NSW Water Strategy addresses key challenges and opportunities for water management and service delivery across the state and set the strategic direction for the NSW water sector over the long-term. The NSW Water Strategy sets the overarching vision for 12 regional and two metropolitan water strategies The NSW Water Strategy defines 7 priorities for the state's water resources. This RDRP supports the priorities of: • **Priority 4** – Increase resilience to changes in water availability (variability and climate change). • **Priority 5** – Support economic growth and resilient industries within a capped system. • **Priority 6** – Support resilient, prosperous and liveable cities and towns.
The Greater Sydney Drought Response Plan 	The Greater Sydney Drought Response Plan (GSDRP) sets out how Sydney Water, WaterNSW and the NSW Government will work together to respond to droughts in the future. Both GMC and WSC are within the Greater Sydney catchment and source water from the WNSW operated Wingecarribee Reservoir. Actions implemented under the GSDRP are likely to have implications for water supply in the region, via any drought response triggers included in the Greater Sydney Water Sharing Plans. The GSDRP introduces the framework of a staged drought response by defining actions and decisions that are required pre drought, as drought conditions develop and intensify, and during recovery. The GSDRP also identifies a need to develop rainfall independent supply to enhance drought resilience. An action that is supported by this RDRP.

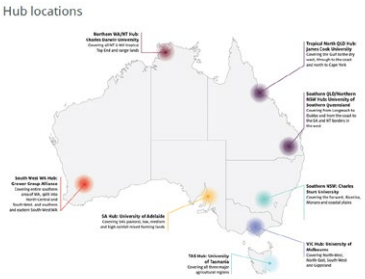
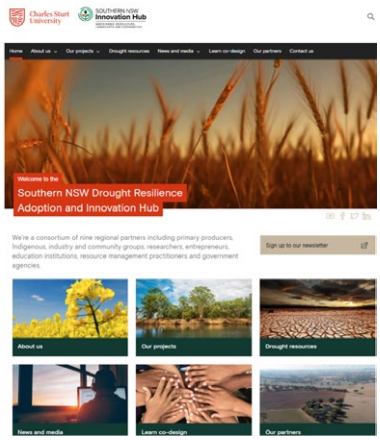
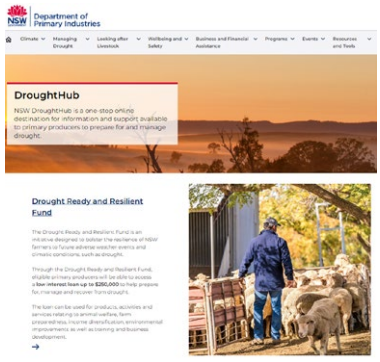
Regional Strategy/Plan	
Southern Tablelands Regional Economic Development Strategy (REDS) + 2023 Update  	The Southern Tablelands REDS articulate a framework for identifying actions crucial to achieving the regional vision aims to leverage the Region's endowments: its topography, water, climate and soils, natural resources, proximity to Sydney and Canberra (including the road and rail access), extractive and mineral resources, lifestyle advantages, historic heritage and villages, public order and safety institutions, hospitals, local institutions and strong leadership, labour supply and specialist labour skills. The identified endowments are the basis of the Region's specialisations in Sheep and Beef Cattle Farming, Meat and Meat Product Manufacturing, Public Order and Safety Services, Construction Material Mining, Road Freight Transport, Residential Care Services and Tourism, as well as the potentially emerging specialisation in renewable energy generation. The Southern Tablelands REDS identify priorities to sustain, build, realise and enhance. Of relevance to the development of the RDRP, the Southern Tablelands REDS seeks to identify opportunities to: • Sustain the Region's agriculture and agricultural processing advantage, especially in livestock • Build on the Region's core strength in energy generation and natural resource extraction. The 2023 update provides an updated evidence base to guide governments in making policy and investment decisions to enhance resilience.
Wingecarribee Regional Economic Development Strategy – 2023 Update 	The Wingecarribee REDS was first developed in 2018 and reviewed in 2023. The 2023 update identified that despite recent shocks (drought, bushfire, covid) impacting many endowments, key endowments remain, such as: • Proximity to Sydney, Canberra, and Illawarra • Water, climate and soil • Education & healthcare infrastructure • Substantial labour supply • Local institutions and strong leadership • Aboriginal & historic heritage The Wingecarribee REDS – 2023 update also discussed strengths, vulnerabilities, and opportunities. For example, identifying agriculture opportunities in emerging specialist industries such as horse breeding, niche produce such as truffles and garlic, and flexible approaches to land use planning to alleviate constraints on agriculture.

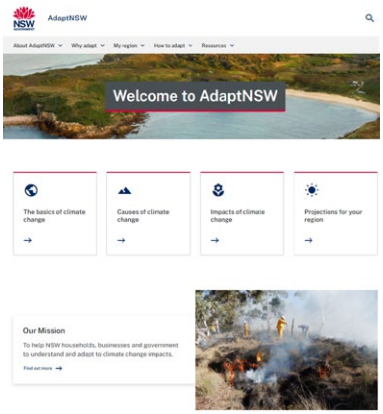
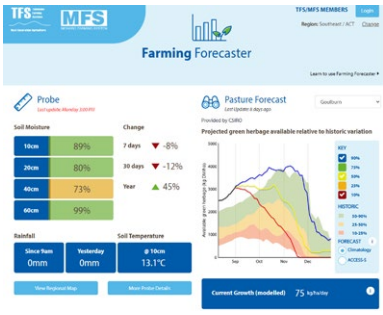
Regional Strategy/Plan	
Wingecarribee 2040 Local Strategic Planning Statement 	The Wingecarribee Local Strategic Planning Statement (LSPS) sets out the 20-year land use vision for the region and provides a long-term planning framework to meet the economic, housing, social and environmental needs of the community. The LSPS outlines six key land use themes including: our environment and sustainability, our rural lands, our economy, our housing, our infrastructure, and our place. Each land use theme includes a set of planning priorities and actions to achieve the communities' vision for the Wingecarribee Shire. The LSPS identifies key water priorities as: • Increase of alternative water supplied to decrease dependency on distributed water • Increase uptake in rainwater tanks and dual reticulation recycled water in new development and alternations and additions to existing developments • Reduced potable water used for non-potable uses. This RDRP identifies water savings actions to support the listed water priorities.
Community Strategic Plan - Wingecarribee 2041 	The Community Strategic Plan - Wingecarribee 2041 (Wingecarribee 2041) is a community-led long-term plan which considers the community's current and future needs and aspirations. Wingecarribee 2041 is divided into five themes: leadership, people, places, environment and economy. Of relevance to the RDRP, Wingecarribee 2041 has the stated overarching goals of: • Goal 2.1: A healthy, happy, active and resilient community • Goal 4.4: A resilient Shire that takes action on climate change
Goulburn Mulwaree Community Strategic Plan 2042 	The Goulburn Mulwaree Community Strategic Plan (CSP) is Informed by community input and sets out a long-term vision for the region to 2042 and identifies priorities and strategies for achieving this. The CSP is currently in the draft community consultation phase. Priorities that are relevant to the RDRP include: C.8 Improve community understanding of ways to care for yourself and others during extreme weather events and natural disasters C.9 Plan for and maintain climate resilient community facilities that cater to community needs in changing conditions C.10 Plan, respond and recover from natural disasters C.11 Maintain a balance between growth, development, environmental protection, and agriculture through sensible planning D.13 Ensure high quality water supply options for the towns in the region D.15 Investigate safe and secure water supply and sewer collection options to accommodate regional growth and drought.

Regional Strategy/Plan	
Southeast NSW Resilience Blueprint 	The South-East NSW Resilience Blueprint (Resilience Blueprint) is a high-level regional framework seeking to address a wide array of natural hazards, including drought, and identify ways in which the South-East NSW region (including GMC and WSC) can mainstream resilience into the everyday activities of its communities. The Resilience Blueprint and its priorities are opportunities that can be explored and taken forward by those with a role in contributing to resilience to embed its consideration as part of day-to-day processes. Different stakeholders can use the resilience directions that follow to filter those that are relevant to different roles, responsibilities, circumstances and needs.

Source: Heritage Goulburn Courthouse, Tahlia Aubusson

Table 3: Literature, Tools and Studies

TOOL	DESCRIPTION
Australian Government's Drought Resilience Adoption and Innovation Hubs 	The Australian Government established a network of drought resilience adoption and innovation hubs in 2021, with the aim of connecting farmers with agricultural experts in their region to harness innovation and adopt new practices. A Southern NSW Innovation Hub (see below) provides local resources within in NSW. However, the broader hubs provide resources and data relating to the experience of drought more broadly across Australia.
Southern NSW Innovation Hub 	Led by Charles Sturt University, the hub seeks to combat drought and form the epicentre of user-driven innovation, research and adoption and facilitate transformational change through the co-design of research, development, extension, adoption and commercialisation activities. The Baselining Drought (2022) study was undertaken to establish a shared understanding of what constitutes drought in the current context across southern and central NSW. The purpose of establishing a drought baseline was to understand what drought means for communities and primary producers of the region as a basis for assessing required changes, barriers to change, and opportunities to improve drought resilience. The baselining study provides valuable insights into drought impacts in the GMC and WSC region.
NSW Government DroughtHub 	An online assistance and information portal for NSW primary producers to prepare for and manage drought.

TOOL	DESCRIPTION
NSW Government AdaptNSW website 	An online assistance and information portal to inform and empower communities, businesses, households and government to adapt to climate change.
Farming Forecaster 	Managed by a consortium comprised of Monaro Farming Systems, South East / ACT Local Land Services, Tablelands Farming Systems and Bookham Agricultural Bureau, Farming Forecaster is an online dashboard providing soil moisture content and landscape health data captured from regional soil moisture probe networks.

While the wealth of knowledge regarding drought and drought management is extensive, perhaps the largest knowledge base is held by our Aboriginal peoples. This knowledge base is recognised in other elements of natural resource planning within NSW, including the establishment of the Aboriginal Water Programs, focussed on establishing a future where water for Aboriginal people is embedded in water planning and management in NSW to improve access to, and ownership of, water for cultural, spiritual, social, environmental and economic benefit to Aboriginal communities. A key element of this program is the establishment of Regional Aboriginal Water Committees for Aboriginal people across NSW to provide advice on water planning and management, as well the "Yarning with Communities" and engagement program for water resources at a local level. The potential to tap this knowledge bank in the specific context of drought resilience has not been fully explored at this point in time.

WHAT DO WE MEAN BY DROUGHT AND RESILIENCE?

What is drought?

There is no universal definition of drought, nor is there a single type of drought. At a high-level, the Bureau of Meteorology (BoM) defines drought as a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use[1] and states *Drought is not simply low rainfall; if it was, much of inland Australia would be in almost perpetual drought.*

Each drought period is accompanied by a range of factors that impact the environment, people, and the economy in different ways. For this reason, drought is measured in different ways and at different timescales:

- **Meteorological drought** occurs when there is a deficiency in current rainfall compared to the long-term seasonal average (negative deviation from the mean).
- **Agricultural drought** occurs when there is a moisture deficit in the soil during critical growing seasons or there is a long-term impact on the producer's capacity to produce feed for livestock.
- **Hydrological drought** occurs when there a prolonged moisture deficit leading to shortages in surface water, groundwater and depleted dam and reservoir levels.
- **Socio-economic drought** is the combined impacts of insufficient water supply on the flow of economic goods and human wellbeing.
- **Snap droughts or flash droughts** occur when there is an acute decline in rainfall coupled with a rapid spike in temperatures causing soils to dry out quickly.

This RDRP does not adopt a strict single definition of drought when referring to abnormal periods of dryness, rather it seeks to adopt a broad concept of drought which incorporates all the measures above to examine the different pathways by which an abnormally dry period can impact on society, the economy, and the environment.

1 http://www.bom.gov.au/climate/drought

Source: John Carnemolla, iStock, 2024

What is resilience?

As with “drought”, there are similarly many potential definitions of resilience. For the purposes of this RDRP, the United Nations Officer for Disaster Risk Reduction (UNDRR, 2022) definition of resilience has been adopted:

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.

This definition highlights the multifaceted components of drought resilience. This is in accordance with standard resilience frameworks that provide a conceptual framework for considering the various indicators contributing to drought resilience or, conversely, drought vulnerability. The UN (2019) multiple dimensions model (Figure 3) provides one such model, identifying vulnerability / resilience to drought as a function of two main elements:

- The adaptive capacity
- The impact of drought

A resilient region is one that has high adaptive capacity. It has the capacity to resist, absorb, accommodate, recover, transform and thrive through a range of drought impacts.

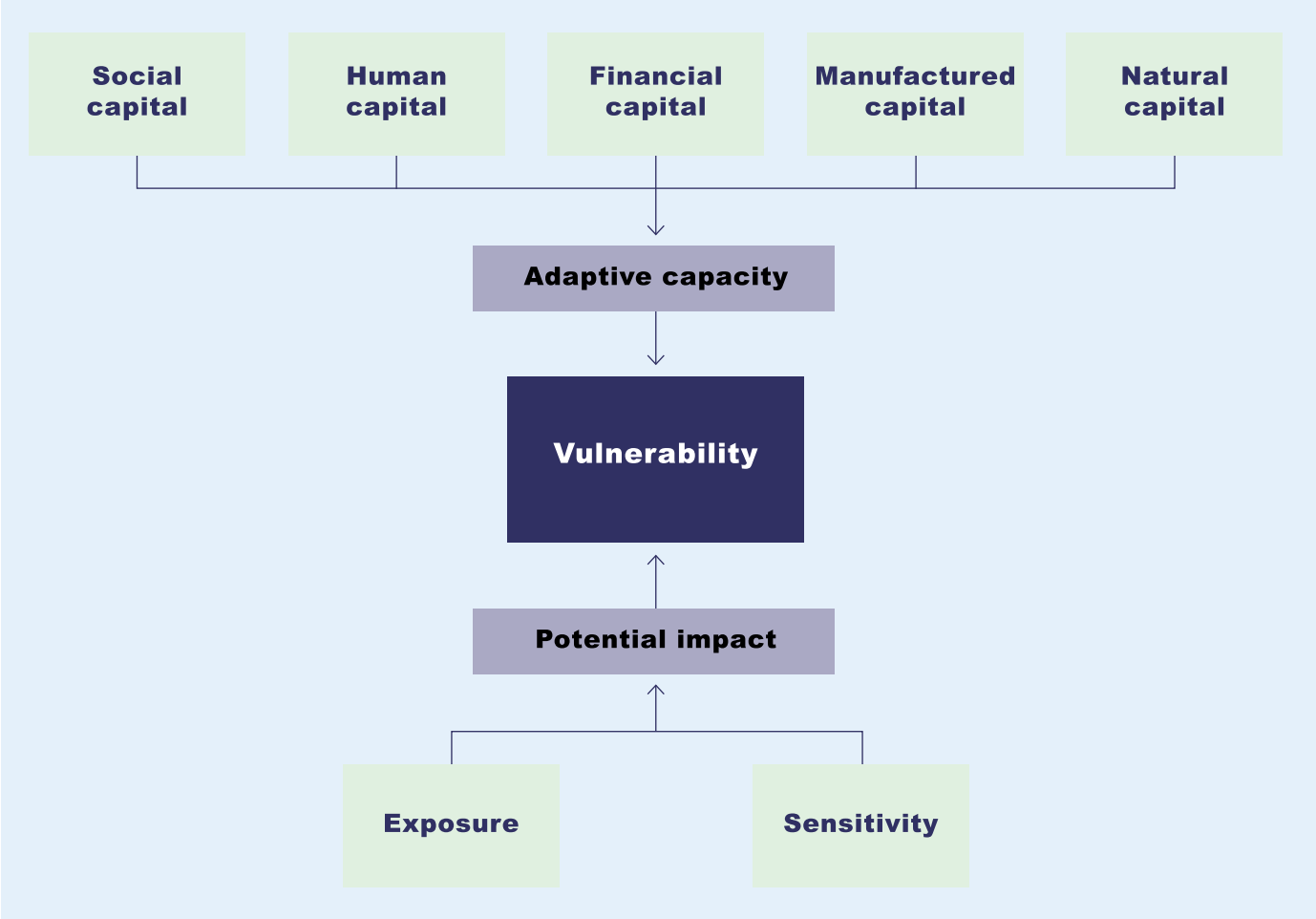


Figure 3: The multiple dimensions of drought vulnerability (Source: UN, 2019)

Adaptive Capacity

Adaptive capacity is a critical component of understanding the potential resilience of the region because it considers and represents the resources available to adapt to and absorb the impacts of drought (ABARES, 2022). The UN (2019) describes these resources as various forms of capital:

- Social capital – factors that impact social connectedness (such as government, access to services, employment and income distribution)
- Human capital – influences on the productivity of people and labour (such as education and health)
- Financial capital – access to income, savings and credit (such as income and debt level)
- Manufactured capital – infrastructure and the built environment
- Natural capital – land, water and biological resources of the region.

Essentially, areas with greater capital resources are likely to have higher adaptive capacity as the resources are available to either moderate direct impacts or redistribute capital as needed (i.e. a person with a larger water tank is less likely to worry about a short dry spell).

This RDRP applies a similar consolidated lens, viewing adaptive capacity across three inter-related characteristics of our region:

- Economic adaptive capacity – The ability of the economy to absorb the economic impact of shocks and stressors without change the economic status or outcomes (i.e. elements of financial capital, manufactured capital, and social capital)
- Environmental adaptive capacity – The ability of the natural environment to cope with a diverse range of shocks and stressors while maintaining natural processes and ecosystem services (i.e. natural capital, elements of manufactured capital)
- Social adaptive capacity – The ability of human society to cope with a diverse range of shocks and stressors while maintaining existing social and community functions (i.e. social capital, human capital)

In contrast to many other natural hazards, drought typically represents a chronic stressor (i.e. a long-term, slow burning issue that can incrementally overwhelm the adaptive capacity of a region) rather than a shock (i.e. a sudden large-scale event that disrupts the economic, social and environmental systems). Based on the engagement activities undertaken, the developing stressors within the region are typically associated with diminishing productivity, diminishing financial reserves and income, diminishing water and feed supplies, diminishing emotional reserves. The shocks of drought are typically indirect in nature and associated with joint probabilities of other hazards (e.g. bushfire, heatwaves and flood). However, community engagement did identify some direct drought shocks arising (e.g. mass sudden vegetation die-back or fish kills) where certain viability trigger levels are reached. The adaptive capacity of a region needs to be able to handle both shocks and stressors for the region to be considered resilient.

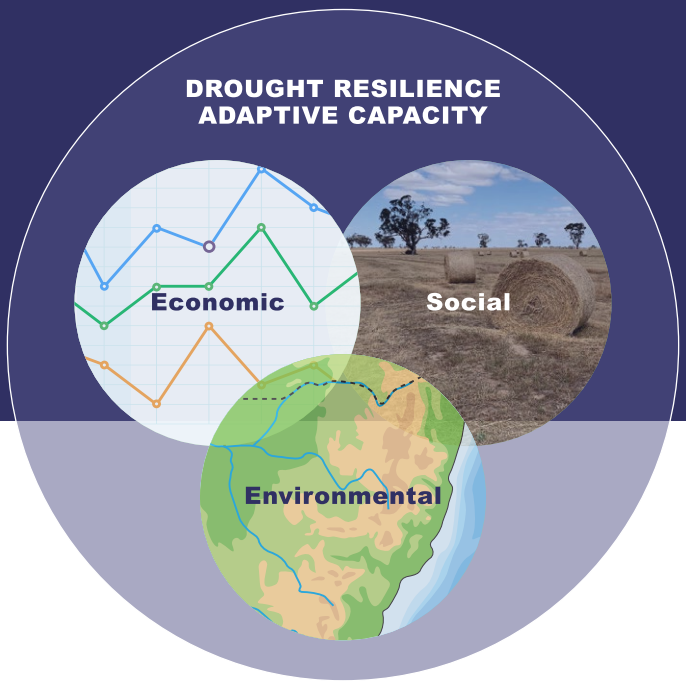


Figure 4: Components of drought adaptive capacity

Absorptive and Transformative capacity

While adaptive capacity is the focus of the UN (2019) framework, the resilience dimensions of absorptive capacity and transformative capacity will also contribute to the resilience of the Goulburn Mulwaree and Wingecarribee Shire Communities. It is important to acknowledge that resilience actions will not always relate to capacity to adapt (availability of capital resources) but also the capacity to absorb and transform, and that all three resilience dimensions will contribute to a systems-based approach to increasing drought resilience.

