Ordinary Meeting

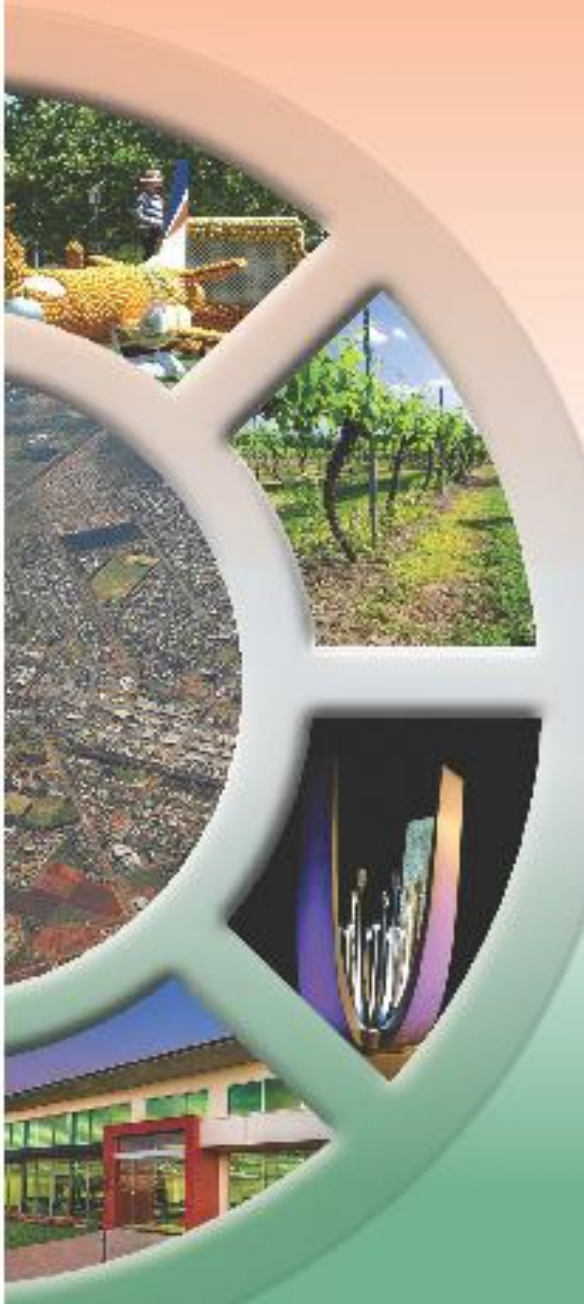
Tuesday, 28 October 2025

ATTACHMENTS UNDER SEPARATE COVER

CL03 Alteration - Methodology Change for Levying Stormwater Management Charge to Business Rating Category

CL05 Western Riverina Regional Drought Resilience Plan

Minutes of the Scenic Hill User Group Meeting held on 23 September 2025



ATTACHMENTS UNDER SEPARATE COVER

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Circular No. 06-47
Date 26 July 2006
Doc ID. A56653

Contact Wendy Forrester [redacted]

STORMWATER MANAGEMENT SERVICES CHARGE GUIDELINES

This Circular is to advise councils of the release of the Stormwater Management Services Guidelines (attached).

The Guidelines have been developed to assist councils that wish to levy a stormwater management services charge. They describe in detail the requirements associated with levying the charge.

The Department of Local Government and the Department of Environment and Conservation have jointly prepared the Guidelines in consultation with the Local Government and Shires Associations of NSW, local government finance and rating professional bodies, a number of councils and a number of Catchment Management Authorities.

The Guidelines have been adopted under the provisions of section 23A as Director General's Guidelines. As such, councils are required to consider these Guidelines when levying a stormwater management services charge in accordance with section 496A of the *Local Government Act 1993* and clauses 125A, 125AA, 200A and 217 of the Local Government (General) Regulation 2005.

The aims of the Guidelines are to:

- explain the details related to levying the charge and allocating expenditure for stormwater management services to eligible privately owned land and
- outline community consultation and reporting requirements through inclusion of particulars related to stormwater management services in council's management plan and annual report.

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The Guidelines replace the Frequently Asked Questions attached to the department's Circular to Councils 06-24 *Stormwater Management Services Charge – Commencement of legislation and updated FAQs.*

Garry Payne
Director General

Stormwater Management Service Charge Guidelines

Department of Local Government

July 2006

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ISBN 1 920766 44 8

Produced by **Directional Consulting** for the
Department of Local Government

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1 Introduction

1.1 Scope and purpose

These Guidelines, adopted and issued by the Director-General of the Department of Local Government under section 23A of the *Local Government Act 1993*, are to assist councils that wish to levy a stormwater management service charge. This option has recently been made available through amendments to the *Local Government Act 1993* and the *Local Government (General) Regulation 2005* (see **Appendix A** for legislative provisions).

The Guidelines describe in detail the requirements associated with levying the charge including:

- details related to levying the charge
- the allocation of expenditure for new/additional stormwater management services provided to eligible privately owned land; and
- community consultation, management planning and reporting requirements.

The Guidelines have been divided into six main sections:

- Section 2 provides background information on stormwater management;
- Section 3 outlines the roles and responsibilities for stormwater management within New South Wales;
- Section 4 describes stormwater management services;
- Section 5 outlines the particulars relating to levying the charge;
- Section 6 briefly describes changes to planning related to stormwater management; and
- Section 7 highlights additional reporting requirements associated with the charge.

A worked example is presented in **Appendix B** to provide councils with a model for levying the charge. **Appendix C** contains a flowchart and checklist to assist councils determine and undertake the necessary steps to implement the charge.

Councils must take into consideration these Guidelines when planning, implementing and reporting on the levying of a stormwater management service charge.

1.2 Relationship to other documents

These Guidelines should be read in conjunction with other Department of Local Government publications, which provide additional information for councils on levying a stormwater management service charge. These and other relevant policies and publications are listed in **Appendix A**.