Oxfam (2017) describes absorptive and adaptive capacity as:

- Absorptive capacity – is the capacity to 'bounce back' from shocks and stressors such as extreme weather events. Absorptive capacity involves the capacity of a community to anticipate, plan for, and cope with shocks and stressors

- Transformative capacity – relates to fundamental changes in structures that cause vulnerability to a shock or stressor, as well as the mechanisms for sharing risk amongst a community so that marginalised members are not inequitably impacted. Transformative capacity typically relates to long-term structural changes and ongoing changes.

Drought impact

The consequence of a drought upon a community or region can be divided into two elements:

- Exposure – the exposure of the region to drought conditions (e.g. how common an occurrence is drought within our region and will this change into the future). A brief history of our regions previous exposure to drought and potential drought future is provided below.

- Sensitivity – the responsiveness of a region to a drought when it occurs (e.g. a house that only has a small water tank may quickly and severely notice a reduction in rainfall). The challenge with drought is that the impact pathways are numerous and complex. A description of the major impact pathways and associated sensitivities for our region is provided below.

Typically, the **exposure** of a community to drought hazard and the **sensitivity** of a community to drought hazard are used to describe the potential for adverse impacts to arise as result of drought. Against such impacts, the **adaptive capacity** of the community can be overlain to manage and mitigate these impacts, revealing ultimately the true resilience/vulnerability of the community to drought.

Applying the theory

For the purpose of this RDRP a simplified exploration of adaptive capacity and drought impacts was undertaken through literature review and community engagement, seeking to:

- Identify exposure and sensitivity to drought by understanding the lived experience of community members and evaluating historic data sources to reveal the direct impacts of drought across the region's environmental, economic and social systems

- Identify the adaptive capacity of the region through assessment of key indicators and community sentiment as to the region's strengths and weaknesses regarding preparation, response and recovery to drought.

Combining these two elements, the RDRP describes the environmental, economic and social resilience of our region and recommends a suite of actions to further strengthen this resilience.

OUR REGION AND OUR DROUGHTS

Source: Tarago landscape, Goulburn Mulwaree Council, 2024

Like much of rural Australia, the Goulburn Mulwaree and Wingecarribee Shire region has a long relationship with drought. The agricultural foundations of the area go together with living through climatic challenges of all types.

The region has experienced several drought periods since European settlement, and many hundreds prior to it. The Bureau of Meteorology records significant drought periods affecting the region over the last century as:

- The Federation Drought (1895 to 1902)
- The 1914 to 1915 Drought
- The World War II Drought (1938 to 1945)
- The 1965 to 1968 Drought
- The 1982 to 1983 Drought
- The Millennium Drought (1997 to 2009)
- The 2017 to 2019 Drought.

This is roughly one significant drought every 20 years. To assess the current drought resilience of the region, the environmental, social and economic impacts of the Millennium Drought and 2017 to 2019 Drought have been reviewed, while noting the broader definition of drought being considered as part of the RDRP. These two droughts represent those for which the most robust data sets exist.

Both these droughts were followed by devastating bushfires, with the 2009 fires following the Millennium Drought and the 2019/2020 bushfires following the 2017-2019 drought.

Source: Streetscape, Bundanoon, Destination NSW

The Millennium Drought

The Millennium Drought occurred between 1997 and 2009, severely impacting the southeast and southwest of the continent. A defining feature of the Millennium Drought was the prolonged periods without significant rainfall episodes during the cooler seasons (Figure 5) coupled with above average summer temperatures, particularly at the tail end of drought between 2005 - 2007. The combination of prolonged dryness coupled with above average summer temperatures severely depleted major water storages, devastated cropping regions of NSW and Queensland and led to the introduction of extreme water restrictions across the towns and cities of eastern Australia.

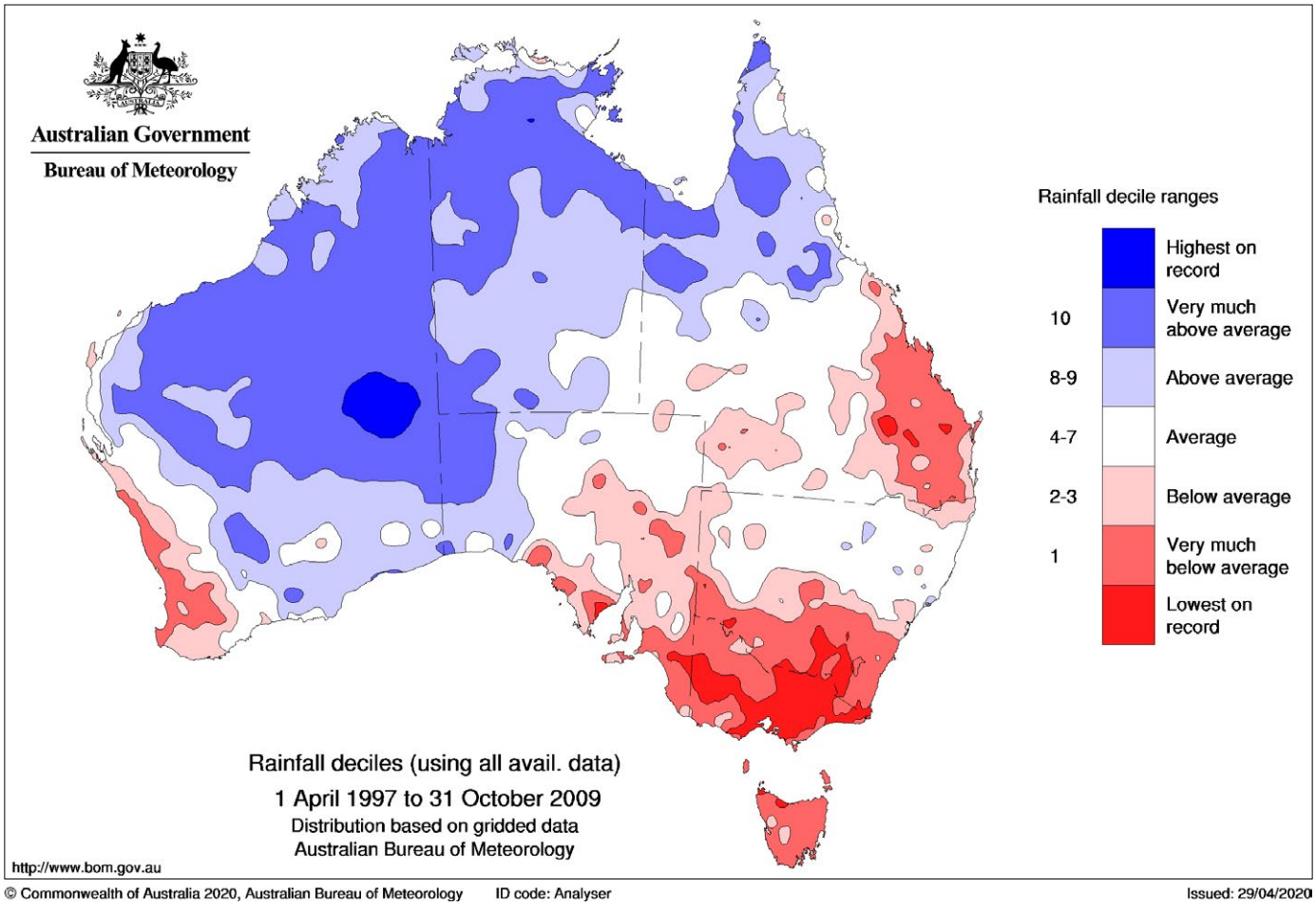


Figure 5: Millennium Drought Rain Deciles (Source: BOM, 2020)

The 2017 to 2019 Drought

The 2017 to 2019 Drought was preceded by a period of high rainfall over the winter and spring of 2016 followed by a sharp decline in 2017 through to 2019. The drop in rainfall was particularly acute within the Murray Darling Basin region, where the 36-month period between 2017 to 2019 was the driest on record. The 2017 to 2019 Drought was characterised by intense dry conditions in the cool seasons, followed by moderate rainfall in the October-December period in 2017 and 2018. 2019 was particularly dry, with the extreme cool season dryness extending into the warmer months of October – December. Figure 6 shows the intense dryness of the April-September period (right) within the 36-month drought period (left). It can be observed that the rain decile ranges indicate that the April-September period was the driest on record in the region.

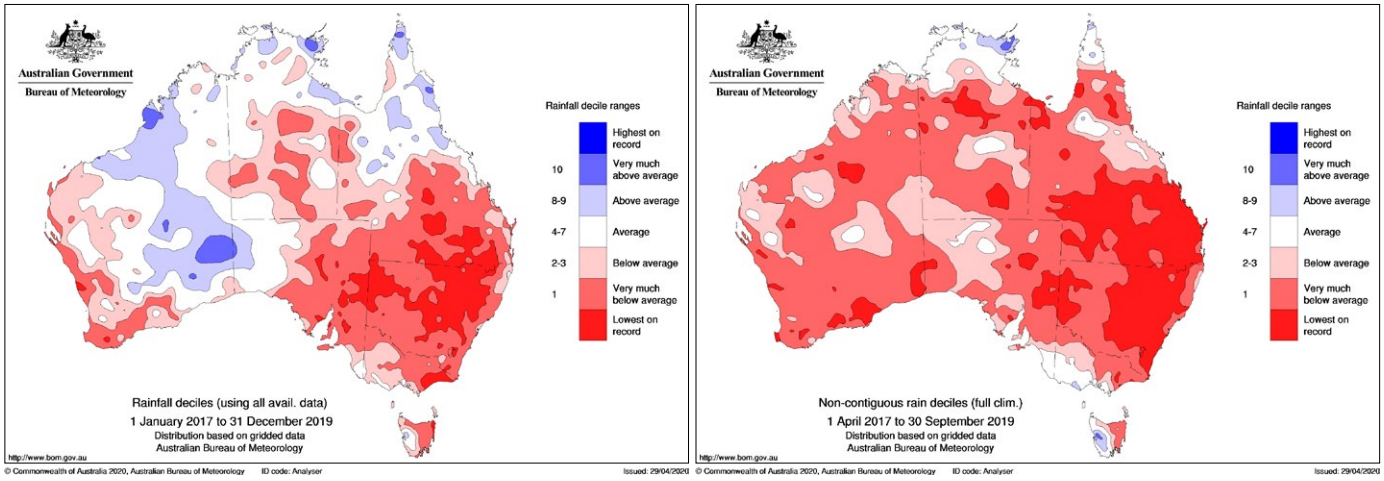


Figure 6: 2017-2019 Rain Deciles - (L) average annual rainfall (R) average rainfall April - September (Source: BoM 2019)

LIVED EXPERIENCE

The impact of these events for our region were extensive and diverse. A more detailed assessment of the impacts of drought against key indicators is discussed in the assessment of Adaptive Capacity, however, the following aspects highlighted by local communities and media at the time provide a snapshot of the breadth of impact pathways arising:

- **Environmental:**
  - Increased death of wombats in the region because of increased mange spread as wombats are forced to congregate closer together to access feed
  - Loss of habitat and water led to migration of hundreds of thousands of bird species away from the region, affecting local pollination while also causing issues for areas receiving new bird species
  - No soil moisture means propagation of seeds is reduced and reduced ecological growth and diversity
  - Higher probability of invasive weed incursions due to absence of climate limitations on some species capacity to survive
  - Interruption of community volunteer native tree planting programs.

- **Economic:**
  - Significant farm operational cost increases to cover feed and water
  - Increased cattle yard sales as farmers look to reduce stock in response to higher cost of feed and water
  - Loss of investment in breeding and adaption of livestock to local conditions when farms destock
  - Local stock feed growth not possible due to lack of soil moisture and high costs of carting water
  - Coming out of drought, farmers are faced with uncertainty and limited funds as to whether to invest in restocking strategies or to seek alternate income opportunities
  - Landowners recovering from drought may feel the need to invest in protection of natural resources and soil reserves which help recovery after drought, but the economic returns are likely only to be felt 20 years later after the next drought.

- **Economic / Social**
  - Cancellation of annual events such as the Goulburn All-Breed bull sale which act as broader community-shaping activities
  - During the Millennium Drought the Goulburn municipal water supply, serving over 20,000 people reached critically low levels with less than 12 months of supply remaining
  - City of Goulburn spent more than 2 years on the top level of water restrictions in the Millennium Drought, forcing behavioural changes and business operational changes
  - Farms and agricultural companies reduce investment on social activities (e.g. removing sponsorship of local sporting clubs) leading to reduced community activities and cohesiveness.

- **Social**
  - Water restriction changing the culture regarding household water use also leading to lower sanitation and hygiene outcomes and social tensions between those who follow the restriction and those who do not
  - Negative community sentiment towards other regions due to water reserves being utilised in other regions, such as Wingecarribee Reservoir used to augment water supply to Greater Sydney and Shoalhaven
  - Closure of recreation facilities such as local swimming pools and sporting fields reduces opportunities for social interaction
  - Loss of established farms leading to secondary impacts on town businesses, employment and schools
  - Emotional distress at loss of crops and gardens due to insufficient watering
  - Emotional distress at lax water attitudes in neighbouring LGAs and regions where available water reserves were not at risk to the same extent
  - Farmers working 7 days a week sourcing feed and water, with associated high stress and fatigue and limited time for families or recreation.

While the array of negative impacts is substantial, the drought also led to the creation of many initiatives and actions, from both within the community and government, that strengthened the community identity and bonds of our region, including:

- Establishment of Mayoral Emergency Relief Funds, through which business and individuals contributed to support their affected farmers
- Wingecarribee Shire Council formally supported farmers through the deferral of rates payments
- Resilience Ready Expo's coordinated local community associations
- The Country Women's Association playing an active role in coordinating community events and providing support and connection to households during drought
- Goulburn Mulwaree Council initiative providing farmers with 450 bales of hay delivered by the Rapid Relief Team Goulburn
- Establishment of The Big Dry Regional Services Guide providing online information for those seeking financial, emotional, and health support services across drought affected areas
- Goulburn Mulwaree Council coordinating water carting services for residents not on mains water
- Expansion of the Australian Government's Rural Financial Counsellors free services
- Establishment of the NSW Government's Farm Tracker system, enabling farmers to access timely support information to aid decision making
- Government introducing low interest loans to increase feed and water storage to manage dry conditions.

FUTURE DROUGHT PROJECTIONS AND IMPACTS

Current climate change forecasts suggest that drought conditions are expected to worsen across the broader south-east NSW region. While both Goulburn Mulwaree and Wingecarribee may not be as exposed as other more inland LGAs, both the frequency and magnitude of drought is anticipated to increase. This will be driven by:

- Long term reduced average annual precipitation (Figure 7)

- Long term increases in summer and spring temperatures, leading to increased evapotranspiration and reduced soil moisture (Figure 8).

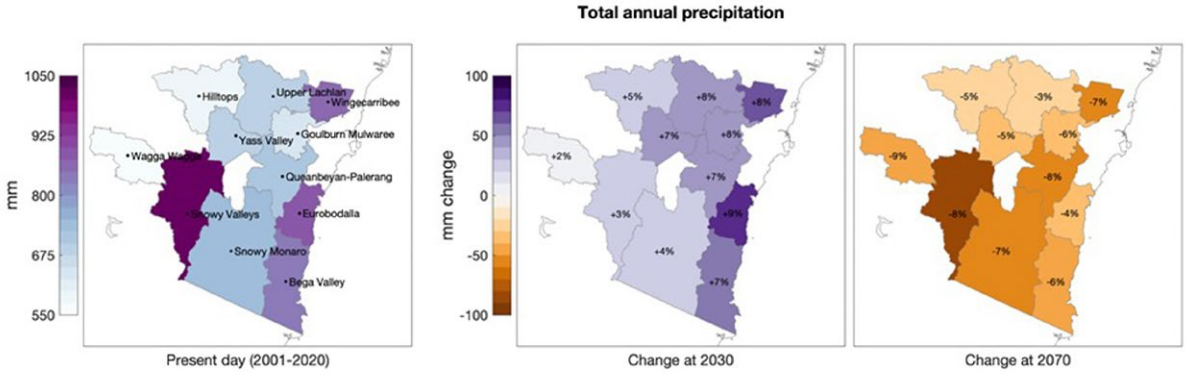


Figure 7: Change in annual mean precipitation (adapted from the South East NSW Resilience Blueprint (CRJO, 2022)

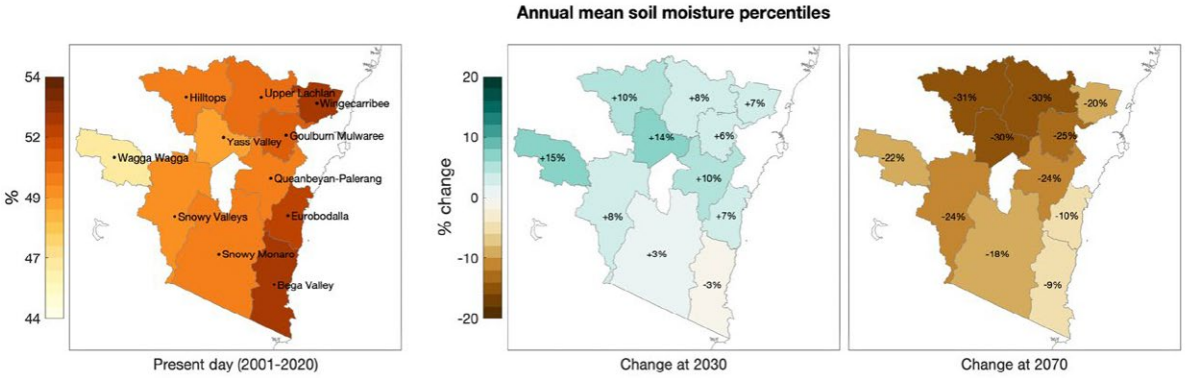


Figure 8: Change in annual mean soil moisture percentiles (adapted from the South East NSW Resilience Blueprint (CRJO, 2022)

The NSW Office of Environment and Heritage South East and Tablelands Climate change snapshot forecasts:

- Maximum summer and spring temperatures are projected to increase by 2.4°C by 2070, with the greatest increases in temperatures likely to be experienced away from the coast (Figure 9)

- Minimum temperatures are expected to increase by 2.0°C by 2070

- Spring rainfall is projected to decrease, while autumn and summer rainfall is projected to increase. Increased warm weather rainfall is likely to mean that water storages and soil moisture will be adversely impacted by evaporation, compounding the impacts of lower cool weather rainfall

- The region, on average, is projected to experience an extra three days above 35°C per year by 2070, while the area to west of Goulburn is projected to experience up to 30 additional days above 35°C by 2070 (Figure 10).

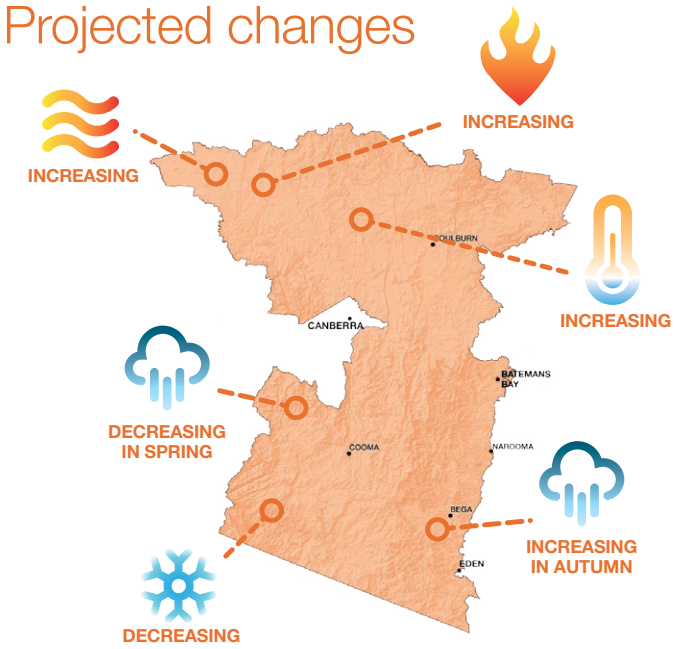


Figure 9: South East Climate Change Snapshot (Source: NSW OEH, 2014)

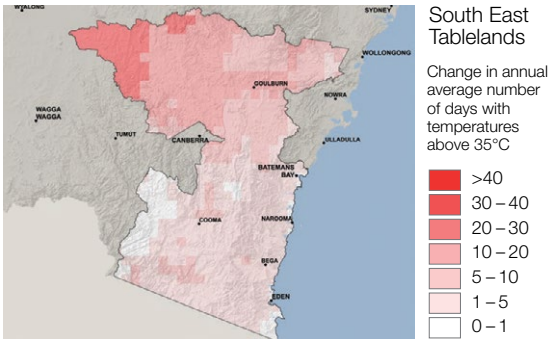


Figure 10: Projected changes in number of days with max temperature above 35°C (Source: NSW OEH, 2014)

Without appropriate intervention and planning, the drought impacts currently incurred are likely to significantly worsen. Figure 11 suggests that by 2070, Wingecarribee LGA will face a 20% increase in the likelihood of drought by 2070, with the Goulburn Mulwaree LGA will face a 33% increase.

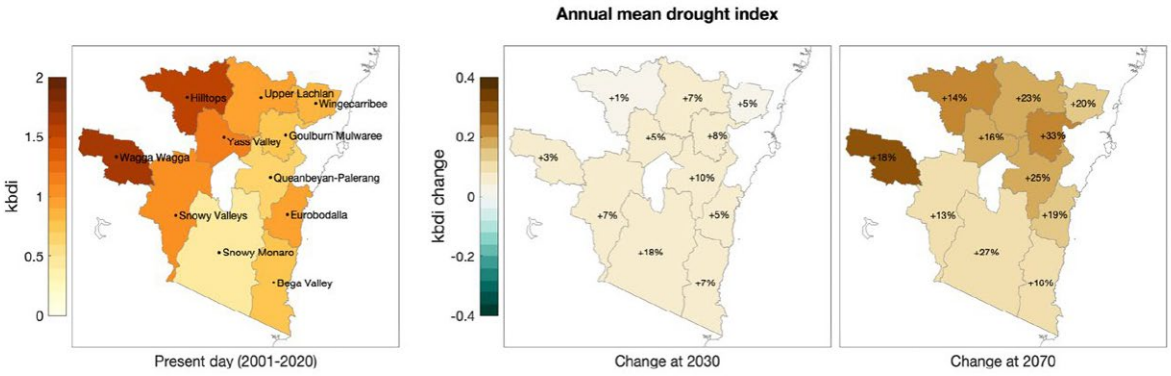


Figure 11: Change in annual mean drought index (Keetch-Byram index values) (adapted from the South East NSW Resilience Blueprint (CRJO, 2022)

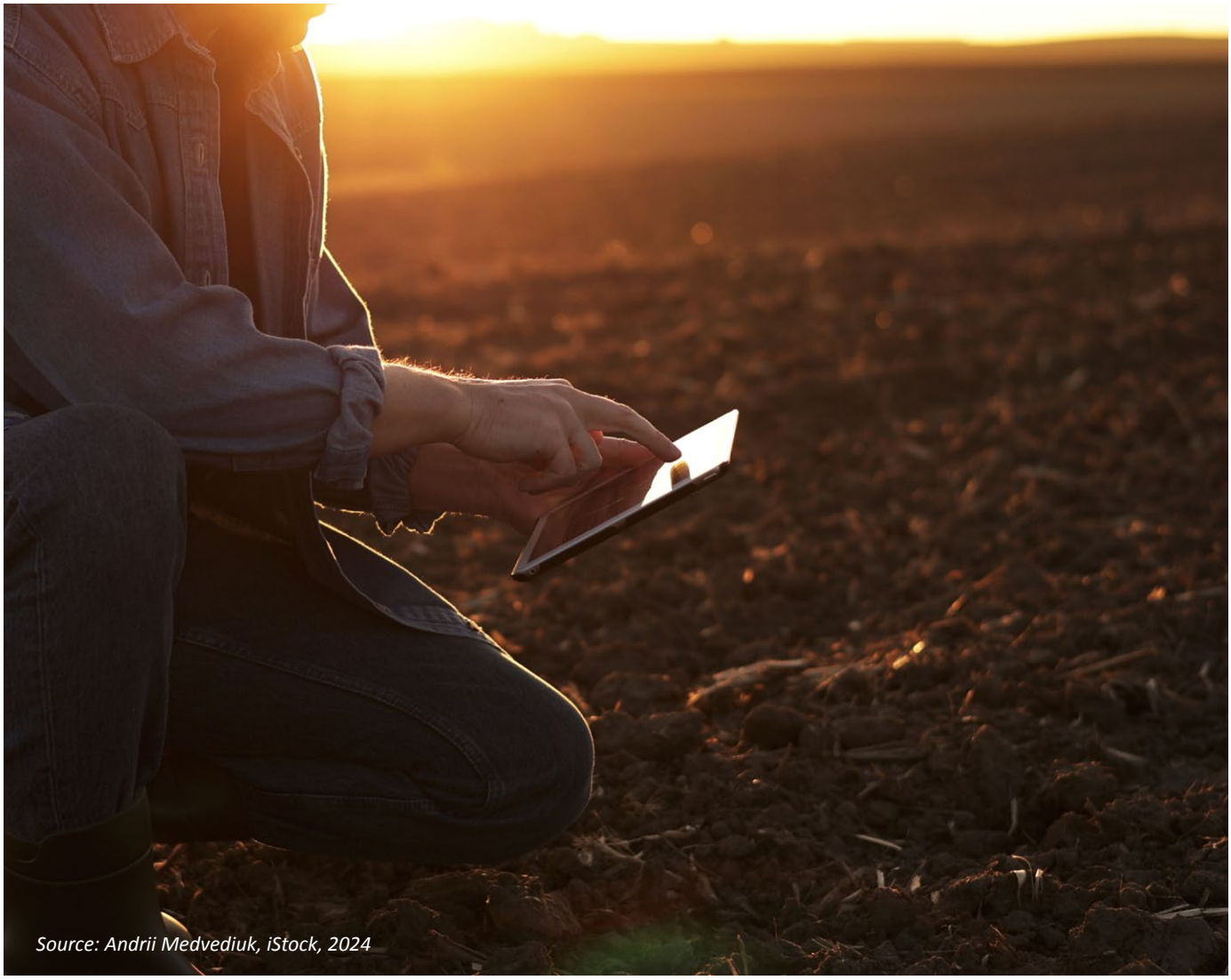
OUR DROUGHT RESILIENCE

Based on the results of the community engagement undertaken, impacts and effects of previous drought and assessment of key indicators, the RDRP undertook a LGA specific evaluation of the Adaptive Capacity, Exposure and Sensitivity to drought.

ADAPTIVE CAPACITY

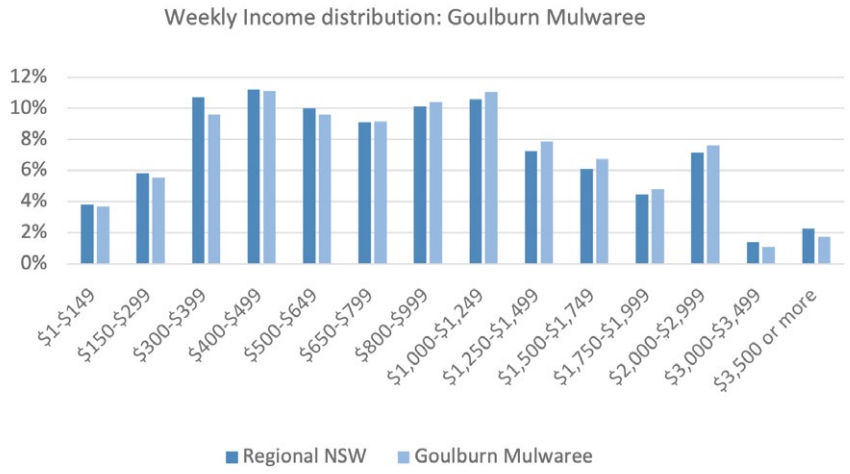
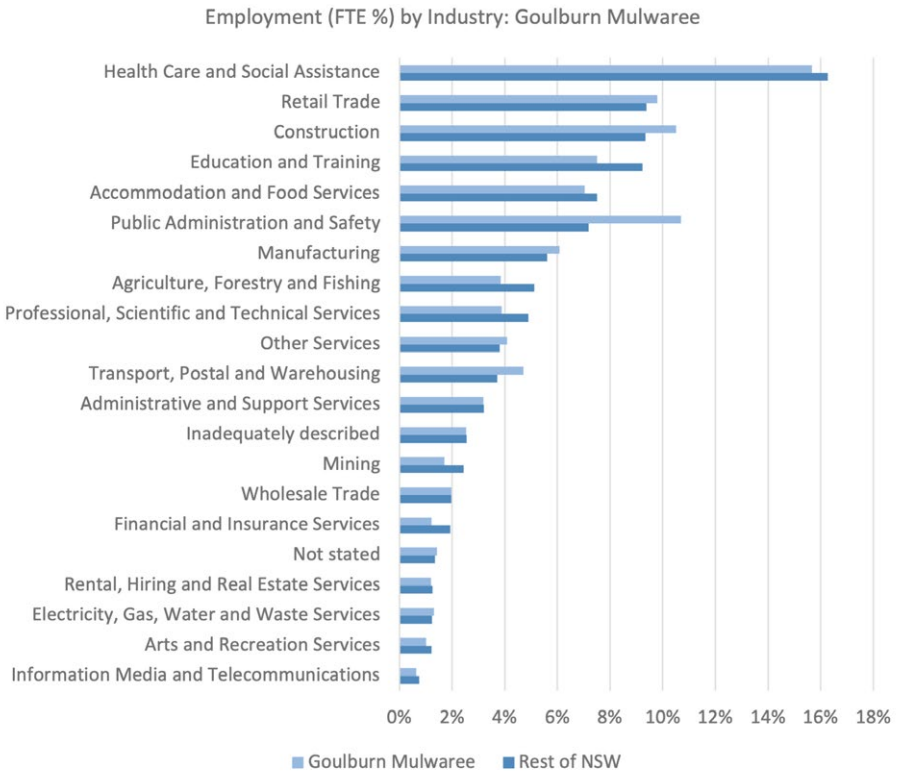
The adaptive capacity dimensions of Goulburn Mulwaree are summarised in Table 4, and Wingecarribee Shire in Table 5.

Overall, the two LGAs appear to have relatively strong capital resources that could contribute to the adaptive capacity of the region. The two LGAs display, at a high level, a relatively healthy and educated population with highly diversified economies. The high proportion of land use (natural capital) for agricultural purposes appears to be the clear impact pathway for drought conditions to affect the two LGAs socially, economically, and environmentally. For both LGAs, agricultural activities represent the dominant land use.



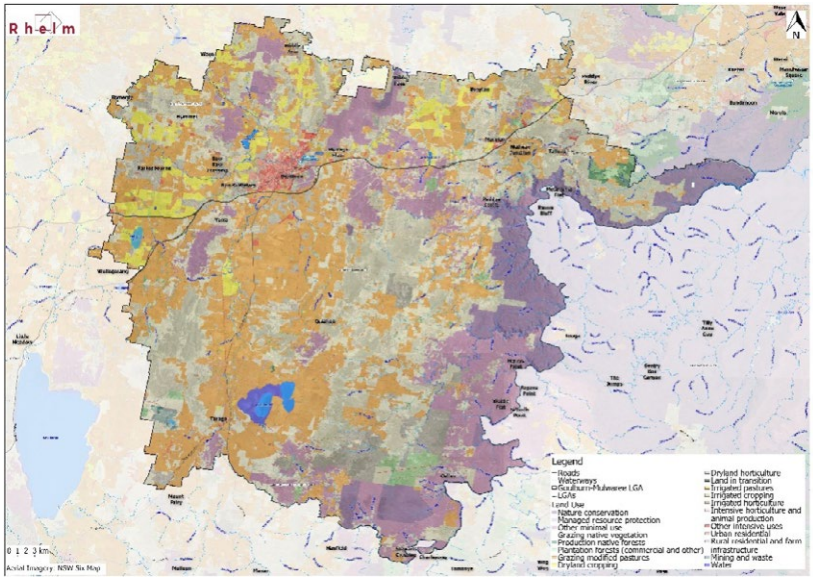
Source: Andrii Medvediuk, iStock, 2024

Table 4: Adaptive capacity dimensions of Goulburn Mulwaree Council (Source: Informed Decisions, Rhelm)

DIMENSION	INDICATOR
Social capital:	
Income distribution: Income distribution is in line with Regional NSW, with slightly higher proportion of population in medium-higher income ranges than the Regional NSW average. From a social capital perspective, this indicates there is not a high proportion of income disparity in the region.	
Employment: Current unemployment rate of 3.2%, diversified employment with low dependency on agriculture sector for job creation. The economic mix is in line with Regional NSW average. This mix of employment indicates there is a not a strong reliance on one sector of the economy for job creation.	

Natural capital

Land use: Goulburn Mulwaree land use is characterised by a high proportion dryland grazing (brown) and dryland cropping (yellow), with some nature conservation land on fringes (purples)



Water supply: The LGA has a diversified water supply however all are likely to become strained during drought periods.

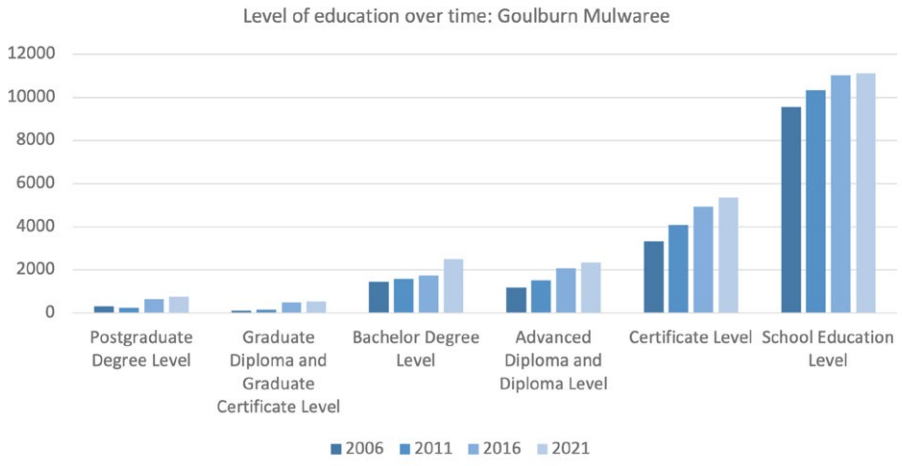
There are three major water storages for the Goulburn Mulwaree region are:

- The Pejar Dam (9,000ML at capacity) on the Wollondilly River
- The Sooley Dam (4,140ML at capacity) on the Bumana Creek
- Rossi Weir (330ML) downstream on the Wollondilly River

The town of Goulburn is also able to source water from the Wingecarribee Reservoir via the Highland Source Pipeline.

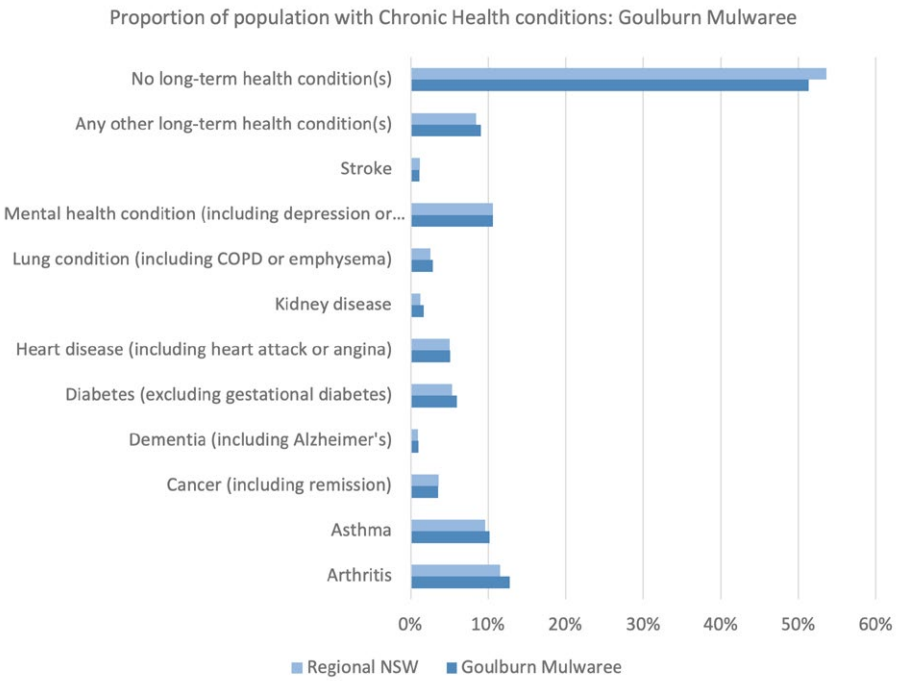
Human Capital

Education level: All levels of education have increased over the last 20-years, representative of the changing mix of economic activity over time. A higher proportion of educated population is likely to strengthen human capital due to increased employment opportunities.

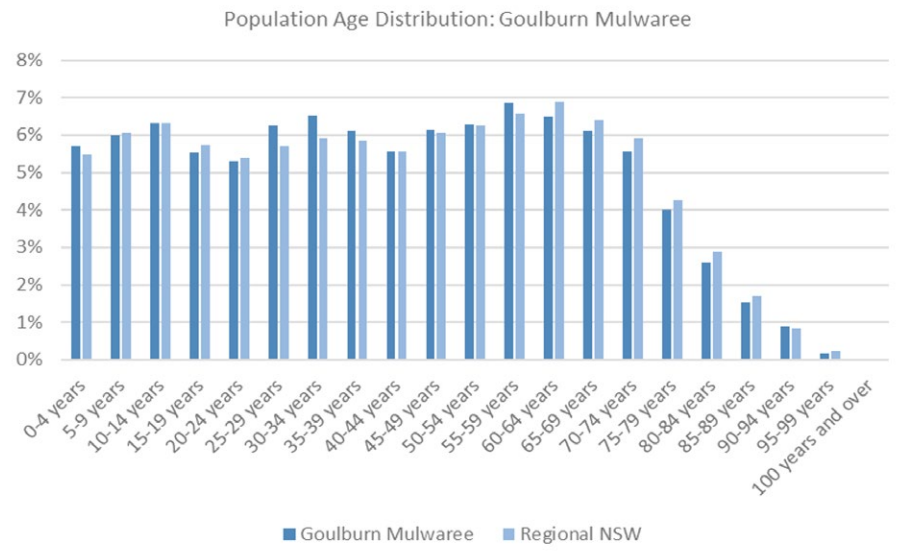


Human Capital

Health and disease prevalence: around 50% of the population report no long-term health conditions, while the number of people reporting a mental health condition is in line with the Regional NSW average (1 in 10).