2 Background

2.1 Stormwater management issues

Increasing urbanisation has resulted in a significant increase in impervious surfaces and has significantly increased the volume of stormwater flowing into urban waterways. These flows contribute substantial loads of litter, sediment and chemicals to urban waterways, as well as causing flooding in some areas.

In addition, appropriate asset management (through maintenance and replacement of drains and stormwater treatment measures) and the harvesting and reuse of stormwater is becoming increasingly important.

Meanwhile, issues associated with the sustainable supply of potable water clearly demonstrate the need for robust water conservation measures across the State. Stormwater harvesting and reuse schemes, providing an alternative source of supply for non-potable uses, at least partly address this issue through their potential to augment supply. A range of pilot schemes have been implemented across New South Wales, and these are providing evidence for the feasibility of transforming stormwater, previously considered as waste, into a valuable resource.

Stormwater management involves the use of structural (eg. physical infrastructure and treatment techniques) and non-structural (eg. education programs and monitoring) measures to both improve stormwater quality and mitigate excessive flows. This contributes to pollution abatement, protection of aquatic ecosystem health and flood mitigation.

2.2 NSW Government response

The NSW Government acknowledged the importance of urban stormwater management in the late 1990's, and introduced the *Waterways Package*. As part of this Package, the *Urban Stormwater Program*, administered by the Stormwater Trust, provided $82 million worth of funding for local programs over a 5-year period. This approach significantly raised the profile of stormwater management, and helped to motivate councils to improve stormwater practices. The success of this program, demonstrated through the significant environmental gains achieved, identified the need to establish a sustainable funding source aimed solely at providing for improved stormwater management.

In recognition of councils' key role in stormwater management and the need for ongoing funding for stormwater management, the NSW Government amended the *Local Government Act* in October 2005 to allow councils the option of levying a stormwater management service charge. Amendments to the *Local Government (General) Regulation 2005* provide supporting detailed requirements for this charge. These amendments came into force in April 2006.

3 Stormwater management roles and responsibilities

Councils have primary responsibility for stormwater management within their local government area. This includes managing both stormwater quality and quantity in their area and ensuring that potential negative stormwater impacts are not transferred across council boundaries.

A variety of organisations and State agencies in New South Wales share responsibility for stormwater management with local government. These include:

- water supply authorities - **Sydney Water** and **Hunter Water Corporations** hold responsibility for predominantly large (or trunk) drains within a proportion of their operational areas. They are required to maintain both the condition and hydraulic capacity of these assets. Sydney Water's stormwater assets extend across 27 local government areas in the greater Sydney metropolitan area, while 75% of Hunter Water drains are within the three major Hunter region councils - Lake Macquarie, Cessnock and Newcastle. Water supply authorities may levy charges on landowners in certain areas for trunk drain operations and maintenance. Such charges do not preclude the levying by councils of a stormwater management service charge to provide revenue to cover a proportion of councils' costs in managing the remainder of the stormwater system within a catchment.
- **RailCorp**, which has primary responsibility for railway corridor drainage systems;
- **Roads & Traffic Authority (RTA)**, with stormwater management responsibilities normally limited to drains needed to pass stormwater across State roads. The RTA contributes to the cost of drains along these roads under certain circumstances, and also has responsibility for stormwater management on its freeways;
- **Upper Parramatta River Catchment Trust (UPRCT)** has responsibilities for stormwater management within the Upper Parramatta River catchment. The Trust works closely with the four councils within the catchment – Parramatta, Blacktown, Baulkham Hills and Holroyd. The Trust is due to be incorporated within the Sydney Metropolitan Catchment Management Authority in 2006; and
- **NSW Maritime**, which is responsible for collecting litter and other gross pollutants from Sydney Harbour, as part of its Harbour Cleaning Service. Most of this material is sourced from stormwater systems.

A number of other State agencies carry responsibility for establishing the policy framework for environmental and natural resource management, including stormwater management. These are:

- **Department of Environment & Conservation (DEC)**, which has supported the Stormwater Trust since its inception, and coordinates the policy direction for stormwater management in New South Wales. Additionally, the DEC is developing a suite of documents under the *Managing Urban Stormwater* theme, published to provide guidance to councils and developers on issues ranging from treatment techniques to stormwater planning.
- **Department of Natural Resources (DNR)**, which holds ultimate responsibility for management of natural resources within the State. Of particular relevance to stormwater management is the integral role the Department has in coordinating Floodplain Management Plans (FMPs);
- **Catchment Management Authorities (CMAs)**, which are responsible for overseeing natural resource management within their respective catchments. Generally, they also play a major role in determining distribution of Commonwealth and State funding to local government natural resource management projects.

  In relation to stormwater management specifically, the CMAs may identify potential stormwater management related projects of regional significance through Catchment Action Plans. **For the purpose of administering the stormwater management service charge, councils need to consider these plans prior to determining which stormwater management activities will be funded by the charge.**

  Through consulting with CMAs during the project/activity planning phase involved with levying the charge, councils have the opportunity to both:
    - meet the needs of their own communities, which is particularly important for a service charge; and
    - adopt partnership approaches towards addressing stormwater issues of regional or catchment-wide significance.
- **Department of Energy, Utilities & Sustainability (DEUS)**, which promotes integrated water cycle management by water utilities to manage water systems in a sustainable way that benefits the community and local environment. The Department also provides guidance and support to local water utilities that operate under the *Local Government Act*.

4 Council stormwater management services

4.1 Stormwater management services

Stormwater management can be broadly defined as managing the quantity and quality of stormwater runoff from a catchment with the aim of:

- minimising stormwater impacts on aquatic ecosystems;
- minimising flooding impacts; and
- utilising stormwater as a water resource.

The *Local Government Act* defines a stormwater management service as "a service to manage the quantity or quality, or both, of stormwater that flows off land, and includes a service to manage the re-use of stormwater for any purpose".

Closely related to stormwater management is the restoration or rehabilitation of creeks and other waterways degraded by past stormwater runoff impacts.

The land within a catchment can be broadly categorised for stormwater management purposes as:

- public land owned by council (eg parks and roads);
- private land (eg private residential properties and commercial/ industrial premises); and
- non-rateable land that is not council owned public land.

Council stormwater management activities can therefore be split as follows:

- stormwater management services to private land;
- stormwater management services to public and other non-rateable land; and
- restoration activities (ie restoring degradation arising from past poor practices, including stream and riparian vegetation rehabilitation).

Table 1 presents an indication of potential council stormwater management activities that are usually related to each of these three categories. Some of these activities are common across both private and public/non-rateable land, in proportion to the amount of stormwater runoff from each of these land types.

Table 1: Typical stormwater management activities

Private land related activities	Public/non-rateable land related activities	Restoration
Monitoring of water quality and aquatic ecosystem health to assess effectiveness of stormwater pollution controls		Bushcare projects or activities (unless the proposed project/ activity relates to stormwater impacts on bushland)
Cleaning up stormwater pollution incidents		Management or rehabilitation of riparian vegetation
Monitoring of flows in drains and creeks, to assess effectiveness of flow management (flooding) controls		Management/ rehabilitation of streams/ degraded waterways
Planning, construction and maintenance of drainage systems, including pipes, channels, retarding basins and waterways receiving urban stormwater		
Planning, construction and maintenance of stormwater treatment measures, including gross pollutant traps and constructed wetlands		
Planning, construction and maintenance of stormwater harvesting and reuse projects		
Implementation of local and regional stormwater-related priorities identified in Catchment Action Plans (CAPs)		
Replacement of stormwater assets (i.e., drainage channels, pipes, treatment measures, etc)		
Planning and undertaking of community and industry stormwater pollution education campaigns	Irrigation of publicly-owned parks or gardens by treated stormwater	
Inspection of commercial and industrial premises for stormwater pollution prevention purposes	Street sweeping	
	Managing stormwater flows and quality from national parks, Crown land, etc.	
	Kerb and guttering, unless required to manage stormwater runoff from private land for flood mitigation purposes	

4.2 Stormwater management service costs

Many councils have not specifically identified their stormwater management costs. This is because many of their stormwater management activities can be related to other council activities such as:

- Environmental management
- Road construction and maintenance
- Waste management
- Land use planning

Where a council has a dedicated and inclusive stormwater management budget, the costs for these activities have not normally been attributed to managing stormwater runoff from private and other land (eg public and non-rateable land). Therefore the costs of providing a stormwater management service to private land have often not been specifically identified.

It is relatively difficult to estimate the stormwater management service costs to a specific parcel of land, particularly in comparison to other services that may be provided by council, such as water supply services where council is a water utility. It is not practical or cost-effective to measure the amount of stormwater runoff from an individual parcel of land and the associated load of stormwater borne pollutants. Councils therefore need to adopt a reasonable approach to estimating each parcel of land's contribution to council's stormwater management costs.

The overwhelming majority of annual stormwater runoff volume and pollutant load from an urban area is derived from runoff from impervious surfaces. These include roads, roofs, car parks and other paved areas. A common approach used in North America to apportion stormwater management costs is to estimate the entire stormwater management costs for a catchment and to apportion these costs based on the impervious areas within the catchment (ie derive costs per unit of impervious area). To minimise administrative costs in this approach, a constant impervious area is often assumed for single residential dwellings based on a calculated average sized residential block and the impervious area either calculated directly or as a function of the residential block area for commercial or industrial land.

This approach forms the basis of the stormwater management service charge described in Section 5. The average impervious area of a residential lot based on data supplied to the Department of Local Government by councils is 320 m^2. Business and commercial lots generally have a much higher impervious surface area than residential lots. In addition, the total area of business lots is considerably more variable than for residential lots, ranging from a size equivalent to a residential lot to a number of hectares. An "equivalent residential lot" has been used to specify the upper limit of the business land charge in the *Local Government (General) Regulation*. This notional lot size is based on an impervious area of 320 m^2, (equivalent to that of a residential lot) and the assumption that a business lot is 90% impervious (refer to **Appendix D**). The equivalent lots sizes for business lots is therefore 350 m^2 (as 90% of 350 m^2 is approximately 320 m^2).

This approach can be used by councils to apportion their stormwater management costs. Indicative impervious fractions (or discharge factors) for various land uses are presented in **Appendix D**.

A reasonable approximation of the split in impervious areas between land categories in a typical urban area is:

- approximately half of the impervious area is from private residential or business land and
- the other half of the impervious area is from public roads, reserves and other non-rateable land.

There may be individual instances where the council does not provide any stormwater management services to a parcel of land (eg for a parcel of land abutting the sea with a privately owned stormwater discharge pipe) or provides a reduced level of service. Examples include golf courses for which a much smaller than average proportion of land is impervious, or residences/businesses that can demonstrate they deal with a lot of their own stormwater privately through harvesting, private pipes etc. This is discussed further in Section 5 in relation to the stormwater management service charge.

5 Levying a stormwater management service charge

Key Points

- *The upper charge limit is set at $25 for urban residential land, and $25 per 350m^2, or part thereof, for urban business land.*
- *The level of the charge must not exceed the anticipated cost of providing a new/additional stormwater management service to land subject to the charge.*
- *A council cannot levy the charge where an existing special rate or drainage charge providing **primarily** for stormwater management is in place, **regardless** of whether the council received a special variation to implement the special rate or charge.*

5.1 Purpose of the charge

The purpose of the charge is to allow councils the option to raise additional revenue to cover some or all of the costs of providing new/additional stormwater management services within a catchment, suburb, town or local government area (LGA). This is to cover costs additional to those attributed to the level of service provided to the area in previous years, which has been funded by council's general income (ie excludes services provided by external ad-hoc grant funds). Council's stormwater management service costs may vary between years, hence an average cost over recent years would be appropriate (eg 3-5 years – the longer the time the more representative the average would be as significant variations would be smoothed out). The cost of continuing to provide the level of service equivalent to that provided in recent years must be met from other income sources (eg general income).