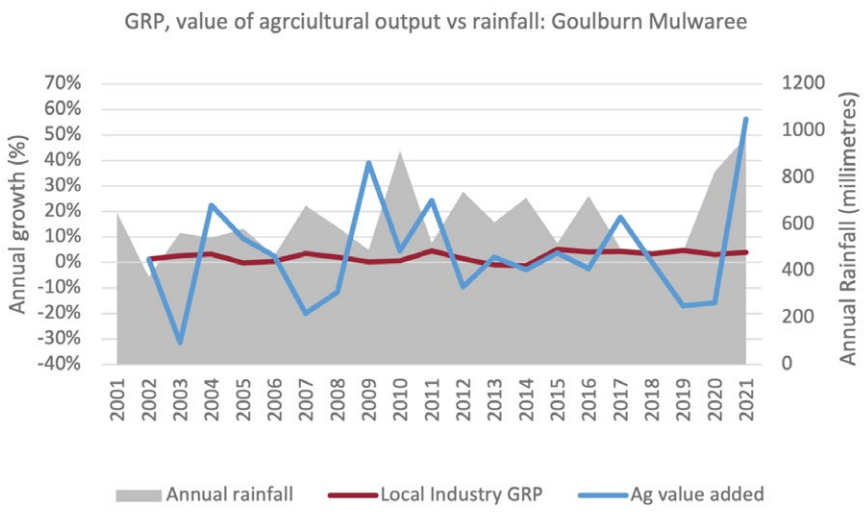


Population age distribution: The population distribution of Goulburn Mulwaree is in line with the Regional NSW average, with a slightly higher proportion of the population in the 55-75 age range and slightly lower proportion in the 25-45 age range.



Economic Capital

Gross Regional Product: GRP growth is observed to be stable over time, and not to be sensitive to water intensive industries such as agriculture



Value add by industry: Health care and social services and construction are highest value industries. The high value of non-agriculture output provides some buffering of the economy during drought periods.

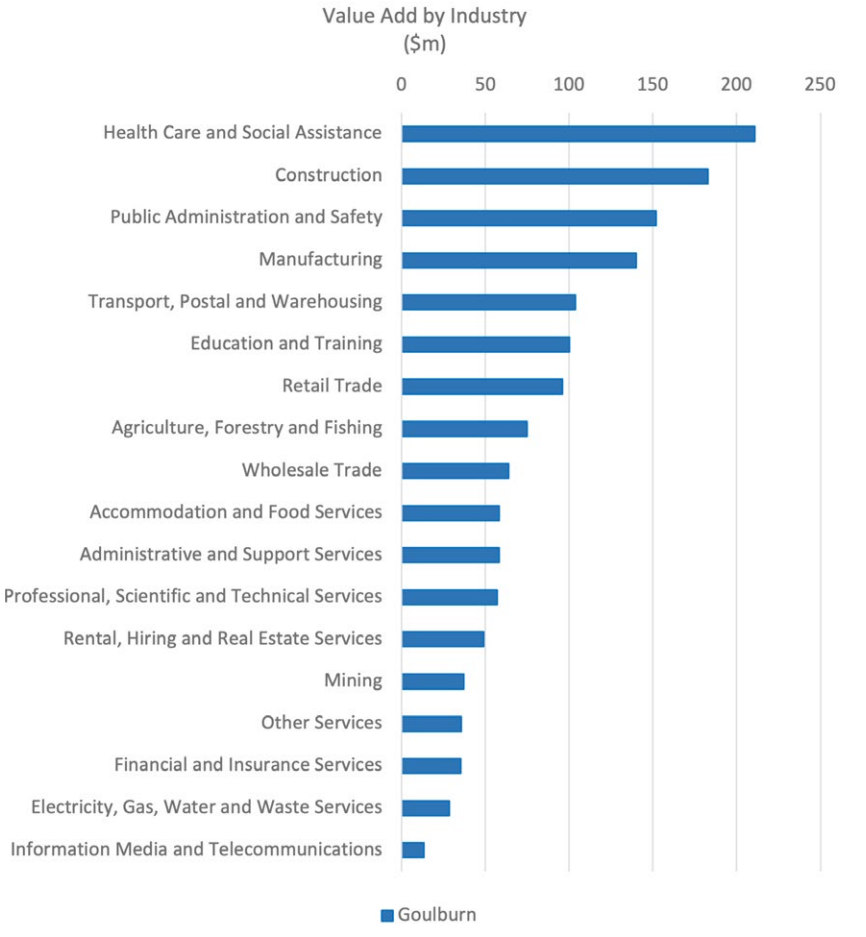
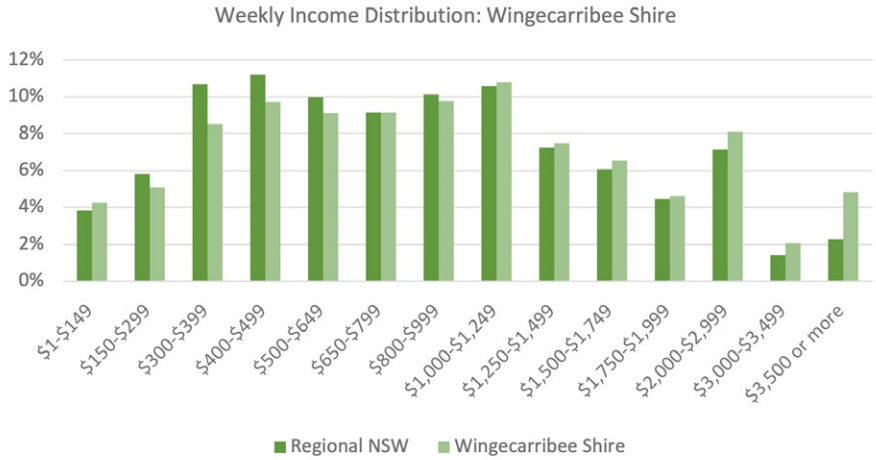
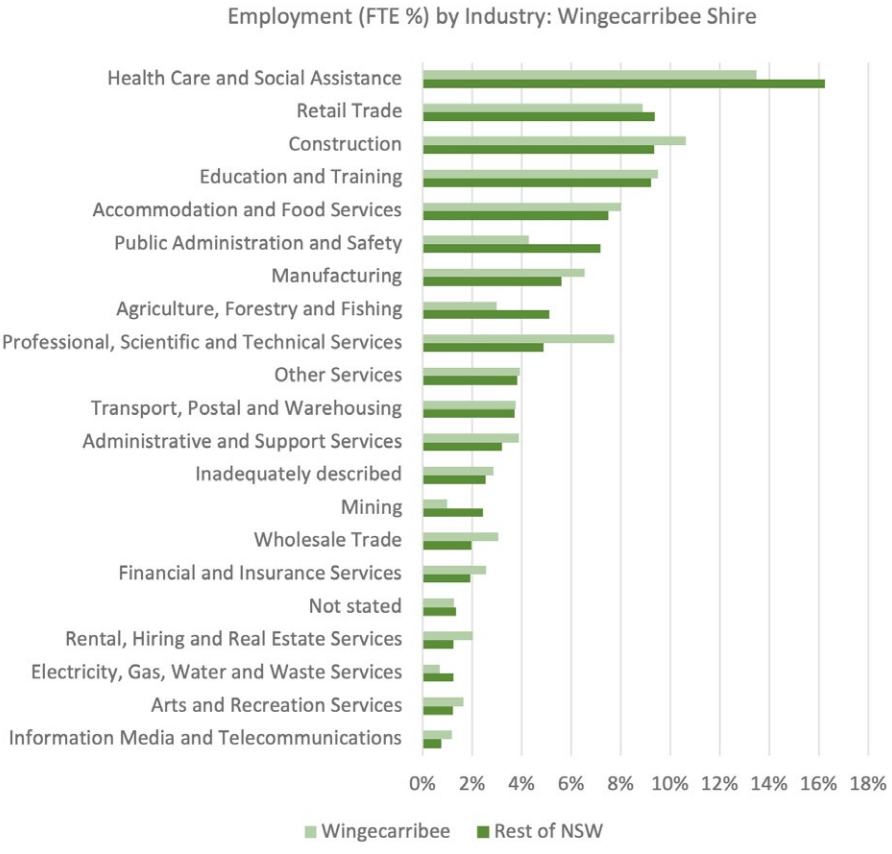
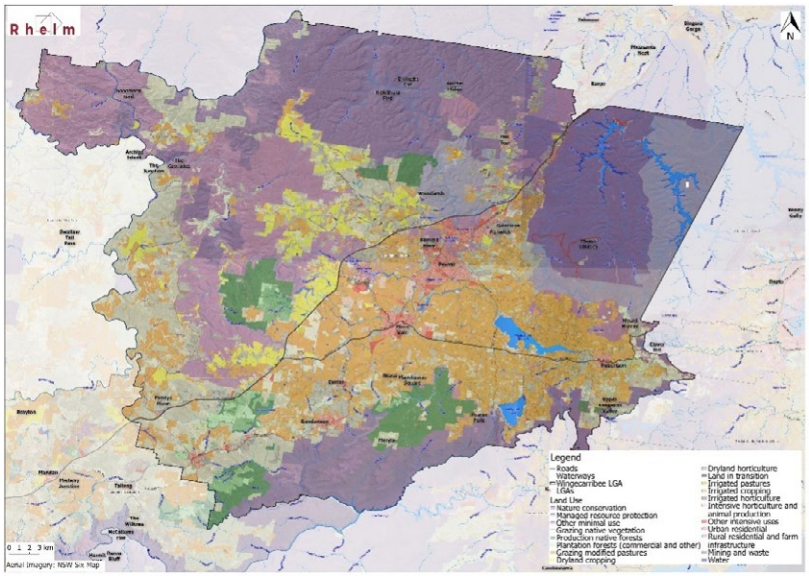


Table 5: Adaptive capacity dimensions of Wingecarribee Shire (Source Informed Decisions, Rhelm)

DIMENSION	INDICATOR
Social capital:	
Income distribution: Wingecarribee Shire has a relatively higher proportion of middle-to-high-income earners than the Regional NSW average, and a relatively low proportion of low-income earners.	
Employment: The current unemployment rate is 3.2%, with diversified employment and low dependency on agriculture sector for job creation.	

Natural capital

Land use: Wingecarribee Shire land use is characterised by a high proportion of natural conservation land (purple), and dryland grazing (brown)



Water Supply

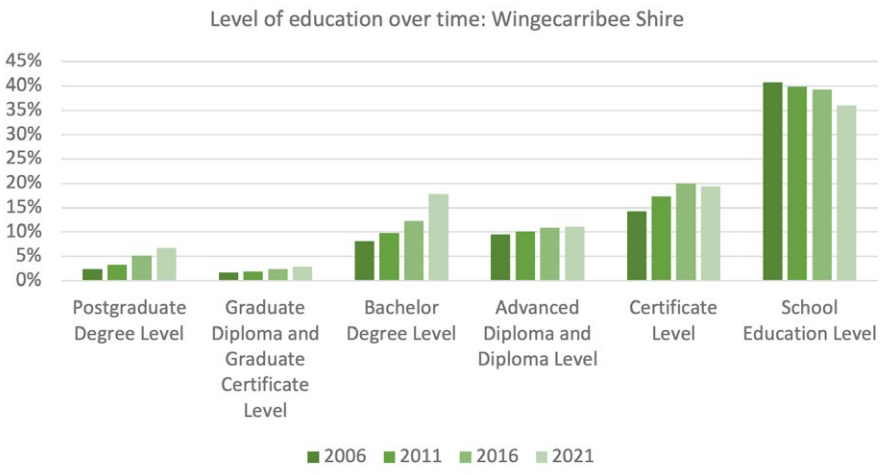
The Wingecarribee Reservoir may be likely to come under strain during drought conditions, meaning the region may be exposed to water security issues.

The Wingecarribee Reservoir, located on the Wingecarribee River, about 15 km southeast of Bowral is the main source of water for communities within the Wingecarribee Shire. The Wingecarribee Reservoir has a capacity of around 30,000 ML and is part of the Shoalhaven Scheme, which during drought conditions is drawn on to augment Sydney and Illawarra water supplies.

Under the Greater Sydney Water Sharing Plan, water supply to Wingecarribee Shire can be augmented from Tallowa Dam under limited conditions (access to water below -1 metre storage levels is not permitted).

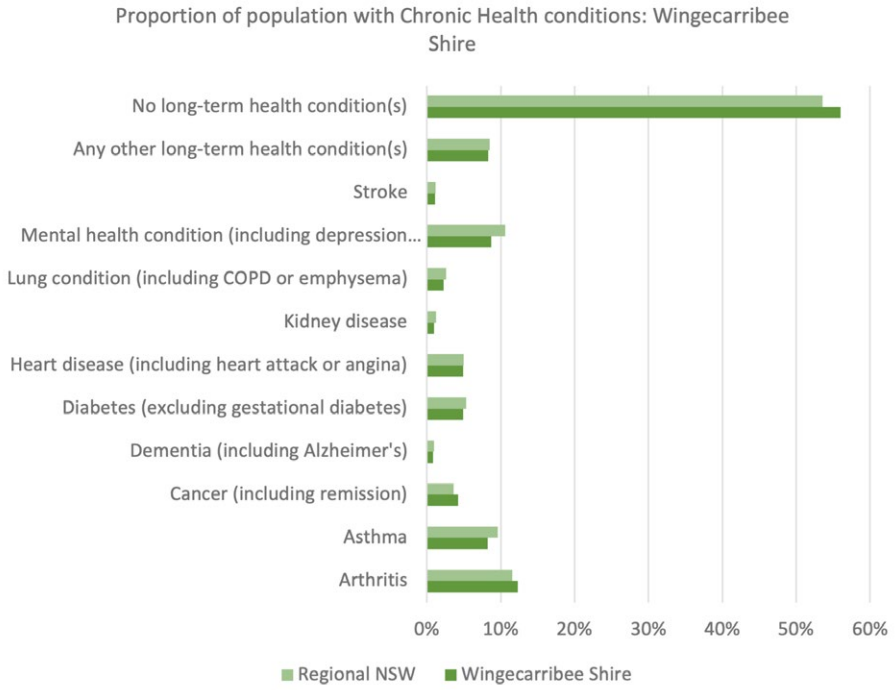
Human Capital

Education level: Higher education levels have increased over the last 20-years, representative of changing demographics. Higher education levels may enhance adaptive capacity due to increased employment opportunities.

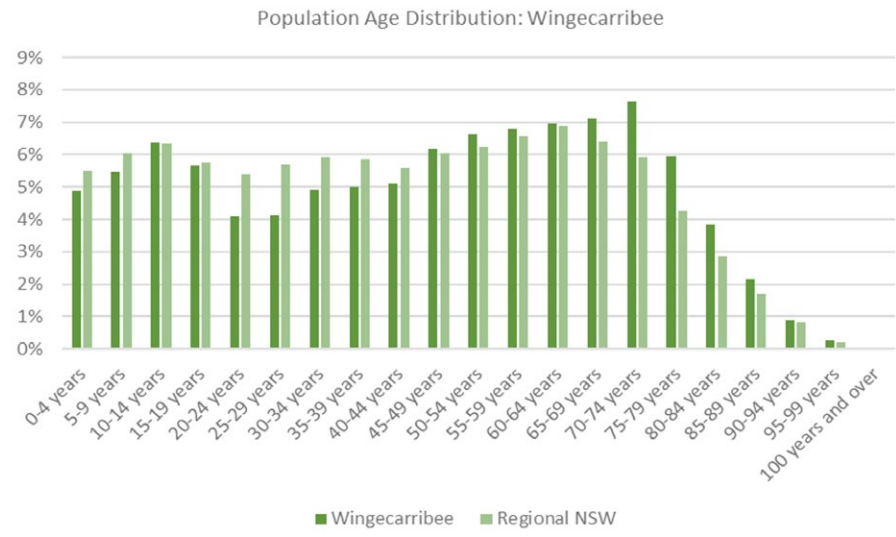


Human Capital

Health and disease prevalence: around 55% of the population report no long-term health conditions, while 1 in 8 report a mental health condition, which is slightly higher than the average for Regional NSW (1 in 10).

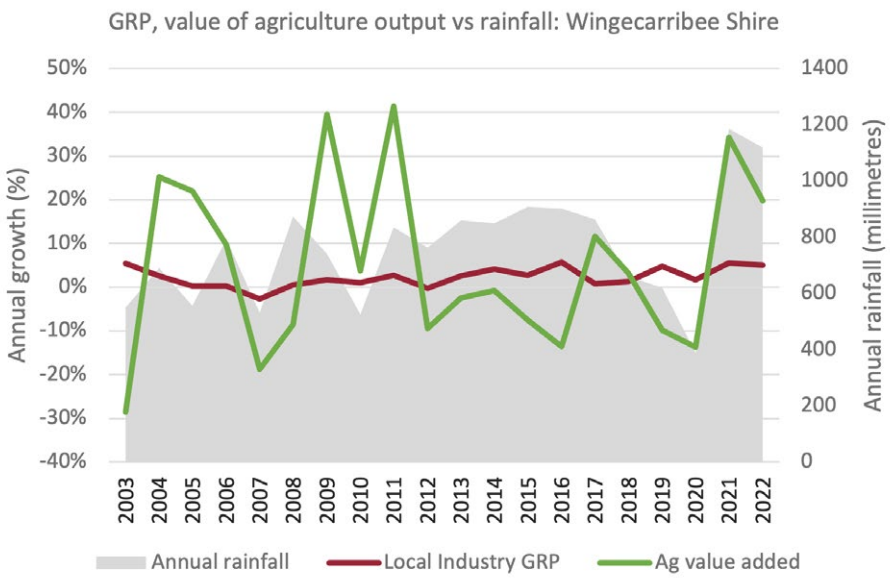


Population age distribution: Wingecarribee Shire has an aging population when compared to the Regional NSW average. While this age category is primarily non-agricultural, drought impacts are likely to be experienced through water restrictions and urban amenity impacts (loss of green space etc)

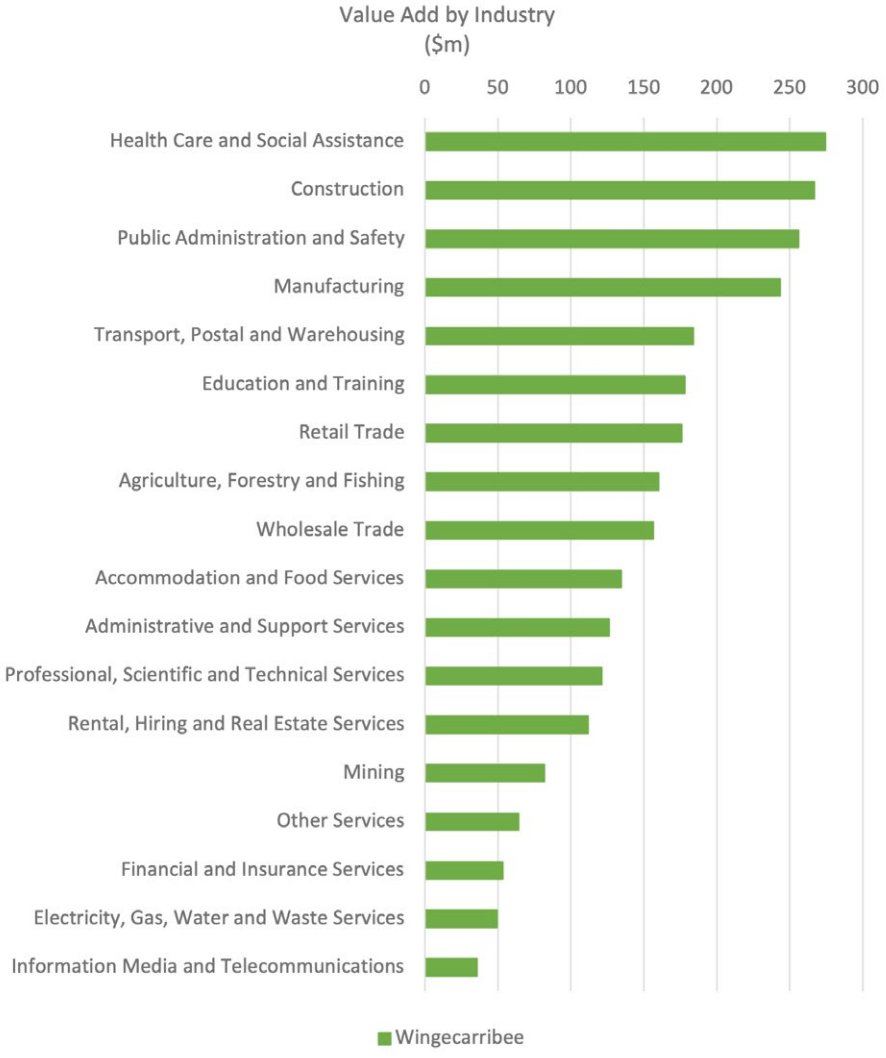


Financial and Economic Capital

Gross Regional Product: GRP growth is observed to be stable over time and not to be sensitive to water intensive industries such as agriculture



Value add by industry: Health care and social services and construction are highest value industries. High value of non-agriculture industries is likely to increase adaptive capacity as there is low dependency on water sensitive industries.