Certain land is exempt from the charge (see section 5.2) and the charge cannot be levied when a council has a stormwater-related special rate or special variation granted primarily for stormwater management or a drainage charge in place. The charge must not exceed the estimated cost of implementing the new/additional stormwater measures (see section 5.4) and the *Local Government (General) Regulation* caps the maximum amount of the charge for both residential and business properties (see section 5.3).

The stormwater management service charge cannot be used for dealing with stormwater run-off from public land. A broad analogy to this is the domestic waste management charge. Councils levy this charge on domestic premises to recover the costs of providing domestic waste management services. However, the cost of collecting waste from public areas and restoration of old landfills is recovered from ordinary rate or other income. A difference between the two charges is that the stormwater charge is to be for new/additional activities, rather than for fully recovering the costs of providing the stormwater management service.

Example:

A council has spent an average of $10 million/year on stormwater management services within its LGA on capital and recurrent expenditure over the last 5 years. The council wants to increase its expenditure to $12 million, to provide additional stormwater services, focused on flood mitigation and stormwater harvesting. There are 100,000 residential properties within the LGA, and the council wants to raise the extra $2 million by levying a $20 stormwater management service charge on each property.

Council then needs to check that:

1) properties are eligible to be charged (section 5.2) and they are within an eligible rating category (ie. residential, business)
2) the proposed $20 charge is less than the regulated upper limit (section 5.3); and
3) the proposed charge is no more than the cost of providing stormwater management services (section 5.4).

Figure 1 illustrates how the cost of new/additional stormwater works can be met through the stormwater management service charge.

The costs of the new/additional stormwater management services can be recovered using the stormwater management service charge up to the regulated upper limits and where the costs of the new/additional services are less than the costs of providing the service to chargeable land.

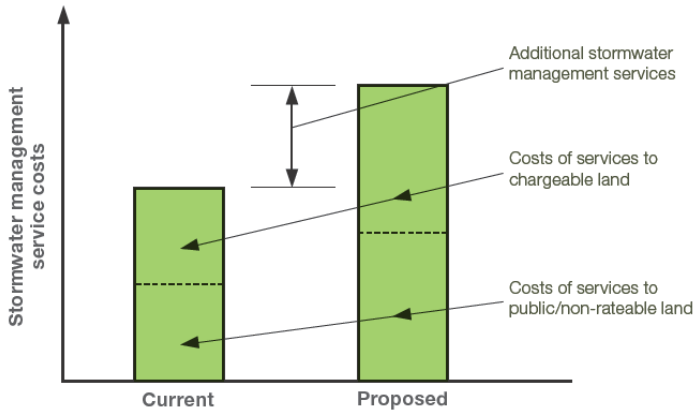


Figure 1 – Relationship between stormwater service costs and additional costs

5.2 Land eligible to be charged

Councils may apply the charge to parcels of rateable land categorised as residential or business under the *Local Government Act* within an urban area, that benefit from the proposed new/additional stormwater management services. These urban land-use categories are deemed most likely to contribute to increased stormwater flows and pollutant loads, as they contain a greater proportion of impervious area related to total land area. For this purpose, "urban" means land within a city, town or village. This may differ from the definition of urban contained in council's local environmental plan.

Urban land exempt from the charge includes:

- public land, such as:
    - Crown land,
    - council-owned land, and
    - land held under a lease for private purposes granted under the *Housing Act 2001* or the *Aboriginal Housing Act 1998*;
- vacant land, as in land containing no buildings, car parks or large areas of material such as concrete (i.e., no impervious surfaces); and
- rural residential or rural business land (i.e., land not located within a village, town or city)
- land belonging to charities and public benevolent institutions.

Councils may not levy the charge if they have a drainage charge or a special rate or special variation where the primary purpose is stormwater management – this is discussed further in section 5.5. A council is also not to levy a stormwater management service charge if it is a water supply authority and levies a stormwater charge under the *Water Management Act 2000*. These charges are regulated by the Independent Pricing and Regulatory Tribunal (IPART) – this provision applies to Gosford and Wyong Councils.

Councils are not to levy the charge on land where they do not provide a stormwater management service.

Councils may not have immediate access to information about properties to help determine if a parcel of land is exempt from the charge, and should determine appropriate mechanisms for identifying land as vacant or urban. This will involve identifying criteria for both vacant and urban land. It will also involve an appeals mechanism, such as including information with rates notices about a process where ratepayers can apply for an exemption, should they believe their land should not be subject to the charge.

If a parcel of land is vacant at the start of the rating period and a building is constructed on the land during the year, council could levy a pro-rata charge. However, to keep the administrative costs reasonable, council could decide to defer levying the charge until the following rating period. In the less likely circumstances of a parcel of land becoming vacant during a year, council could offer a rebate to the ratepayer on application. Council could charge a fee to cover any administrative costs associated with reimbursement.

If a council is concerned about stormwater quality from rural-residential or other rural land, an option to fund associated stormwater management activities would be to apply a special rate. This could be levied with or without a special variation approval.

5.3 Limits to the charge

Specified limits

Under the *Local Government (General) Regulation* the upper charge limit for urban residential land is $25. Urban business land can be charged up to $25 per 350m^2 of land area, or part thereof. This acknowledges the often greater area, proportionately, of impervious surfaces on urban business land as compared to urban residential land.

The charge amount levied by a council must also not exceed the anticipated cost of providing the new/additional stormwater management service to land subject to the charge. If the anticipated cost is estimated to be less than the $25 cap, then councils may only levy this lesser amount (as this reflects the cost of service provision).

Appendix C contains a flowchart and checklist that councils may use when levying the charge.

In most council areas, the greater percentage (over 90% on average) of rateable properties subject to the charge are residential (based on the Department of Local Government's council comparative information) and the administration of charges for these properties is relatively straightforward. Charging of business properties and strata lots, however, is more complex (see below).

While the Regulation sets maximum limits for the charge, councils may choose to levy a lower charge. This gives councils the flexibility to levy the charge in a manner that minimises administration costs for business properties and strata lots. However, councils need to ensure that the charge remains as equitable as possible across all land uses.

Calculating the Business land charge limit

Councils should have access to land area and unit entitlement information in valuation lists provided by the Valuer General or in their GIS. Councils will need to ensure that this data is integrated with data in existing rating programs to enable the upper charge amount for urban business land to be calculated.

Councils may choose to implement a simple charge approach in the first year of application that balances administrative costs, income received, and the gap between the capped amount and the charge amount (as councils will need to recover these costs from other income). Potential interim options for applying the charge could include:

- charging all businesses a flat $25 and all business strata units a flat $12.50 or
- charging all small-medium sized businesses a flat $25 (eg, up to 1,200$m^2$) and charging larger businesses (eg, over 1,200m^2) either a higher flat charge (eg, $100) or an area-based charge. Large businesses are relatively rare, and the extra effort required for collecting area data in these circumstances may be warranted due to the potential for additional income.

During the first year of implementation councils should ensure they collect the data necessary to refine the application of the charge in later years. It is expected that after the first year of implementing the charge councils will charge business properties based on actual land area data.

Example

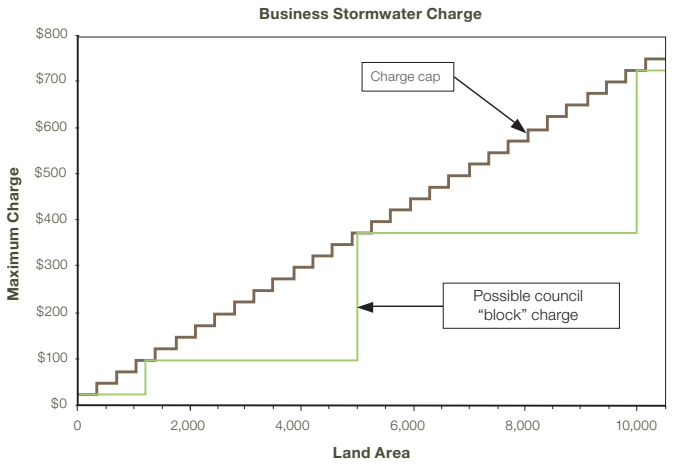
A council wants to achieve a reasonable balance between the administrative costs of levying the stormwater management service charge on business land and the revenue from the charge. Council is aware of the need for the charge to also be reasonably equitable relative to the charge for residential properties, to ensure that there are no community concerns about households effectively subsidising stormwater management service costs from businesses.

Council decided that the most appropriate approach was a relatively simple "block charging approach". This involved levying the charge on the following basis:

- $25 for all lots with an area below 1,200 m^2
- $100 for lots with an area greater than or equal to 1,200 m^2 and below 5,000 m^2
- $375 for lots with an area greater than or equal to 5,000 m^2 and below 10,000 m^2
- $725 for lots with an area greater than or equal to 10,000 m^2

These charges are below the regulated cap of $25 per 350 m^2 for business land. The relationships between the cap and these "block charges" is illustrated in **Figure 2**.

Figure 2 – Example business land "block charge"



Calculating the charge for strata lots

Note that regulations governing the charging of strata lots for stormwater management services are yet to be made under the Local Government (General) Regulation 2005. An amendment to the Regulation is expected to occur in the latter half of 2006. In the meantime, policy on levying the stormwater management service charge on strata lots is provided in these Guidelines (below).

Calculating the charge for residential strata lots

Councils may only charge the actual cost of providing a stormwater management service to residential strata lots. The cost of managing stormwater runoff from impervious surfaces is usually substantially less per residential strata lot than per standard residential property.

Councils may adopt any reasonable approach to determining the charge for strata lots, provided the charge does not exceed the lower of the cost of providing the service or half (50%) of the residential upper limit (ie. $12.50). Residential strata lots may only be charged up to **50% of the adopted charge as applied to standard residential properties**. This effectively caps the charge to residential strata units at $12.50 per unit.

For example, if the cost of providing a stormwater management service to standard residential properties is calculated to be $20 per property, strata lots would be levied at up to $10 per strata lot. In certain circumstances, such as for high-rise strata properties, councils may determine that the cost of providing the stormwater management services is less per strata lot than $10. In such circumstances councils may levy a lesser amount again, for example $5 per high-rise strata lot.

Calculating the charge for business strata lots

As discussed under 5.3, councils may adopt a simple approach for calculating the charge for business strata lots in the first year. However, the charge may not exceed the lower of the cost of providing the service or the business upper limit ($25 per 350m^2 of land area then divided between the strata lots). One option would be to charge $25 per 350m^2 of the land area occupied by the strata scheme (or part thereof), which is then divided on a pro-rata basis between the lots.

In the event that this approach results in individual contributions of less than $5, the council may adopt a minimum amount of $5 to be levied on each strata lot.

Example

A building containing 10 business strata lots has a land area of 1,250m². If the cost of providing the stormwater management service to the building is estimated to be $120, but the cap for a land area of 1,250m² is 4 x $25 = $100, each of the 10 units would then be levied an amount of $100 ÷ 10 = $10. The gap between the capped amount and the service amount for the building, in this case $20, must be funded from other income sources. As an alternative, a council may choose to apportion the charge according to the unit entitlement as determined by the Valuer General.