EXPOSURE TO DROUGHT

Within the region, rainfall and temperature conditions during the Millennium Drought and 2017-2019 Drought were similar to those observed across most of southeast NSW. Figure 12 and Figure 13 show that rainfall was generally higher in January than July, and that periods of high rainfall were often accompanied by high temperatures. It is shown in Figure 12 and Figure 13 that the low rainfall in 2017 and 2019 was accompanied by the highest January temperatures in the 20-year period depicted in the figures.

In terms of the various types of droughts, the NSW Department of Primary Industries (NSW DPI) began publishing the NSW Seasonal Update in 2017. The NSW Seasonal Update includes regional drought ratings based on the Combined Drought Indicator (CDI). The CDI uses remote sensing and on-ground reports to measure the drought indicators of rainfall, soil moisture and plant growth against long-run average to assess phases of drought. A CDI rating of Drought or Intense Drought indicates that a single or all three drought indicators, respectively, are significantly below the long run average. The CDI is not a declaration of drought, rather it is an information tool for primary producers to stay informed of prevailing climatic conditions.

The CDI indicators for South Eastern NSW as of December 2019 are shown in Figure 14 and Figure 15. Figure 14 indicates that, for the 12 months to 2019, much of the region was in experiencing either Drought or Intense Drought conditions. Figure 15 shows vegetation density in December 2019 was well below the long run average (> -5%), signifying that agricultural activity had been severely impacted by insufficient rain and prolonged low soil moisture levels for the previous 12 months.

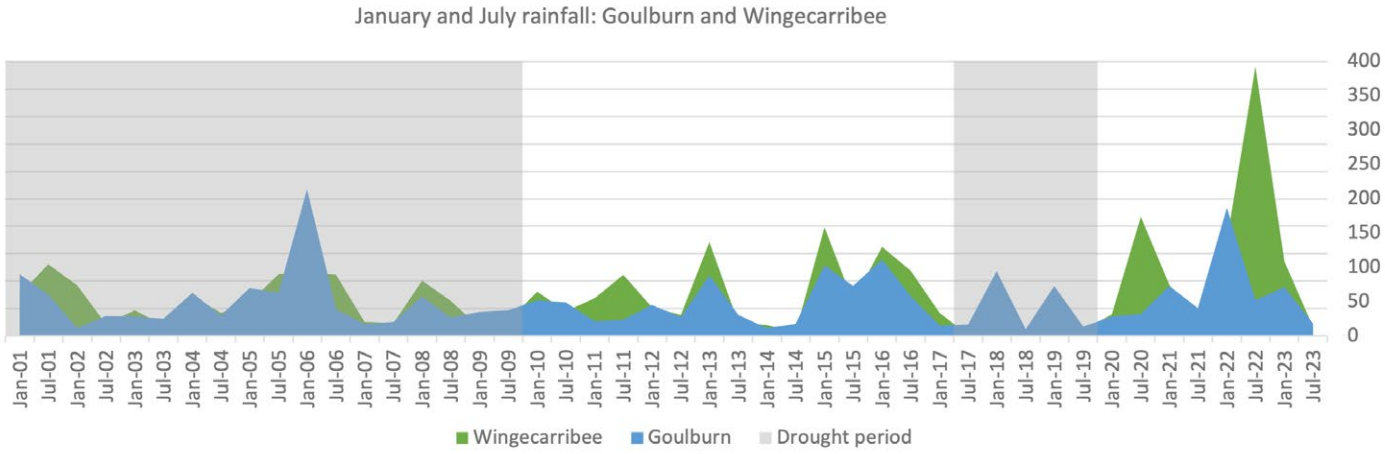


Figure 12: January and July Rainfall: Goulburn (Goulburn TAFE AWS) and Wingecarribee (Moss Vale AWS) (Source: BoM)

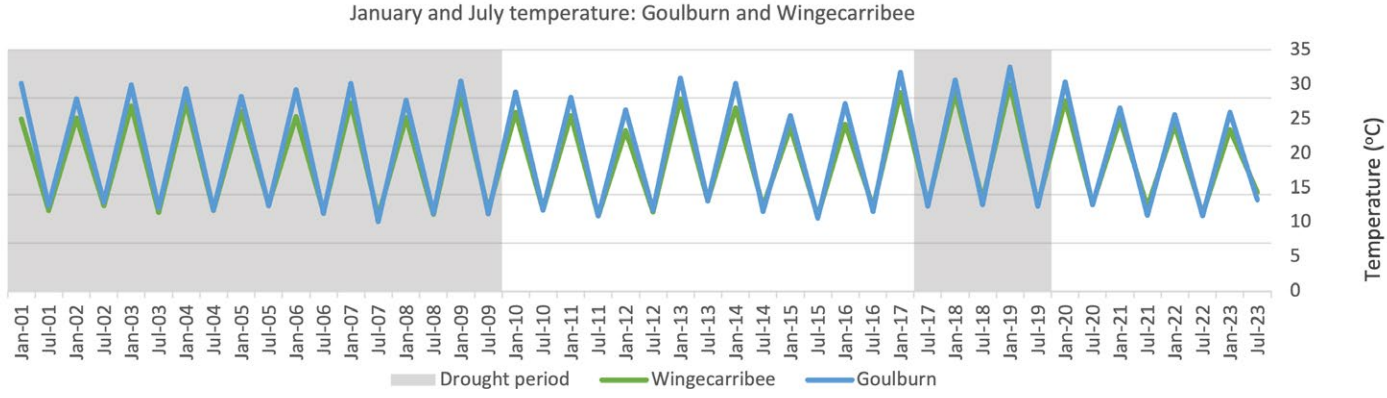


Figure 13: January and July Temperature: Goulburn (Goulburn TAFE AWS) and Wingecarribee (Moss Vale AWS) (Source: BoM)

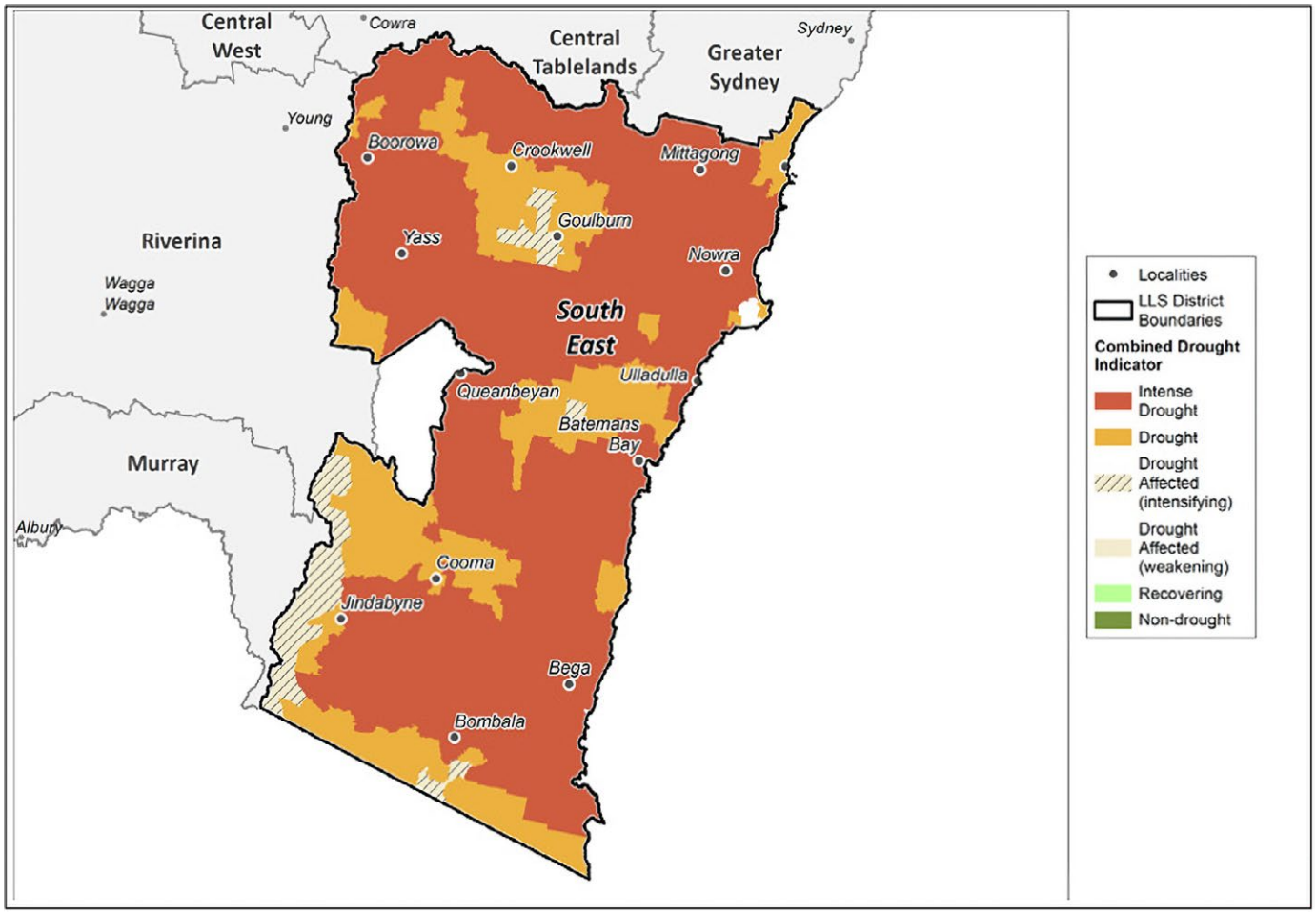


Figure 14: Combined Drought Indicators for South East NSW - 12 Months to December 2019 (NSW DPIRD, 2019)

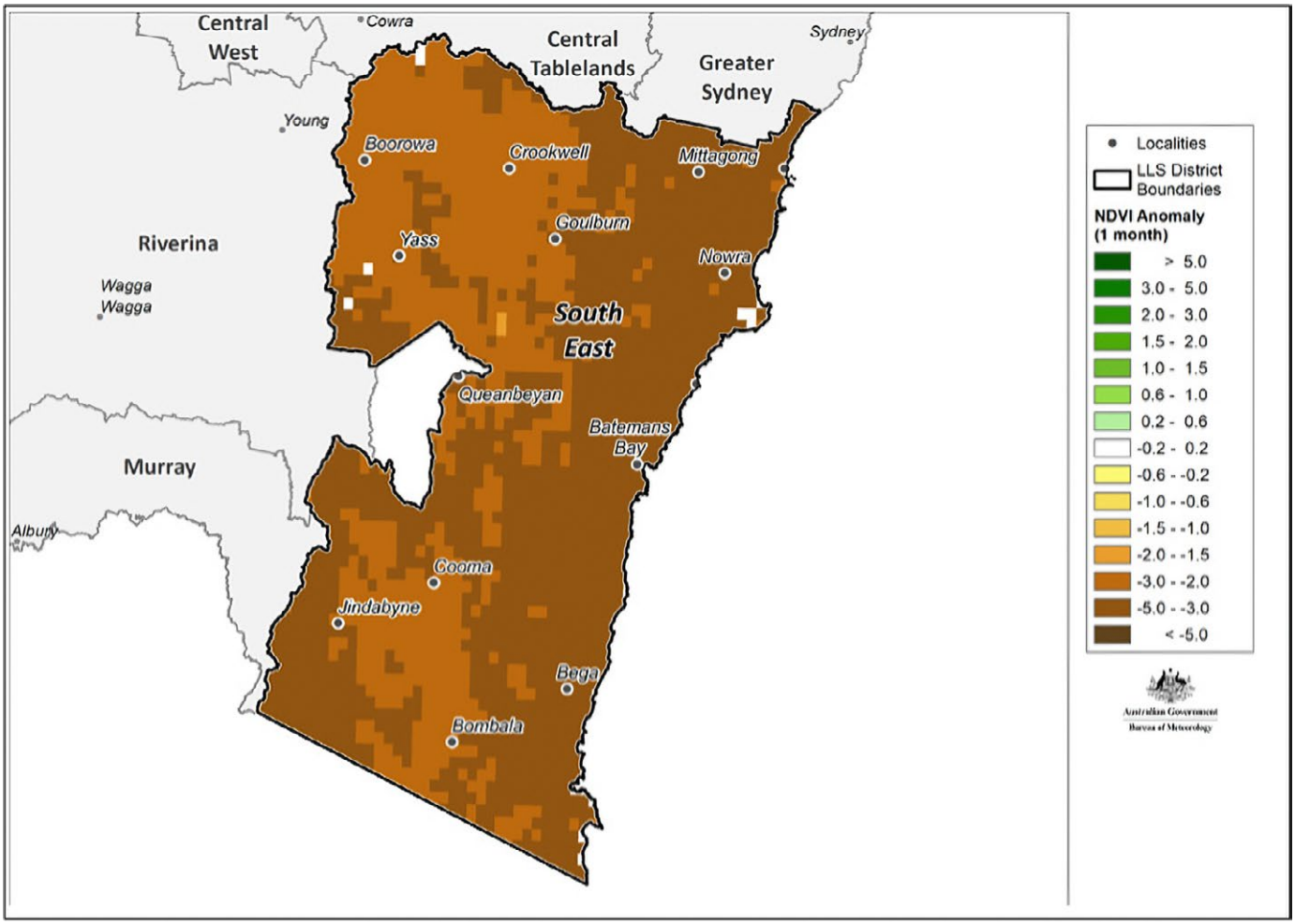


Figure 15: Vegetation Index for South East NSW as at December 2019 (NSW DPIRD, 2019)

ASSOCIATED HAZARD SHOCKS

While drought is primarily a slow onset natural hazard stressor, it can be associated with an array of inter-related rapid natural hazards, including:

- Extreme temperatures and heatwaves – Acute extreme temperatures can lead to health risks, particularly of aging populations, as well as higher energy costs for associated cooling. Such events can rapidly exacerbate existing drought conditions by rapidly reducing remaining surface and soil water/moisture

- Bushfire – The likelihood and severity of bushfires increases with the moisture content present within the available vegetation and decaying matter. Drought condition, particularly early on in their formation can significantly increase drought risk. The magnitude of the 2020 fires in the area were enhanced through the preceding 2017-19 drought

- Flood – The occurrence of a flood does not necessarily represent the end of a drought and often the first flood following a drought can be severe as the hardened nature of the ground increasing imperviousness as well as the presence of high volumes of litter and material entrained by the floods

- Dieback – the gradual loss of water sources for ecological communities may reach a tipping point for some communities, beyond which the ecological community effectively collapses because of core elements (often trees or fresh water for aquatic communities) dying/disappearing. Such shifts can be sudden and are often dramatic visual impacts to surrounding residents

- Dust – For prolonged droughts, pending the nature of the region, the loss of moisture within soils can lead to increased likelihood of dust-storm occurrence. While ranging significantly in size and impact, larger events can significantly affect local air quality and can be associated with health issues for aging populations.

LOCAL DROUGHT IMPACT PATHWAYS AND SENSITIVITY

When a community is exposed to a drought, the magnitude of impact within the community (i.e. the sensitivity of the community to the drought) will reflect the characteristics of the community and the impact pathways present: the relational link between the effect of the drought and the economic/ environmental and social activities of the community. Key impact pathways present within our region include:

- **Transport and connectivity**
  - Road and transport infrastructure condition may deteriorate during drought, increasing transportation costs
  - Our community has limited access to public transport in some locations, reducing access to services, particularly for community members without access to private transport. This socio-economic disadvantage may deteriorate further under drought conditions.

- **Housing and property**
  - Increase housing/mortgage/rent stress because of lower incomes and greater expenditure on responding to drought
  - Low rental incomes as renters move out of the drought affected area
  - Housing stock condition deteriorates as maintenance works diminish
  - Rural small holdings may not be well managed during drought leading to increased risk of associated natural hazard shocks, weeds and pest growth.

- **Health and Wellbeing**
  - While larger health centres are available in both Sydney and Canberra, the limitation of the region's immediate health care service providers can struggle to meet the provision of continuous and adequate health care support (particularly mental health) during droughts
  - Aging populations, like those within Wingecarribee Shire, are more sensitive to drought impacts than younger populations. In particular, social isolation, mental health and the ability to access services are issues of concern.

- **Employment and businesses**
  - The region can face the inability to attract skilled workforce as a results of drought conditions
  - Unemployment rates typically increase during drought, particularly for economies that lack diversity in industries, as lower productivity and reduce incomes decreases workforce demand.

- **Industry**
  - Both LGAs have a historic heavy reliance upon agriculture and related services for income and employment, naturally increasing the sensitivity of the economy to drought
  - Drought induced lack of feed within the agriculture sector leads to increased importation of feed from other areas, and with it, increased pests and weeds.

- **Land and Water**
  - The Wingecarribee LGA, due to its connectivity to the substantial resource of the Greater Sydney Water Catchment areas has a relatively high-water security.
  - The Goulburn Mulwaree LGA, since the completion of the Highland Source Pipeline, also has access to water supplies of Greater Sydney Water Catchment, although this did not prevent the need for water carting in the 2017-2019 drought.
  - Both LGAs have over 30% of the total population not connected to the Council/Sydney Water operated distribution network and must rely on their own water sources
  - Competition for limited water supplied between land-owners and large industry, such as mine operators requiring extractive water for dust suppression
  - Drought related land and water degradation can lead to significant native eucalypt and vegetation dieback, amenity impacts, and cultural implications and impacts to Aboriginal peoples.

DROUGHT RESILIENCE ASSESSMENT

A review of the adaptive capacity, exposure and sensitivity of our region as presented above allowed the identification of the resultant drought resilience strengths, weaknesses, opportunities and threats (SWOT) across our economic, environmental and social systems. The SWOT components are defined as:

- Strengths are existing positive attributes of the region that already contribute to drought resilience
- Weaknesses are attributes of the region that could be improved to enhance drought resilience
- Opportunities are positive factors of the region that could be harnessed to contribute to enhance drought resilience
- Threats are external conditions that negatively impact drought resilience now and into the future.

The SWOT assessment results are presented in Table 6.