Calculating the charge for company title properties

The charge for company title properties is calculated in the same manner as strata title properties, according to the land category (residential or business). That is, if a parcel of land under company title is categorised as residential, the charge that applies to other residential strata lots would be levied on each individual shareholder. If the parcel of land under company title is categorised as business, the charge would be calculated according to the land area and divided among the shareholders, either equally or proportionately at the council's discretion.

In the event that this approach results in individual contributions of less than $5, the council may adopt a minimum amount of $5 to be levied on individual unit entitlement or share holders.

Calculating the cost for mixed development

Councils may adopt any reasonable method of calculating the charge for mixed developments. Two possible approaches are:

- adopt the dominant rating category as applying to the total parcel of land, using data provided by the Valuer General. The methods described above would then be used to determine the charge for this dominant use; or
- calculate a pro-rata charge for each portion of the mixed development. This is a more equitable arrangement, although the levying the charge on this basis will require more administrative effort.

In the event that a mixed development is 50% residential and 50% business, council has the discretion to determine whether to charge the property as a residential or business property.

Calculating the cost for stratas with multiple categories

Councils may adopt any reasonable method of calculating the charge for strata schemes with multiple categories (ie strata schemes with both residential and business strata lots). Councils should use their discretion in determining the most appropriate charge as long as the charge does not exceed the service provided to the property.

One possible approach would be for councils to adopt the dominant category as applying to the total strata scheme.

5.4 Anticipated cost of service provision

Councils may adopt any reasonable approach to estimating the costs of providing new/additional stormwater management services to land subject to the charge. This may be determined on a project-by-project basis, or across the whole catchment or local government area. Importantly, councils cannot levy a charge that exceeds the anticipated cost of providing a stormwater management service to a property subject to the charge. This means that councils must determine the cost of providing such a service before introducing the charge.

A suggested simple and justifiable method of determining the cost of offering such a service is to estimate the total cost of the stormwater management service to an area (i.e. a suburb, catchment or LGA) and pro-rata the costs to individual parcels of chargeable land based on their impervious area (as discussed in Section 4.2)

Councils should aim to demonstrate that properties are levied a charge according to the stormwater management services provided to them. In practice, it is difficult to directly link all stormwater management services back to the individual properties levied (eg. education, water quality testing). To overcome this problem, councils may choose to take a ‘global’ approach in providing stormwater management services across their local government area rather than on a catchment-by-catchment basis. However, in doing so, councils still need to ensure equitable distribution of stormwater management services over time.

Example

A council is proposing to spend an additional $2 million annually to provide stormwater management services to its council area. The council area contains 20,000 residential lots, 2,000 strata lots and 500 businesses. Based on the approach to charging strata lots in section 5.3, the 2,000 strata lots can be considered to be equivalent to 1,000 residential lots. Council has calculated the area of the 500 businesses to be equivalent to that of 1,000 residential lots. Hence the number of actual and equivalent residential lots is 22,000.

Council has estimated that half of the land within the area is chargeable land, hence $1 million in additional costs can be attributed to 22,000 lots, or $45 per lot. This represents the cost of additional service provision for a residential lot. For a strata lot, the additional service provision cost can be estimated at $22.50. The cost for business lots is $45 per 350 m^2 or part there of.

Note: These figures represent total **cost** rather than the amount that can be **charged**, which is capped at $25 for a residential lot and $25 per 350 m^2 for a business lot.

5.5 Relationship between charge and special rate/special variation

Difference between charge and special rate

Table 2 outlines the differences between a special rate for stormwater management and a stormwater management service charge.

Table 2: Stormwater management special rate vs service charge

	Special rate for stormwater management	Service charge for stormwater management
Calculation method	Structure must include an ad valorem component	The lower of a specified cap ($25 for residential lots) or the anticipated cost per lot of providing new/additional stormwater services.
Payees	Specific group of ratepayers who benefit from, contribute to need for, or have access to service	All eligible ratepayers in the LGA receiving a stormwater management service
Rate pegged	Yes	No
Approval/ consultation process	Ministerial approval required if special rate causes council to exceed permissible general income limit	Community consultation through draft management planning process
Reporting process	In annual report if subject to special variation approval	In annual report

Existing drainage charge, stormwater special rate or special variation

A council cannot raise the stormwater management service charge if the council has in place a special variation approval **primarily** for stormwater management activities that would apply for the period when the service charge is proposed. Regardless of the method employed to raise additional income for stormwater management activities, the use of this income combined with revenue raised from levying the charge for stormwater management purposes would be considered to be 'double-charging'.

If a council has received a special variation that includes a stormwater component, the council will be required to determine whether the stormwater component was incidental or primary to the overall purpose of the application.

If the council determines that stormwater was only an incidental component, it would be able to retain the income derived from the special variation and implement the new stormwater management service charge.

If the council determines that the application was primarily for stormwater related activity, it cannot continue to collect the special variation revenue and also levy the new stormwater management service charge. If the council wanted to implement the new stormwater charge it would be required to discontinue collecting the revenue being raised from the special variation before levying the new charge. In these circumstances, council would still be expected to fund the works previously done from the special variation out of a funding source other than the new stormwater management service charge. This would create a catch-up in general income which would be forfeited after 2 years.

If the council determines that stormwater is only an incidental component of a special variation approval, it may wish to determine the exact proportion of the special variation that relates to stormwater and adjust its rating structure accordingly to ensure there is no perception of 'double-charging'. However, this is not a requirement under these Guidelines.

In circumstances where a council has not received Ministerial approval to raise its general income limit to include income from a special rate or drainage charge, councils would still need to discontinue any special rate or drainage charge raised primarily for the purposes of stormwater management before implementing the stormwater management service charge. The requirement for allocation of funding from general income to be equivalent to that previously allocated to stormwater management still applies.

In summary, a council may only levy the stormwater management service charge after discontinuing any stormwater special rates or charges that are raised either within its general income limit or via a special variation to its general income level. This is to prevent the perception of 'double-charging'.

Examples:

Council C has in place an approved special variation which funds the council's water quality monitoring program. As stormwater management could be considered to be a primary component of this program, Council C would not be permitted to introduce the stormwater management service charge.

Council D has an existing special variation that funds the upgrade of local roads, including construction of stormwater infrastructure to convey runoff from the roads. As the stormwater management component of the program could be considered to be incidental to the primary program purpose, Council D would be able to levy the stormwater management service charge. The ongoing costs of managing stormwater runoff from the road would be met from Council D's general income.

Need for additional revenue for stormwater management

In circumstances where a council determines that the revenue needed to address local stormwater issues is above the amount that could be raised through levying the charge, the council could apply to the Minister for a special variation as an alternative to levying the charge. If a council was considering submitting a variation application, it would need to have either already implemented the stormwater management service charge or be able to substantiate why it has not done so.

Additionally, the variation application would need to justify why higher revenue is required than the amount that could be received from levying the charge. Effectively, the special variation application needs to include a case against the application of the levy. Should the variation be approved, the council cannot also levy the charge. This is to avoid perceptions of 'double charging'.

5.6 Discounts and rebates

The offering of discounts or rebates to owners of properties subject to the charge is at the discretion of each council. Discounts or rebates could be applied in circumstances including where:

- residents can demonstrate good stormwater management practice, particularly relating to installation of rainwater tanks, prior to introduction of the charge;
- pensioners are liable for the charge; or
- councils wish to encourage businesses to adopt improved stormwater management practices.

However, the mandatory concession that applies to ordinary rates, domestic waste management, water and sewerage charges does not apply to the stormwater management service charge.

5.7 Expenditure of service charge income

Funds accumulated through levying of the stormwater management service charge do not have to be spent within the year they are raised, as it is recognised that these funds may be used to resource major programs spanning a number of years. Relevant financial reporting requirements apply, however, to ensure that expenditure is appropriately accounted for.

The income from the charge can be spent on both capital projects and recurrent expenditure relating to new/additional stormwater management services such as:

- planning, construction and maintenance of drainage systems, including pipes, channels, retarding basins and waterways receiving urban stormwater;
- planning, construction and maintenance of stormwater treatment measures, including gross pollutant traps and constructed wetlands;
- planning, construction and maintenance of stormwater harvesting and reuse projects;
- planning and undertaking of community and industry stormwater pollution education campaigns;
- inspection of commercial and industrial premises for stormwater pollution prevention;
- cleaning up of stormwater pollution incidents (charge can fund a proportion);
- water quality and aquatic ecosystem health monitoring of waterways, to assess the effectiveness of stormwater pollution controls (charge can fund a proportion); and
- monitoring of flows in drains and creeks, to assess the effectiveness for flow management (flooding) controls (charge can fund a proportion)
- staff specifically appointed to provide the stormwater management service associated with the charge (eg temporary project staff).

As a rule of thumb, approximately 10 – 15% of the costs associated with stormwater capital project works should be allocated for continued maintenance of the project.

Funding from the charge **cannot** be spent on activities for which the primary purpose does not relate to providing stormwater management services to parcels of land eligible to be charged. These include:

- parks and garden activities;
- riparian restoration or management;
- bushcare (unless proposed activity specifically relates to stormwater impacts on bushland);
- street sweeping;
- kerb and guttering (unless dealing with flooding from private land); and

While some of these activities relate broadly to stormwater management, they are not normally related to managing stormwater from parcels of land eligible for a stormwater management service charge.

Councils that are also a water utility can plan their water supply, sewerage and stormwater activities on an integrated basis, through integrated water cycle management. A council can then use funds from the stormwater charge to fund new/additional stormwater services identified through such an integrated approach.

6 Additional stormwater planning requirements

Key Points

- *The particulars of proposed stormwater management services to be funded by the charge and from all other sources must be included in a council's draft Management Plan.*
- *There must be clear differentiation between expenditure on stormwater management activities related to the charge, and that related to general income or other stormwater related charges by other organisations.*
- *Catchment Action Plans must be referred to when identifying proposed stormwater management activities.*

Allocation of expenditure for stormwater management activities requires significant planning on at least two different levels:

- Economic - in the context of organisational operations, through a council's draft Management Plan, and
- Environmental - from a natural resource management perspective, in line with current environmental or sustainability objectives.

Both approaches must clearly provide information on proposed activities for the community, and allow for the integration of regional, catchment and state-based policies with local priorities.

Councils may also consider expenditure for stormwater management activities in the context of their social/community planning processes.

6.1 Management planning

The *Local Government (General) Regulation* requires that councils must include specifics of all activities related to stormwater management in their draft Management Plans. This applies to both new/additional and existing activities proposed for land both subject to and exempt from the charge.

An ideal starting point for identifying priority projects would be to include those activities specified within a council's Stormwater Management Plan that are yet to be implemented. Alternatively, new planning processes could be introduced that are more community-oriented, based on determined social values and expectations, and aimed at achieving good environmental and economic outcomes.

In accordance with the Regulation, the following detail must be included in a council's draft Management Plan:

- particulars of the proposed stormwater management services that are to be funded by the annual stormwater management service charge;
- particulars of the proposed stormwater management services to be funded by income sources other than the charge;
- particulars of the proposed stormwater management services to be funded from both the stormwater management service charge and other sources (noting the proportion funded from other sources); and
- particulars of the proposed total expenditure for provision of stormwater management services.

Additional considerations for inclusion in the draft Management Plan may be:

- key performance indicators, allowing tracking of specific activity progress; and
- linkages with other relevant organisational plans or strategies, including Stormwater Management Plans, Asset Management Plans or any other plans considered relevant.

Certain stormwater management services are provided to some parcels of land by organisations other than councils. These services are distinctly different to those provided by councils. It is important to explain to the community the differences between any related charges, to reduce any perceptions of "double-charging".