Table 6: SWOT assessment

SOCIAL	ECONOMIC	ENVIRONMENTAL
Strengths		
The Regional Economic and Development Strategies (REDS) summarised in Table 2 highlight the strength in regional social institutions, such as healthcare, governance and law and order. The regional population as a whole is both in good health and higher education levels have been increasing over the last 20-years, indicating a reasonable level of social adaptive capacity.	The region has highly diversified economies with relatively low dependency on water sensitive industries such as agriculture	Stakeholders reported that there has been an improvement in the natural resource management (NRM) farming practices over the last 20-years and provided examples LLS programs and locally developed technology to provide warnings of the onset of drought (for example, soil moisture monitoring equipment that informs drought planning - when moisture drops to 80% below average signals it's time to destock and preserve feed).
Weaknesses		
Both LGAs within the region are characterised by aging populations which may be more susceptible to physical health impacts and risks associated with drought. Stakeholders reported that regional communities can become socially isolated in times of drought and that it is hard to know who is struggling with mental and physical health. Stakeholders also reported that there is a lack of awareness of where to go to seek help. Stakeholders reported that the changing demographics of the region can create tensions during drought periods as people less familiar with rural living ignore waters conservation warnings and property maintenance. The recent evolving demographic nature of the region has led to a loss of local drought knowledge and social support networks which are important during times of stress.	While the diversified economies of the region provide economic resilience in terms of total economic output, the agricultural industry remains highly sensitive to the impacts of drought. Stakeholders also reported that impacts on the agriculture industry are likely to affect related wholesale and retail industries, and that downturns in agriculture are likely to be felt economically in the smaller towns and villages more so than the larger regional centres. Stakeholders reported that while the sections of farming community maintain drought management plans, a large portion of the farming and broader commercial community do not maintain plans. Time, cost, and knowledge were seen as the main barriers to plan development. Stakeholders reported that feed security is an economic challenge for sheep and cattle farmers in the region, this has been exacerbated by changing ownership and use of properties previously used as cropping for hay.	Stakeholders reported that there is some resistance to adopt more NRM farming practices amongst established farmers, and that distributing information and sharing knowledge within the farming community is a challenge. Stakeholders also reported that management of invasive weeds and wildlife management is challenging during drought periods, particularly on vacant lots, and lots with absentee landowners. The increased importation of fodder increases the risk of biosecurity hazards such as priority weeds, feral animals, disease and insects incursions for example fire ants. Regional economic strategies identify the increased water and land use demand posed by residential population growth and housing developments as a key challenge for future water security.

SOCIAL	ECONOMIC	ENVIRONMENTAL
Opportunities		
Stakeholders reported that existing community-based groups (such as the Country Women's Association and local Men's Sheds) provide an informal support service for community members during times of drought and climate stress. The community groups could provide important learnings of the type of social issues occurring, and preferred methods of community engagement and support resources. There is an opportunity for the establishment of a community-based group contact register to champion drought related welfare resources. There is an opportunity for strong social institution (strength) to act as information and response centres during drought onset and drought periods.	The REDS summarised in Table 2 demonstrate that both LGAs are actively seeking options to diversify the agriculture industry and invest in infrastructure to improve drought resilience. Examples include the equine industry growth and investment in regional saleyards and knowledge hubs. Improving rainfall independent supply and groundwater aquifer recharge is a state and regional priority and the RDRP could seek to identify local rainfall independent supply schemes to leverage the state level strategic priorities. Stakeholders identified that while changing demographics and vacant landowners' properties may present a social and environmental challenge, the vacant land may present opportunities for community-based land leasing feed banks schemes or co-ops where vacant land is used to grow crops for feed, or intensive farming (i.e. wheat or cereals).	The state and regional strategies summarised in Table 2 emphasise that maintaining healthy waterways and landscapes are a state and regional planning priority. The RDRP for the region should seek to leverage this strategic priority where possible. There is an opportunity to expand the use of locally developed soil moisture monitoring technology across the entire region. There is also an opportunity to leverage State based drought forums such as NSW DPI Seasonal Update, Drought Signals Dashboard and CDI to provide leading indicators to the community of the onset of drought. Increased development across towns and villages increases the capacity for water catchment on private land through the installation of stormwater capture on buildings. Ensuring this captured water is used for services such as flushing of toilets and watering gardens can ease some of the stress on the municipal supply. There is an opportunity to establish a working relationship with WaterNSW to better forecast water demand for the region, particularly the demands of the increasing residential population.
Threats		
In a drought resilience sense, the key social economic and environmental threat to the region is the predicted changes in climate. The rising temperatures, decreases in cool season rail and increases in warm season rain are likely to be a threat to water security and landscape health. Stakeholders identified water security as a key issue for the area and communicated a desire for the RDRP to address water security issues.		

OUR DROUGHT RESILIENCE ACTION PLAN

Source: Stephenallen75, iStock, 2024

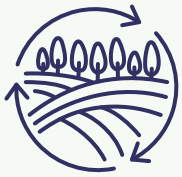
Empowering our communities to enhance drought resilience through co-operative action

Our Action Plan is presented in themes, actions and timeframes (short, medium, and long). The themes emerged over the program of stakeholder engagement as recurrent issues of concern for the region's community. The actions are primarily stakeholder identified actions, that are specific, readily implementable, and measurable. The actions aim to build social cohesion through resourcing the community to build knowledge and provide care, and to create networking opportunities so those existing knowledge holders within the community can share their experience. The actions are designed to offer practical solutions that will build the region's cooperative pathway to a more resilient future.

The four resilience themes that guide our priority resilience actions are (Figure 17):

Resilient local communities

Resilient local economy



Resilient landscapes

Resilient domestic water supply

Stakeholders identified a number of actions under each of these themes. The adoption of resilience actions put forward by the community within this plan were based on an assessment of their:

- Alignment with community sentiment and concern
- Alignment with the overall RDRP vision for the region
- Similarity / duplication of other initiatives already underway
- Clarity of implementation pathway
- Alignment with established regional community plans and strategies
- Effectiveness in addressing regional drought resilience.

This RDRP Plan is preceded by a Draft RDRP that was independently evaluated by the CSIRO against a set of evaluation criteria. A set of five resilience themes, five priority actions and twenty-one secondary actions were included in the Draft RDRP. These actions were socialised with key stakeholder groups for feedback in a series of workshops. The CSIRO evaluation and stakeholder engagement has led to the revisions of actions to be 'foundational' or 'sequential', and revised action plan comprised of four themes, four foundational actions and twenty-three sequential actions. Within the twenty-seven actions (4 foundational and 23 sequential), ten actions have been revised from the draft plan. Lastly, CSIRO provided several suggestions for future plan changes to be applied over time as circumstances and knowledge change. The list of suggestions for future plan changes is provided at Appendix C.

A high-level set of criteria were adopted to establish a sequential pathway towards the identified outcomes for each resilience theme. Prioritising the actions in a sequential pathway or, 'adaption pathway', ensures that the actions that will provide the foundation and build momentum for future resilience actions are prioritised and presented in an actionable format to encourage short-term implementation. The adaption pathway approach ensures that resilience measures are appropriately scaled and provide the region with a level of flexibility in incorporating continued learning into resilience building.

The criteria adopted are summarised in Table 7.

Table 7: Sequential priority criteria

PRIORITY LEVEL	CRITERIA
Foundation action	Momentum building actions that provide the foundation for future actions. The actions have a low risk of over investment, high ease of implementation and high likelihood of short-term improved resilience. The Foundation actions are likely to maintain or modify current systems, rather than transform.
Sequential or supporting action	Actions that are sequential in nature and have a moderate-to-high risk of over investment, medium-to-long term improvement in resilience. The sequential actions may maintain, modify or transform current systems.

It is acknowledged that several legitimate drought resilience issues and actions were identified by stakeholders that are established as priority actions in other Local and State Government plans, such as economic diversity actions covered by Regional Economic Development Strategies (REDS) and water sharing challenges managed by NSW Water Sharing Plans. These actions have not been included within this plan.

Source: Bowral, iStock, Kokkai Ng, 2024

Vision: We seek to develop communities that are prepared, active and structured in such a way that, when under the stress of drought, our economies remain prosperous, our communities remain connected, and our environment is protected

RESILIENCE THEME	RESILIENT LOCAL COMMUNITIES	RESILIENT LOCAL ECONOMIES	RESILIENT LANDSCAPES	RESILIENT WATER SUPPLY
Impact	Regional communities are resourceful, connected & thriving	Local businesses are informed, resourced and prepared	Agricultural landscapes are sustainable, functional, with healthy natural capital	Regional water supply is secure, sustainable and resilient to shocks.
Resilience Outcomes	(S1) More community members are resourced to provide community led intervention (S2) Stronger community connectedness and greater awareness contributing to community wellbeing	(EC 1) More local businesses adopt strategies to reduce financial exposure to drought	(EN1) More primary producers preserve natural capital while also sustaining productivity and profitability. (EN 2) More primary producers adopt whole-of-system approaches to NRM to restore the natural resource base and preserve long-term landscape health.	(S3) More water users are informed about water security issues and adopt sustainable water use practices to sustain water supply
Foundation Action	1.0 Creation of a dedicated (part-time) Resilience Officer resource, to be funded by DRF grant	2.0 Formalise networks, accountabilities and roles for promoting pro-active 'good-year' business planning	3.0 Creation of a (temporary part-time) Agriculture Outreach Officer role	4.0 The establishment of water sharing and availability online dashboard to increase community awareness and visibility of water management during drought
Secondary Actions	1.1 Identify opportunities for collaboration between organisations providing rural health care programs (e.g. RAHMP) and local community organisations (farming groups, sporting clubs etc) to promote wellbeing 1.2 Engage with real estate and property agents regarding access pathways for support and education regarding drought 1.3 Develop a community 'first-aid' kit to assist in community driven out-reach in times of drought and climate stress 1.4 Establish and formalise network of community organisation leaders to coordinate and promote drought response measures (e.g. 1.5). 1.5 Establishment of network of community 'drop-in centres' or 'drought support hubs' at community organisation locations 1.6 Establishment of a youth resilience ambassador role 1.7 Identify the needs of young people during periods of climate stress and create a 10-point Youth Action Plan.	2.1 Promotion of proactive 'good-year' business resilience planning through creation of online 'resilience' planning template and online resource directory 2.2 Organise business networking events for local businesses to share learnings on resilient business practices 2.3 Investigate opportunities for non-agricultural major events to attract tourism to the region, including greater utilisation/activation of town and village assets typically used for agricultural purposes such as regional show grounds or properties 2.4 Investigate opportunities for Aboriginal community led water / land tourism operations 2.5 The establishment of a small farm processor co-op, where smaller farms pool farming machinery and equipment 2.6 The establishment of a member-based regional feed store co-ops for livestock producers 2.7 Implementation of training, education and traineeship/ apprenticeship programs for off-farm income generating activities	3.1 The establishment of an online directory of landscape management grant opportunities, information resources and tools, and education materials practices 3.2 The promotion of 'wet year' landscape management and planning activities to proactively promote landscape health under all climate conditions – i.e. promotion of practices to prepare for drought in 'wet years' 3.3 Engage local aboriginal knowledge holders within local land care groups and practice committee 3.4 Establish partnerships between local agricultural land holders and academic institutions to trial innovative landscape health management practices	4.1 The creation of a 'water-wise' educational campaign targeting community attitudes and behaviours for domestic water use during drought and non-drought periods, including promoting behaviours that manage, store and re-use both potable and non-potable water 4.2 promotion of existing water security initiatives to encourage adoption of on-farm water management and retention planning and management practices during wet-years 4.3 Micro-grants for retrofitting older buildings in rural villages with water conservation equipment, or replacing aged water conservation equipment 4.4 Engage local aboriginal knowledge holders within local land care groups and practice committee 4.5 Consideration of co-operative water storage mechanism for farmers to facilitate local water-carting services
Inputs and activities	Grant funding and establishment of funding models, establishing partnerships and relationship building, formalising nested governance framework for implementation and ongoing monitoring and evaluation, ongoing communications and stakeholder engagement.			

Figure 16: RDRP Action Plan Program Logic

SHORT-TERM	MEDIUM-TERM	LONG-TERM
Actions that create momentum in resilience building and maintain or modify current systems Low risk of over investment, high ease of implementation, high likelihood of short-term improved resilience	Actions that build resilience and modify current systems Moderate risk of over investment, sequential in nature, moderate implementation lead time	Actions that build resilience and transform current systems Moderate-to-high risk of over investment, transformative in nature, long implementation lead time

1.0 Creation of a dedicated part-time Resilience Officer resource, to be funded by DRF grant 1.1 Resilience Officer to Identify opportunities for collaboration between organisations providing rural health care programs (e.g. RAHMP) and Community services (e.g. Services NSW) and local community organisations (farming groups, sporting clubs etc) to promote wellbeing 1.2 Resilience Officer to engage with real estate and property agents regarding access pathways for support and education regarding drought 1.3 Develop a community 'first-aid' kit to assist in community driven out-reach in times of drought and climate stress, contents to be informed by Actions 1.1 and 1.2. First aid kit could be physical or downloadable 'app'. 1.6 Establishment of a youth resilience ambassador role 1.7 Identify the needs of young people during periods of climate stress and create a 10-point Youth Action Plan	1.4 Establish and formalise network of community organisation leaders to coordinate and promote drought response measures (e.g. 1.5). This action, and Action 1.6, could be formalised as a 'Resilience Committee' which periodically meets with Council to determine resilience planning actions 1.5 Establishment of network of community 'drop-in centres' or 'drought support hubs' at community organisation locations such Country Women's Association locations or Men's Sheds	

SHORT-TERM	MEDIUM-TERM	LONG-TERM
2.0 Establish accountability and local ownership of resilience planning for businesses and primary producers 2.1 Promotion of proactive 'good-year' business resilience planning through creation of online 'resilience' planning and education web page 2.2 Organise business networking events for local businesses to share learnings and drought management practices	2.3 Investigate opportunities for non-agricultural major events to attract tourism to the region, including greater utilisation/ activation of town and village assets typically used for agricultural purposes such as regional show grounds or properties 2.4 Investigate opportunities for Aboriginal community led water / land tourism operations	2.5 The establishment of a small farm processor co-op, where smaller farms pool farming machinery and equipment 2. 6 The establishment of a member-based regional feed store co-op for livestock producers 2.7 Implementation of training, education and traineeship/ apprenticeship programs for off-farm income generating activities
3.0 Creation of a (temporary part-time) Agriculture Outreach Officer role 3.1 The establishment of an online directory of landscape management grant opportunities, information resources and tools, and education materials	3.2 The promotion of 'wet year' landscape management and planning activities to proactively promote landscape health under all climate conditions – i.e. promotion of practices to prepare for drought in 'wet years' 3.3 Engage local aboriginal knowledge holders within local land care groups and practice committee	3.4 Establish partnerships between local agricultural land holders and academic institutions to trial innovative landscape health management practices
4.0 The establishment of a water sharing and availability resource to increase community awareness and visibility of water management during drought 4.1 Water wise education campaign for domestic water use including options to manage, store and re-use water	4.2 promotion of existing water security initiatives to encourage adoption of on-farm water management and retention planning and management practices during wet-years 4.3 Micro-grants for retrofitting older buildings in rural villages with water conservation equipment, or replacing aged water conservation equipment 4.4 Engage local aboriginal knowledge holders within a local land care groups and practice committee	4.5 Cooperative water storage mechanism to facilitate local water carting or sharing services

Figure 17: Resilience pathway

RESILIENCE THEME 1: RESILIENT LOCAL COMMUNITIES

Regional communities are resourceful, connected and thriving

(S1) More community members are resourced to provide community-led intervention and assistance.

(S2) Stronger community connectedness and greater awareness contributing to community wellbeing.

Community mental health impacts are significant and far-reaching during times of drought and climate stress. There are many ways in which drought can impact communities, economy and landscapes, but ultimately it is the people within the community who experience the stress and anxiety of a drought's many impact pathways. Edwards et al (2015) report the impacts of drought increase the incidence of mental health issues by up to 10% in rural communities. The impacts of drought on mental health are also broad, ranging from burnout and stress to more severe mental illness issues of anxiety and depression. At the most severe end of the spectrum, anecdotal evidence suggests the that the incidence of domestic violence increases dramatically with the onset of drought, and that the relative risk of suicide can increase by up to 15% in rural males aged between 30-49 as the severity of drought increases.

There are a range of existing programs targeting rural mental health, such as the Rural Adversity Mental Health Program (RAMHP) which targets community knowledge and education through outreach. RAMHP coordinators are employed by Local Health Districts and are embedded within agricultural communities across NSW. However, these resources can become stretched during times of climate stress. Healthcare representatives and community members reported that enabling the community to assist one another during times of drought would assist in enhancing community resilience.

Source: Marulan Kite Festival Markets with Crowds, Goulburn Mulwaree Council, 2024

Stakeholders reported that the uneven impacts of drought, rural nature of farming, and lack of awareness of support services mean that those who are suffering may struggle to seek help. The shifting demographic of the region is also playing a role in the social isolation of community members. The incidence of established community members leaving the region has reportedly led to loss of social support networks for existing community members, and feelings of isolation and lack of support for new community members.

The sensitivity of local communities and economies to drought is also highly variable across the region. The community and economic activity of the regional economic centres are relatively diversified, with a mix of both agricultural and non-agricultural based activity. While the smaller towns and villages have a higher reliance on agricultural activity. The community within the larger regional economic centres may therefore be less aware of the impacts of drought on fellow community members than those in the smaller towns and villages. Drought also impacts age groups differently, with stakeholders reporting that rural youth are often overlooked but experience drought impacts in reduced capacity to access and finance schooling and recreation activities, as well as experiencing feelings of stress and anxiety from witnessing drought impacts on family and family farms.

Finally, stakeholders reported high fatigue and burnout amongst the agricultural community during times of drought. The result is that daily tasks become arduous, individuals have limited time for recreation or family, and it is challenging to find avenues of support for things like financial assistance and personal wellbeing.

A priority action of this RDRP is to seek funding for the establishment of a Resilience Officer to establish networks with key government and community stakeholders and to develop resources to support lasting community wellbeing systems.

FOUNDATION ACTION 1.0: CREATION OF RESILIENCE OFFICER (PART-TIME) ROLE

The purpose of the Resilience Officer is to create a resource with accountability for delivering the supporting and sequential community wellbeing actions as well as complementary actions identified under other resilience themes. Primary responsibilities would include developing productive working relationships with key government, community and business organisations to establish networks and resources to promote community wellbeing.

A key outcome of the role should be the development of the 'First-aid' kit (Action 1.3)

The role would likely be temporary part time role and could be could be funded through DRF grant, or other government grant funding avenues.

IMPLEMENTATION PLAN SUMMARY:	
Timeframe	Short term – by June 2026
Costs	$150,000
Funding opportunities:	• RDRP/DRF funding • Leveraging of existing resources
Strategic alignment	• National Drought Agreement (objectives d. and e.) • Goulburn Mulwaree Community Strategic Plan 2042 (C.8) • Community Strategic Plan - Wingecarribee 2041 (Goal 2.1) • South East NSW Resilience Blueprint (Themes 1 – 3)
IMPLEMENTATION:	
Implementation steps:	• Seek funding • Establish role description and objectives • Advertise for role • Engage with relevant government agencies (such as RAHMP and Service NSW) and community organisations on establishing working relationship
Action facilitator:	• Council
Key Stakeholders:	• NSW Health (RAHMP) • Service NSW • Relationships Australia • Community organisations • Local businesses
Risks	• Lack of available funding • Unable to retain suitable resource • Low government and community engagement with Drought Resilience Officer
MONITORING AND EVALUATION:	
Resilience outcomes:	• More community members are resourced to provide community-led intervention and assistance, resulting in lower rates of drought induced stress and depression • Stronger community connectedness and greater awareness contributing to community wellbeing.
Indicators/ Targets:	• Recruitment of suitable resource • Productive engagement with Government agencies, community organisations and local businesses • Lower incidence of reported poor mental health
Stakeholder Engagement Activities	• Promotion of Drought Resilience Officer role through Council social media, local print media, employment websites, local radio advertisements

	SUPPORTING AND SEQUENTIAL ACTION	ACTION FUNDAMENTALS
1.1	Identify opportunities for collaboration between organisations providing rural health care programs (e.g. RAHMP) and Community services (e.g. Services NSW) and local community organisations (farming groups, sporting clubs etc) to promote wellbeing	Maintain/modify/transform: Maintain existing roles in providing community wellbeing support. Modify government, community and business networks to support community wellbeing outcomes
		Preceding action: Retention of Resilience Officer/ establishment of accountability for action
		Potential facilitator: Resilience Officer/Council
1.2	Resilience Officer to engage with real estate and property agents regarding access pathways for drought support and education for new residents	Maintain/modify/transform: Modify existing pathway to reach new residents
		Preceding action: Retention of Resilience Officer/ establishment of accountability for action
		Potential facilitator: Resilience Officer/Council
1.3	Develop a community 'first-aid' kit to assist in community driven out-reach in times of drought and climate stress and provide resources to alleviate stress (e.g., food and transport vouchers). Contents to be informed by Actions 1.1 and 1.2. First aid kit could be physical or downloadable 'app', with tailored 'kits' for age groups.	Maintain/modify/transform: Modify drought resilience resources to provide regionally tailored drought assistance packages (longer term) Transform the role of community members in providing wellbeing support to fellow community members
		Preceding action: 1.1 and 1.2 to inform resources
		Potential facilitator: Resilience Officer/Council
1.4	Establish and formalise network of community organisation leaders to coordinate and promote drought response measures (e.g. 1.5). This action, and Action 1.6, could be formalised as a 'Resilience Committee' which periodically meets with Council to determine resilience planning actions	Maintain/modify/transform: Modify community organisation networks to established defined roles in responding to community shocks and stressors (i.e. not isolated to drought)
		Preceding action: 1.0
		Potential facilitator: Resilience Officer/Council/Community Organisations
1.5	Establishment of network of community 'drop-in centres' or 'drought support hubs' at community organisation locations such Country Women's Association locations or Men's Sheds	Maintain/modify/transform: Modify community organisation networks to established defined roles in responding to community shocks and stressors (i.e. not isolated to drought)
		Preceding action: 1.4
		Potential facilitator: Resilience Officer/Council/Community Organisations
1.6	Establishment of a youth resilience ambassador role	Maintain/modify/transform: Create/Modify role of youth representation on Council committees to create avenue for youth representation in Regional resilience planning
		Preceding action: 1.0 / Not required
		Potential facilitator: Resilience Officer/Council
1.7	Identify the needs of young people during periods of climate stress and create a 10-point Youth Action Plan. Identification of actions from the UNICEF Australia NSW Youth Summit on Living with Drought that are implementable within the region, either in isolation or as part of the 'first-aid kit' (Action 1.3).	Maintain/modify/transform:
		Preceding action: 1.4
		Potential facilitator: Youth Resilience Officer/Resilience Officer

RESILIENCE THEME 2: RESILIENT LOCAL ECONOMIES

Local businesses are informed, resourced and prepared

(EC 1) More local business and primary producers adopt proactive 'good-year' planning practices and strategies to reduce financial exposure to drought

(EC) Businesses and primary producer communities are connected and share learnings to improve collective economic resilience of the region

The sensitivity of the businesses and primary producers within the region to drought and climate variability is highly variable. The shifting demographics of the region over the past 20 years has brought a wealth of non-agricultural income and industry to the area. ABS (2021) data show that gross regional product (GRP) has grown steadily over the last twenty-years, despite downturns in the value agricultural output during the Millennium Drought and 2017-2019 drought (Table 3 and Table 4). GRP growth is largely due to growth of high value industries such as health care and social assistance, and construction over the past twenty-years. At a high level, this indicates that the relatively diversified economies and high non-agricultural income has buffered the regional economies from the impact of drought. However, the headline GRP growth trend is likely masking the impacts of drought on smaller businesses, particularly those in smaller towns, agricultural communities and industries downstream of agriculture such as retail and wholesale industries.

Source: Bendooly Estate, Berrima, Destination NSW

The region is characterised by urban centres surrounded by smaller towns and villages. The major urban centres of Moss Vale, Mittagong, Bowral and Goulburn host approximately 60% of the regions 86,600 people. Stakeholders reported that the business environment in the larger urban centres is relatively more stable than smaller towns such as Robertson and Marulan. Stakeholders reported that the business environment in smaller towns is challenging due to a combination of factors such as climate variability and the seasonal nature of tourism influxes. The nature of the business environment in the smaller towns and villages means that small shocks can lead to closure of businesses, as businesses struggling with profitability are forced to close. An aging population, particularly within Wingecarribee, while driving economic strength in industries supporting retirement lifestyles, does limit investment in other areas, particularly commercial and industrial trade.

A number of solutions were put forward to increase the resilience of local economies, from small scale planning solutions to structural solutions targeting greater diversification of economic activity. It is noted that both the Southern Tablelands and Wingecarribee Regional Economic Development Strategies (REDS) include priorities for economic diversification.

Stakeholders reported that while the region's agricultural industry typically prepare farm management plans including drought management measures, the local business community generally does not adopt drought management planning practices. Issues of time, cost and knowledge were identified as key barriers to adopting drought management planning. Stakeholders also reported that there are opportunities to improve proactive planning practices undertaken during 'good-years' to prepare for economic downturn.

FOUNDATION ACTION 2.0: FORMALISE NETWORKS, ACCOUNTABILITIES AND ROLES FOR PROMOTING PRO-ACTIVE 'GOOD-YEAR' BUSINESS PLANNING

Stakeholders reported a need to promote pro-active business planning during the 'good-years' to prepare for economic downturns resulting from shocks and stressors. Stakeholders reported that business resilience planning should extend beyond drought resilience planning and cover resilience in general, including such things as income diversification and managing seasonal variations in trade and staff availability. There are several potential commerce and primary producer groups within the region with an interest in improving resilient business practices. The first step is to establish and formalise roles in promoting business resilience planning. The establishment of networks, roles and functions will support sequential actions for the development of resources, programs, and schemes to support improved planning practices

IMPLEMENTATION PLAN SUMMARY:	
Timeframe	Short term – by June 2026
Costs	$20,000
Funding opportunities:	• RDRP/DRF funding • Leveraging existing resources
Strategic alignment	• National Drought Agreement (objective f.) • Goulburn Mulwaree Community Strategic Plan 2042 (C.10) • Community Strategic Plan - Wingecarribee 2041 (Goal 4.4)
IMPLEMENTATION:	
Implementation steps:	• Seek funding • Engage with NSW Small Business Commissioner on potential for assistance • Engage with chamber of commerce and business representative groups • Secure resources
Action facilitator:	• Council/Resilience Officer (if retained) • Local chamber of commerce and business representative groups • Local farming groups
Key Stakeholders:	• Council • NSW Small Business Commissioner • Local business chambers • Local business representatives • Planning template developers • NSW DPIRD – Regional Economic Development • Destination NSW – Destination Networks
Risks	• Lack of available funding • Lack of engagement from local businesses and primary producers • Unable to establish roles and functions
MONITORING AND EVALUATION:	
Resilience outcomes:	• More local business adopt strategies to reduce financial exposure to drought
Indicators/ Targets:	• Key stakeholders active in the promotion of resilience planning • Number of local businesses engaged in resilience planning practices • Lower reported incidence of drought related business closures
Stakeholder Engagement Activities	• Identification of key stakeholders • Identification of action enablers

SUPPORTING AND SEQUENTIAL ACTION		ACTION FUNDAMENTALS
2.1	Promotion of proactive 'good-year' business resilience planning through creation of online 'resilience' planning template and online resource directory	Maintain/modify/transform: Maintain current economic activity through improved resilience planning Preceding action: Action 2.0 Potential facilitator: Resilience Officer/Council, local chambers of commerce, local farming and primary producer groups
2.2	Organise business networking events for local businesses to share learnings on resilient business practices	Maintain/modify/transform: Maintain current economic activity through improved resilience planning Modify business practices to diversify income streams and sales platforms Preceding action: Action 2.0 Potential facilitator: Resilience Officer/Council, local chambers of commerce, local farming and primary producer groups
2.3	Investigate opportunities for non-agricultural major events to attract tourism to the region, including greater utilisation/activation of town and village assets typically used for agricultural purposes such as regional show grounds or properties	Maintain/modify/transform: Modify use of existing regional assets to provide new tourism attractors to increase economic activity Preceding action: Action 2.0 Potential facilitator: Resilience Officer/Council, local chambers of commerce, local farming and primary producer groups, Destination NSW – Destination Network
2.4	Investigate opportunities for Aboriginal community led water / land tourism operations	Maintain/modify/transform: Modify use of existing regional assets to provide new tourism attractors to increase economic activity Preceding action: N/A Potential facilitator: Pejar LALC, DPIRD, Council
2.5	The establishment of a small farm processor co-op, where smaller farms pool farming machinery and equipment	Maintain/modify/transform: Maintain primary production activity through supporting smaller producers to engage in sustainable business practices Transform current farming networks to support formalised productive working relationships Preceding action: Action 2.0/Action 3.0 Potential facilitator: Agricultural Outreach Officer, local farming groups
2.6	The establishment of a member-based regional feed store co-ops for livestock producers	Maintain/modify/transform: Maintain primary production activity through supporting smaller producers to engage in sustainable business practices Transform current farming networks to support formalised productive working relationships Preceding action: Action 2.0/Action 3.0 Potential facilitator: Agricultural Outreach Officer, local farming groups
2.7	Implementation of training, education and traineeship/apprenticeship programs for off-farm income generating activities	Maintain/modify/transform: Transform and diversify economic structures to create employment pathways in non-water sensitive industries Maintain agricultural employment pathways by ensuring young people are aware resilience building resources and educated landscape health practices Preceding action: 1.7 Potential facilitator: Local Chamber of Commerce

RESILIENCE THEME 3: RESILIENT LANDSCAPES

Agricultural landscapes are sustainable, functional, with healthy natural capital

(EN 1) More primary producers preserve natural capital while also sustaining productivity and profitability.

(EN 2) More primary producers adopt whole-of-system approaches to NRM to restore the natural resource base and preserve long-term landscape health.

Stakeholders reported that there are several environmental groups and government agencies operating within the region, with the view to promote the adoption of natural resource management practices and landscape health management. Government agencies and environmental groups operating in the region include:

- Local Land Services (LLS)
- Landcare
- Southern NSW Drought Hub
- Sustainable Goulburn Mulwaree
- Regen Action
- Rivers of Carbon
- Independent Council for Ecosystem Restoration (ICER) Warragamba rehydration and restoration project.

Source: Wingecarribee Local Government Area, DCCEEW, 2024

Further, stakeholders were keen to point out that there are many motivated and experienced landholders and primary producers within the region who have had success implementing land care and sustainable farming practices to build landscape resilience. These members of the community hold valuable knowledge, and skill sets that would be of great benefit to the wider agricultural community.

Finally, local farming groups such as Tableland Farming Systems have developed publicly available landscape health and livestock performance monitoring tools such as the online resource Farming Forecaster. Farming Forecaster is a publicly available online dashboard which publishes soil health and moisture information captured by a network of soil moisture probes within the region.

While there is a wealth of knowledge and programming within the region, stakeholders report there a disjointed approach to land care and resource management across the region and a lack of motivation and resources to alter farming practices. Stakeholders also reported there are opportunities for neighbouring properties to work together to adopt sustainable land management practices and share knowledge and resources.

A number of solutions were provided to increase the uptake of landscape health management practices in the region, ranging from education resources to regenerative agriculture 'field days'. A priority action of this RDRP is for the creation of an Agricultural Outreach Officer position to facilitate the building of partnerships between land care groups, primary producers, and levels government for the purpose of knowledge sharing and building cooperative capacity.

FOUNDATION ACTION 3.0: THE CREATION OF A TEMPORARY PART-TIME AGRICULTURE OUTREACH OFFICER ROLE

The purpose of the Agriculture Outreach Officer is to facilitate the connection of agricultural land holders with farming community networks, relevant government agencies, farming groups and land care organisations, and First Nations organisations. The Agriculture Outreach officer would also be accountable for the supporting and sequential resilient landscape actions as well as creating foundations from complementary measures under resilience theme 2 (Actions 2.4, 2.5, 2.6, 4.2, input into Actions 1.3 and 1.4).

The role is likely to be a temporary part-time role in the short term and could potentially be funded by an RDRP grant.

IMPLEMENTATION PLAN SUMMARY:	
Timeframe	Short term – by June 2026
Costs	$150,000
Funding opportunities:	• RDRP funding • Drought Ready and Resilient Fund
Strategic alignment	• National Drought Agreement (objective c.) • Goulburn Mulwaree Community Strategic Plan 2042 (C.10) • Community Strategic Plan - Wingecarribee 2041 (Goal 4.4)
IMPLEMENTATION:	
Implementation steps:	• Seek funding • Establish role description and objectives • Advertise for role • Engage with relevant land care organisations and government agencies on establishing working relationships
Action facilitator:	• Council
Key Stakeholders:	• Local landholders • NSW DPIRD • LLS • CSIRO • Land care organisations
Risks	• Lack of available funding • Unable to retain resources • Low engagement from local farming community
MONITORING AND EVALUATION:	
Resilience outcomes:	• More primary producers are connected with land care and management agencies • More primary producers preserve natural capital while also sustaining productivity and profitability. • More primary producers adopt whole-of-system approaches to landscape health to preserve long-term landscape health.
Indicators/ Targets:	• Retention of qualified resource • Number of agricultural landholders engaged • Creation of landscape health resources • Adoption of ‘wet year’ planning and farming practices
Stakeholder Engagement Activities	• Radio advertisements, farming and land care group information sessions and member communications, online recruitment resources

SUPPORTING AND SEQUENTIAL ACTION		ACTION FUNDAMENTALS
3.1	The establishment of an online directory of landscape management grant opportunities, information resources and tools, and education materials	Maintain/modify/transform: Maintain current systems by consolidating information sources in a single directory, and promoting the directory to the agriculture community
		Preceding action: 3.0
		Potential facilitator: Agricultural Outreach Officer/ Land care organisations/farming groups
3.2	The promotion of 'wet year' landscape management and planning activities to proactively promote landscape health under all climate conditions – i.e. promotion of practices to prepare for drought in 'wet years'	Maintain/modify/transform: Modify farming practices to promote broad adoption of pro-active landscape health measures
		Preceding action: 3.0 / isolated action
		Potential facilitator: Agricultural Outreach Officer/ Land care organisations/farming groups
3.3	Engage local aboriginal knowledge holders within local land care groups and practice committee	Maintain/modify/transform: Modify farming practices to incorporate learnings from local First Nations land managers
		Preceding action: 3.0 / isolated action
		Potential facilitator: Agricultural Outreach Officer/ Land care organisations/farming groups
3.4	Establish partnerships between local agricultural land holders and academic institutions to trial innovative landscape health management practices	Maintain/modify/transform: Transform farming practices by incorporating innovative land management practices
		Preceding action: 3.0 / isolated action
		Potential facilitator: Agricultural Outreach Officer/ Land care organisations/farming groups

RESILIENCE THEME 4: RESILIENT REGIONAL WATER SUPPLY

Regional water supply is sustainable, secure, and resilient to shocks

(S 3) More water users are informed about water security issues and adopt sustainable water use practices to sustain secure water supply

The shifting demographics of the region over time has led to varying levels of community understanding on the importance of water conservation both under non-drought and drought conditions. Current and expected growth in the residential population is also expected to put a strain on water supply during future drought events.

Goulburn Mulwaree and Wingecarribee Shire have diversified water supply options. Both Councils own and operate dams and source water from the WaterNSW owned and operated Wingecarribee Reservoir. Goulburn Mulwaree primarily sources water from the Council operated Pejar and Sooley Dams, with connectivity to the Wingecarribee Reservoir through the Highland Source Pipeline. Wingecarribee Shire is supplied by the Council operated Bundanoon Dam and the WaterNSW operated Wingecarribee Dam. Under the Greater Sydney Water Sharing Plan, water supply to Wingecarribee Shire can be augmented from the WaterNSW operated Tallowa Dam in the Shoalhaven catchment under limited capacity conditions. However, both Councils reported that they may increase reliance on the WaterNSW operated Wingecarribee Reservoir in the future due to cost and demand pressures created by growth in residential population.

Source: Artesian bore Australia, John Carnemolla, iStock, 2024

Stakeholders reported that over time there has been a decline in understanding of the importance of water conservation practices, both in urban and semi-rural domestic water users. As community members who experienced the severe restrictions of the Millennium Drought have left the region, and people less accustomed to living in a rural environment have settled in the region, there has been a shift in expectations for water availability, cost and security. Rural and regional residential living campaigns have often not been accompanied by water-wise and resource use education campaigns.

A compounding issue is that the residential and recreational buildings in the older towns and villages of the region are not equipped with water conservation equipment, meaning residents, and building occupants are solely reliant on town water. Similarly, equipment installed during the Millennium Drought is becoming aged and in need of replacement.

During the Millennium Drought, Goulburn's town water supply levels reached critically low levels, leading to the implementation of the highest possible water restrictions (level 5) and warnings that the town had less than 12 months of water supply remaining. Water security was improved by the construction of the Highland Source Pipeline in 2011, however stakeholders report that water carting was required during the 2017-2019 drought and Goulburn Mulwaree Council provided urban water taps for domestic use through the Mayoral Relief Fund. Illustrating that while water security has improved, there is a need enhance domestic water conservation practices.

FOUNDATION ACTION 4.0: THE ESTABLISHMENT OF WATER SHARING AND AVAILABILITY RESOURCES TO INCREASE COMMUNITY AWARENESS AND VISIBILITY OF WATER MANAGEMENT DURING DROUGHT.

This action includes the development of online dashboard and public drinking water level signage (similar to green to red 'Fire Danger Today' signs).

Stakeholder consultation highlighted community concern with how water is managed and shared between catchments in drought conditions under NSW Government Water Sharing Plans. Some concern was based on a misunderstanding of water sharing conditions and arrangements, a belief that other catchments received favourable water allocations. Community sentiment of 'getting a bad deal' contributed to feelings of stress and anxiety during drought periods.

The purpose of this action is to create a transparent resource to provide community members with information on:

- How water is shared between catchments within the Greater Sydney Drinking Water Catchment
- Dam levels and water restriction levels on any given day

The public display of drinking water level signage would contribute to elevating community awareness of the importance of, and individual accountability for, responsible consumption of potable water.

IMPLEMENTATION PLAN SUMMARY:	
Timeframe	Medium term – by June 2027
Costs	$50,000
Funding opportunities:	• RDRP funding • Drought Ready and Resilient Fund
Strategic alignment	• Goulburn Mulwaree Community Strategic Plan 2042 (D.13 and D.15) • Wingecarribee 2040 Local Strategic Planning Statement • Greater Sydney Water Strategy (P.2)
IMPLEMENTATION:	
Implementation steps:	• Identify funding sources • Establish accountabilities • Establish resource materials
Action facilitator:	• Council
Key Stakeholders:	• WaterNSW • Sydney Water • NSW DCCEW • NSW DPIRD
Risks	• Lack of available funding • Low community engagement
MONITORING AND EVALUATION:	
Resilience outcomes:	• More rural residential water users are informed about water security issues and adopt sustainable water use practices to sustain secure town water supply
Indicators/ Targets:	• Sufficient funding secured • Publication of online resource
Stakeholder Engagement Activities	• Radio advertisements, local mailouts, promotion through local community groups, real estate agents promoting dashboard to new property buyers

SUPPORTING AND SEQUENTIAL ACTION		ACTION FUNDAMENTALS
4.1	The creation of a 'water-wise' educational campaign targeting community attitudes and behaviours for domestic water use during drought and non-drought periods, including promoting behaviours that manage, store and re-use both potable and non-potable water	Maintain/modify/transform: modify community attitudes on responsible water management practices
		Preceding action: 4.0
		Potential facilitator: Council, WaterNSW, NSW DCCEW
4.2	Promotion of existing water security initiatives such as the Australian Government's *On-farm Emergency Water Infrastructure Rebate Scheme*, NSW Government *Drought Ready and Resilient Fund*, ANU Sustainable *Farms Enhance farm* dams resource to encourage adoption of on-farm water management and retention planning and management practices during wet-years	Maintain/modify/transform: Maintain and/or modify on-farm water management practices that maintaining or installing water management infrastructure
		Preceding action: 3.0 / not required
		Potential facilitator: Agriculture Outreach Officer/Council
4.3	Micro-grants for retrofitting older buildings in rural villages with water conservation equipment, or replacing aged water conservation equipment	Maintain/modify/transform: Maintain or modify rural water conservation practices by replacing or installing required equipment
		Preceding action: not required
		Potential facilitator: Council / NSW Government
4.4	Engage local aboriginal knowledge holders within local land care groups and practice committee	Maintain/modify/transform: Modify on farm water conservation practices based on First Nations learnings
		Preceding action: 3.0 / not required
		Potential facilitator: Agriculture Outreach Officer, land care groups
4.5	Consideration of co-operative water storage mechanism for farmers to facilitate local water-carting services	Maintain/modify/transform: Transform regional water sharing arrangements to increase cooperative capacity / resilience reserves
		Preceding action: 3.0 / not required
		Potential facilitator: Agriculture Outreach Officer, land care groups, farming groups

IMPLEMENTATION REQUIREMENTS

This RDRP sets out a prioritised approach to realise our vision for the region. The proposed actions represent an array of initiatives to be led by community members, stakeholders, local and state government. Moreover, it is recognised that while actions are best delivered locally, the ability to draw upon multi-jurisdictional learnings from similar projects (as well as consider any associated broader requirements) ultimately leads to better outcomes. The successful delivery of the plan (and any of its actions) will be reliant upon:

- Community ownership – A commonality across the proposed actions is the change in understanding and action by local community members as the ultimate driver to the RDRP success. While the actions identified above have been developed through community engagement, the continued adoption of the actions at both and individual and community groups level will be important. Identifying community working groups or key community representatives to support localised implementation will be critical

- Local Government ownership – Both GMC and WSC are committed to enhancing the drought resilience or the region. Both Council's already operate a number of working groups and dedicated resources to managing natural hazards and this plan will fall within and support these existing portfolios. Additional personnel support is likely to be required to facilitate implementation, such as the creation of a Drought Resilience Officer role

- State and Federal ownership – This RDRP forms one of many currently in development across NSW and the ongoing regional co-ordination, as well as and cross-jurisdictional learning opportunities, will be critical to the success of both this RDRP and the broader program. The federal government likewise has a national level coordination and funding role that support the delivery of state and local programs.

LASTING GOVERNANCE

This RDRP provides a set of community driven actions within a sequential framework, designed to achieve a set of resilient outcomes. While it is a community-led plan, implementation of the actions will require a level of coordination across all levels of government, as well as a variety of NGOs. An agreed governance arrangement for all aspects will be required to ensure consistency and clarity in plan implementation, given the array of contributing parties. Key to its successful implementation, will be funding commitments to support the governance process and ultimate delivery from community, local, state and federal agencies. The ultimate structure of the governance framework will likely depend on ongoing implementation of the Regional Drought Resilience Planning Program, and coordination of implementation between Federal and State Governments. This RDRP identifies key governance roles at different levels of implementation (Figure 18).

The envisioned Governance system (Figure 18) is based on nested responsibilities at different levels of Federal and State, Local and Community levels. The foundation of the Governance system will be the creation of a Local Government level Project Control Group and a community level Working Group. It is envisioned that these groups will meet periodically to monitor and review action implementation, as defined under the Monitoring, Evaluation, and Learning (MEL) Framework. It is also envisioned that the RDRP will be a live document, and that a formal review will be conducted after five years of publication of this RDRP (2030).

Figure 18: Governance system

MONITORING, EVALUATION AND LEARNING (MEL)

The RDRP is envisioned to be a live document. As our communities change, and our drought exposure continues to change and evolve there is a need to:

- Review the resilience indicators and update the resilience assessment
- Review climate projections
- Review the implementation of current actions
- Update the proposed action list.

A Benefits Realisation Plan (BRP) will be developed to support the RDRP and act as the mechanism to coordinate reviews and ensuring ongoing performance enhancement throughout the life of the plan. A robust Monitoring, Evaluation, and Learning (MEL) Framework will be central to the BRP. The key elements are included below.

MONITORING

The monitoring framework is centred on a set of outcome indicators that are directly linked to the outcomes described in Figure 17. This plan envisions that the RDRP Working Group will track the outcome indicators over the next five-years and that the outcome indicators will be refreshed on review of this RDRP. The outcomes indicator framework is provided at Appendix B.

EVALUATION

The evaluation framework sets out the types and frequencies of evaluation to be performed under the RDRP MEL framework. It also defines the envisioned roles of stakeholders and partners and provides a system for tracking evaluation findings over time. The evaluation plan will include thematic benefit realisation evaluations, programmatic evaluations, and a summative evaluation.

It is envisioned **benefit realisation evaluations** will be undertaken annually to assess the extent to which the measurable target outcomes for each thematic action defined within the outcome indicator framework (Appendix B) are being met.

It is envisioned the **programmatic evaluations** will take place every six-months. Programmatic evaluation will review.

- Implementation – The timeframe, governance and budget for delivery are being met and understood
- Finance – The action has available funding for completion
- Risks – Risks to the action are understood and appropriate mitigation measures are identified
- Engagement – Community and government sentiment regarding the action (and its successful implementation) has been sought and given.

The **summative evaluation** should take place five years after the publication of this RDRP. The summative evaluation will be a comprehensive review of the periodic benefits realisation and programmatic performance review outputs. It is envisioned that the summative valuation will also include a revision of the resilience assessment of the region, a review of future climate predictions and economic shocks, and any required changes to resilience pathway actions. The CSIRO list of suggested future plan updates is provided at Appendix C and it is expected to inform future plan updates considered at the summative evaluation.

As part of the summative review, all existing proposed actions will be assessed for continued relevance in terms of:

- Alignment with the overall RDRP vision for the region (if changed)
- Similarity / duplication of other initiatives already underway
- Alignment with community sentiment and concern
- Clarity of implementation pathway
- Lessons learned resilience actions undertaken by GMC, WSC or other RDRP plans.

LEARNING

Reflection and continuous learning will be facilitated though the formalisation of a learning plan. The learning plan will ensure that information captured through the monitoring and evaluation stages of the RDRP MEL framework will inform decision making on resilience actions to be altered, pursued, or if necessary, ceased.

It is envisioned that an annual MEL workshop will be held involving members of the RDRP Working Group to be formalised under the Governance Framework. The annual MEL Workshop will report the outcomes of ongoing evaluations and promote sharing of learning across the RDRP thematic actions. Learnings should be recorded within a workshop report and used to evaluate future changes to this RDRP, to be considered at the summative evaluation.

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APPENDIX

Source: Sheep heading for shearing shed, John Carnemolla, iStock, 2024

APPENDIX A: RDRP STAKEHOLDER ENGAGEMENT LIST

- Agribusiness and Equine Strategic Working Group, Wingecarribee
- Australian Organics Plus
- Bowral Co-op
- Business Southern Highlands
- Community Voice for Hume
- Country Women's Association
- Department of Planning and Infrastructure (DPI)
- Department of Primary Industries and Regional Development (DPIRD)
  - Youth Community & Delivery Team
  - Aboriginal Partnerships Program
  - Regional Economic Development
- Exeter Business
- Goulburn Chamber of Commerce
- Goulburn Mulwaree Community Sustainability Hub
- Goulburn Mulwaree Sustainability Hub
- Grow Southern Highlands
- Illawarra Local Aboriginal Land Council (LALC)
- Jim Hindmarsh (Livestock Agency)
- Landcare Goulburn Mulwaree – Regenerative Grazing and Framing Group
- Local Land Services (LLS)
- Marulan Region Chamber of Commerce
- National Parks and Wildlife Services (NPWS)
- NSW Health - Rural Adversity Mental Health Program (RAMHP)
- Pejar Local Aboriginal Land Council (LALC)
- Regen Action
- Robertson Business Chamber
- Rural Financial Counsellor
- Service NSW
- Southern Highlands Agribusiness
- Southern Highlands Community Garden Network
- Southern NSW Local Area Health District (LAHD)
- Sustainable Goulburn
- Tablelands Farming Systems
- TAFE NSW
- The Interagency Group.
- The Southern Highlands Farming Community Resilience and Preparedness Working Group
- Water NSW
- Wingello Village Store

APPENDIX B: PERFORMANCE AND OUTCOME INDICATORS

OUTCOME	ACTION	PERFORMANCE INDICATOR	OUTCOME INDICATOR
Resilience local communities: *Regional communities are resourceful, connected & thriving*			
(S1) More community members are resourced to provide community led intervention	1.0 Creation of a dedicated (part-time) Resilience Officer resource, to be funded by DRF grant	1. Secure funding by target date 2. Retention of one resource per LGA by target date	1. Community survey data shows lower incidence of poor mental health (e.g. ABS census data, population health surveys) 2. Increase in participation in community-driven outreach initiatives such as 'check-in on your neighbour
	1.3 Develop a community 'first-aid' kit to assist in community driven out-reach in times of drought and climate stress	1. First aid kit list of resources established by target date 2. First aid kit launched by target date	
	1.6 Establishment of a youth resilience ambassador role	1.Role description established by target date 2. Role filled by target date	
	1.7 Identify the needs of young people during periods of climate stress and create a 10-point Youth Action Plan.	1. Youth resilience workshop held by target date 2. 10-point Youth Action Plan developed by target date	
(S2) Stronger community connectedness and greater awareness contributing to community wellbeing.	1.1 Identify opportunities for collaboration between organisations providing rural health care programs (e.g. RAHMP) and local community organisations (farming groups, sporting clubs etc) to promote wellbeing	1. Partnerships established by target date 2. Preliminary list of collaboration events established by target date	1. Community survey data shows lower incidence of poor mental health (e.g. ABS census data, population health surveys) 2. Increase in participation in community-driven outreach initiatives such as 'check-in on your neighbour'
	1.2 Engage with real estate and property agents regarding access pathways for support and education regarding drought	1. Target number of real estate agents engaged by target date 2. List of potential pathways established by target date	
	1.4 Establish and formalise network of community organisation leaders to coordinate and promote drought response measures (e.g. 1.5).	1. Target number of community organisation and NGO leaders engaged by target date 2. Network formalised by target date	
	1.5 Establishment of network of community 'drop-in centres' or 'drought support hubs' at community organisation locations	1. Target number of community organisation and NGO leaders engaged by target date 2. Network of 'drop-in' centres formalised by target date	

OUTCOME	ACTION	PERFORMANCE INDICATOR	OUTCOME INDICATOR
Resilient local economies: *Local businesses are informed, resourced and prepared*			
(EC 1) More local businesses adopt strategies to reduce financial exposure to drought	2.0 Formalise networks, accountabilities and roles for promoting pro-active 'good-year' business planning	1. Network members engaged by target date 2. Network and responsibilities formalised by target date	1. Local chambers of commerce and business groups report target number of businesses developing resilience plans and implementing practices 2. Target percentage reduction in drought related business closures within the region 3. Value of regional economic output declines by less than 10% during prolonged drought periods
	2.1 Promotion of proactive 'good-year' business resilience planning through creation of online 'resilience' planning template and online resource directory	1. Accountability for development of online template and resource directory established by target date 2. Online template launched by target date	
	2.2 Organise business networking events for local businesses to share learnings on resilient business practices	1. Target number of resilient business networking events established by target date	
	2.3 Investigate opportunities for non-agricultural major events to attract tourism to the region, including greater utilisation/activation of town and village assets typically used for agricultural purposes such as regional show grounds or properties	1. List of potential events and venues established by target date 2. first event held by target date	
	2.4 Investigate opportunities for Aboriginal community led water / land tourism operations	1. Accountability for action established by target date 2. List of opportunities established by target date 3. List of operators formalised by target date	
	2.5 The establishment of a small farm processor co-op, where smaller farms pool farming machinery and equipment	1. Accountability for action established by target date 2. Potential co-op members engaged by target date 3. Co-op governance framework established by target date	
	2.6 The establishment of a member-based regional feed store co-op for livestock producers	1. Accountability for action established by target date 2. Potential co-op members engaged by target date 3. Co-op governance framework established by target date	
	2.7 Implementation of training, education and traineeship/apprenticeship programs for off-farm income generating activities, particularly focused toward regional youth	1. Accountability for action established by target date 2. Potential programs established by target date 3. Program partnerships established by target date 4. Program launched by target date	

OUTCOME	ACTION	PERFORMANCE INDICATOR	OUTCOME INDICATOR
Resilient landscapes: ***Agricultural landscapes are sustainable, functional, with healthy natural capital***			
(EN1) More primary producers preserve natural capital restore the natural resource base and preserve long-term landscape health, while also sustaining productivity and profitability.	3.0 Creation of a (temporary part-time) Agriculture Outreach Officer role	1. Secure funding by target date 2. Retention of one resource per LGA by target date	1. Value of agricultural output is sustained during drought periods 2. Drought indicators such as NSW DPIRD vegetation index report greater vegetation density during dry periods than previous drought periods (i.e. 2019-20 drought) 3. Agricultural employment is sustained during drought periods
	3.1 The establishment of an online directory of landscape management grant opportunities, information resources and tools, and education materials	1. Accountability for action established by target date 2. Directory launched by target date	
	3.2 The promotion of 'wet year' landscape management and planning activities, and resources to proactively promote landscape health under all climate conditions – i.e. promotion of practices to prepare for drought in 'wet years'	1. Accountability for action established by target date 2. Program launched by target date	
	3.3 Engage local aboriginal knowledge holders within a local land care groups and practice committee	1. Accountability for action established by target date 2. Program launched by target date 3. Target number of workshop attendees	
	3.4 Establish partnerships between local agricultural land holders and academic institutions to trial innovative landscape health management practices	1. Accountability for action established by target date 2. Program launched by target date	

OUTCOME	ACTION	PERFORMANCE INDICATOR	OUTCOME INDICATOR
Resilient water supply: ***Regional water supply is secure, sustainable and resilient to shocks***			
(S3) More water users are informed about water security issues and adopt sustainable water use practices to sustain water supply	4.0 The establishment of a water sharing and availability resource to increase community awareness and visibility of water management during drought	1. Accountability for action established by target date 2. Program launched by target date	1. Reduced demand for water delivery (carting) services during drought periods, when compared to previous drought
	4.1 Water wise education campaign for domestic water use including options to manage, store and re-use water	1. Accountability for action established by target date 2. Campaign launched by target date	
	4.2 promotion of existing water security initiatives to encourage adoption of on-farm water management and retention planning and management practices during wet-years	1. Accountability for action established by target date 2. Resource launched by target date	
	4.3 Micro-grants for retrofitting older buildings in rural villages with water conservation equipment, or replacing aged water conservation equipment	1. Accountability for action established by target date 2. Funding source identified 3. Number of successful grant applications	
	4.4 Engage local aboriginal knowledge holders within a local land care groups and practice committee	1. Accountability for action established by target date 2. Aboriginal knowledge holders identified by target date 3. Program launched by target date	
	4.5 Consideration of co-operative water storage mechanism for farmers to facilitate local water-carting services	1. Accountability for action established by target date 2. Potential co-op members engaged by target date 3. Co-op governance framework established by target date 4. Program launched by target date	

APPENDIX C: CSIRO SUGGESTIONS FOR FUTURE PLAN UPDATES

RDRP COMPONENT	SUGGESTED CHANGE FOR FUTURE PLANS
Component 1: Definition, vision, goals and outcomes	Future plan updates could ensure 'transformation' is carefully considered as an element of the definition of resilience, and that the needs for transformation are explored and reflected in priority actions.
	Future plan updates could explore transition, and transformation needs in the region to achieve the stated vision.
Component 2: Stakeholder engagement, participation, and partnerships	In future plan updates, it would be helpful to consider how stakeholder engagement could be extended to include any missing sectors and segments of the community. Also the approach could be deepened to support a more community-owned plan.
	Future plan updates and implementation should be underpinned by stronger partnership arrangements with clearly defined roles and responsibilities.
Component 3: Active learning and adaptive governance	Future plan updates could include details about explicit structured processes to support active learning and ongoing adaptation of the plan and its actions. Facilitated structured learning processes could also be explicitly embedded in the monitoring, evaluation and learning (MEL) section with potential for the Project Control Group to have a leading role.
	Future plan updates could outline formal adaptive governance arrangements that clearly address the following three questions: (i) How will the governance arrangements ensure ongoing appropriate representation of groups with different vulnerabilities to drought, including First Nations communities and non-farming populations? (ii) How will the governance be nested with other governance structures and ensure that decisions are made at the appropriate level (the level closest to where they will have an impact? (iii) How will responsibilities and ownership of the plan be balanced with rights and resources at appropriate levels for coordinating and implementing resilience-building activities?
Component 4: Evidence base, a stocktake of past and current relevant work and alignment	Future plan updates could include more discussion about the references cited, so that readers may better understand how these works connect to and align with the plan. This would help strengthen the analysis of its evidence base.
	Future plan updates could include further analysis of the key linkages between the other plans and policies, and their implications for understanding and contributing to the region's resilience, (e.g. vulnerability to drought and the economic, social and environmental impacts). Doing so would help the plan provide a more integrated picture of the state of the region's resilience, and explicitly show how the actions proposed in the plan, and those listed in the other plans and policies, are linked.
Component 5: System description and resilience assessment	Future plan updates could do more to better reflect details of the system. This could be achieved by understanding experiences and perspectives from across diverse groups, including First Nations people. A profile of drought impacts for those non-agricultural sectors identified as significant (e.g. health care, retail and construction) could also be included. Furthermore, the profile could describe the employment benefits of those highest value industries for the region (e.g. health and social administration, and construction) to better inform the degree to which they can contribute to building drought resilience.
	Future plan updates could go beyond characterising impacts and vulnerabilities to provide a more comprehensive assessment of what confers resilience to drought in different sectors, supply chains and segments of communities. Such an assessment would better inform resilience-building pathways and intervention options by explicitly considering the capacities (anticipatory, absorptive, adaptive and transformative) of the region's different sectors and community segments to drought and related stresses and shocks.
	Future plan updates could include a resilience assessment that provides quantitative and empirical evidence in key economic and social variables over time. This assessment could show demographic changes in the diversity of businesses, livelihoods and employment opportunities for different community segments; emergent versus declining types of industries; and labour mobility among different industry and sectors. Together, this evidence will better inform the analysis of socioeconomic resilience of the region to drought.

RDRP COMPONENT	SUGGESTED CHANGE FOR FUTURE PLANS
Component 6: Future scenarios	Future plan updates could include an exploration of alternative future scenarios that consider other key drivers of change (e.g. global economic disruptions) and how these may interact with the identified future impacts of drought. These future scenarios should consider a mix of livelihoods and sectors, including those that rely less on agriculture and water. A participatory-based scenario development process and its outcomes could inform active learning and adaptive governance for future plan updates and implementation.
Component 7: Intervention options and pathways for building regional resilience	Future plan updates could introduce the concept of adaptation pathways that create options for future drought preparedness, response and recovery. Such pathways should also contain triggers and decision criteria to help navigate uncertainties when choosing which options to implement when.
	Future plan updates could build on the adaptive capacity and SWOT analyses and assess the type and nature of change needed to the region's services, livelihoods, sectors, value chains and subsystems for building resilience to drought and related stresses and shocks. Based on this assessment, the proposed intervention options may be classified according to whether they contribute to maintaining, modifying or transforming different aspects of the region. These exercises may also help with identifying additional and innovative initiatives associated with aspects of the region that need to be modified or transformed to build resilience.
Component 8: Assessment of pathways and theory of change for recommended actions	Future plan updates could consider developing more resilience-related criteria and means for assessing each action. This assessment could include considering whether each selected action is necessary, whether it forms a set, whether the priority and secondary actions are sufficient to achieve the stated outcomes and impacts, and whether they contribute to building regional drought resilience.
Component 9: Monitoring, evaluation, and learning	Future plan updates could have a well-developed theory of change that builds on the existing program logic. It could explain the assumed mechanisms by which the proposed actions are intended to bring about desired outcomes and impacts. This will involve working backwards from the vision and themes to identify the changes required and the causal mechanisms, as well as the outcomes, outputs and activities needed to achieve the desired changes. A more robust theory of change could also guide the development of the plan's monitoring, evaluation and learning (MEL) processes.
Component 10: Integration between components	Future plan updates could explore the development of robust theory of change and detailed monitoring, evaluation and learning (MEL) that could enhance clarity through better interaction and linkages between the plan components.