Councils must therefore include additional information in their draft management plan if the land subject to the charge is also subject to a related charge, being a:

- Stormwater or drainage charge levied by Sydney Water or Hunter Water.
- River management charge levied by the Upper Parramatta River Catchment Trust; or
- A catchment contribution levied by a CMA.

The draft plan is to include a summary of:

- the activities to be funded by the related charge;
- how those activities differ from those funded by the stormwater management service charge; and
- any activities jointly funded by the two charges.

6.2 Natural resource management planning

The availability of a sustainable source of funding directed solely towards stormwater management provides the opportunity for councils to implement local actions in alignment with local, regional, catchment and state-based natural resource management (NRM) objectives. The importance of this integration is recognised in the Regulation through the requirement for councils to consider Catchment Action Plans (CAPs), produced by Catchment Management Authorities, in the determination of stormwater management activities.

Other plans that may provide synergies include:

- Local plans, such as:
  - Estuary Management Plans;
  - Total Water Cycle Management Plans;
  - Sustainability Strategies;
  - Environmental Education Plans;
  - Onsite Sewage Management Strategies;
  - Biodiversity Conservation Strategies or Plans; and
  - Other relevant NRM plans.
- Regional plans, which are particularly useful when bordering councils employ a partnership approach to stormwater management, including;
  - Floodplain Management Plans;
  - Water Sharing Plans; and
  - Integrated Water Cycle Management Plans; and
- State-based plans and strategies, including:
  - State Water Management Outcomes Plan.

6.3 Further community consultation

Councils are required to undertake community consultation through the draft management planning process whereby the proposed stormwater management activities are included in a council's draft Management Plan.

However, additional community consultation may be appropriate. This will enable each council to raise awareness of the charge among their respective communities, and may be useful in engaging the community in identifying potential stormwater management projects. Additional consultation could simply take the form of highlighting the charge and activities to be funded by charge revenue in the foreword to the Management Plan, in a separate media release, or through other advertising means and inviting public comment.

Councils may choose to establish a committee with a variety of stakeholder representatives to plan for allocation of charge funds, or add this responsibility to an existing representative committee.

7 Additional stormwater reporting requirements

Key Points

- *Details of actual stormwater management services provided compared to those proposed in the draft management plan, and an explanation of any difference between the two, must be included in a council's Annual Report.*
- *Additional reporting of stormwater management activities should be included in a council's State of the Environment Report.*

The introduction of the stormwater management service charge carries with it the responsibility for council to report on both expenditure and stormwater management related activities. This provides a valuable method of informing the community and other stakeholders of improvements made to local stormwater management.

The Regulation requires that councils report on activities and expenditure through the Annual Report. Specifically, councils are required to report on implementation of each of the stormwater management services proposed in the Management Plan. This will involve comparison between the services proposed in the Management Plan with the services actually provided, and inclusion of a statement explaining any differences between them.

In addition, relevant changes will be made to the *Local Government Code of Accounting and Financial Practice* and the *Council Rating and Revenue Raising Manual* to guide councils through altered financial reporting requirements.

7.1 Other reporting mechanisms

A further means of reporting is through incorporating stormwater management, particularly progress against activities included in the draft Management Plan, in Social/Community Plans, State of the Environment Reports, or any other documentation deemed relevant.

While inclusion of relevant information in the State of the Environment Report is not mandatory, it is recommended as this will specifically allow councils to demonstrate:

- proactive responses to an important environmental issue;
- linkages to regional, catchment and state policy initiatives; and importantly
- real sustainability outcomes, potentially building the community's confidence in the allocation of charge funds.

Example: State of the Environment Reporting

Water Quality Management

Indicator: Tonnes of gross pollutants removed from Gross Pollutant Traps (GPTs) in local watercourses

Response 2005/2006

- A total of 10 GPTs are installed within the local area. These treatment measures typically remove pollutants in stormwater flows from local sporting fields and major roads. During 2005/2006, GPTs were cleaned every 6 months, with a total of 200 tonnes of waste material (comprising leaf litter, general litter and trapped sediment) collected this year.

Projected Actions 2006/2007

- The advent of the stormwater management service charge has allowed Council to significantly improve stormwater management on private land. As a result, during 2006/2007, Council plans to:
  - install 10 additional GPTs in watercourses receiving run-off from residential areas;
  - introduce a water quality monitoring program; and
  - increase the frequency of GPT maintenance to quarterly.

Policy/Strategy Links

- Council's Asset Management Plan
- Council's Total Water Cycle Management Strategy

8 Glossary

Drainage charge – a charge for the provision of drainage services under s.501 of the *Local Government Act*. The drainage service involves draining water, including stormwater, from a parcel of land.

Primary purpose – principal or main purpose.

Stormwater – rainfall that runs off all urban surfaces such as roofs, pavements, carparks, roads, gardens and vegetated open spaces.

Stormwater management – the management of the quantity and quality of stormwater that flows off a parcel of privately owned developed urban land.

Stormwater management service – a service to manage the quantity or quality, or both, of stormwater that flows off land, and includes a service to manage the reuse of stormwater for any purpose (from the dictionary of the *Local Government Act*).

Stormwater management service charge – the charge levied under s.496A of the *Local Government Act* for the provision of stormwater management services to a parcel of land.

Urban - land within a city, town or village (as per clause 125A of the *Local Government (General) Regulation)*.

General income - income from ordinary rates, special rates and annual charges, other than special rates and annual charges for water supply, sewerage, waste and stormwater management services and charges made under s.611 of the *Local Government Act* (as per s.505 of the Act).

New/additional stormwater management services – stormwater management services provided to a parcel of land in addition to the average level of stormwater management service funded by council over the last 3-5 years.

Special variation - approval granted by the Minister and specified in a Ministerial instrument for a particular council to increase its general income limit by a specified % beyond rate-pegging in a specified year or years (as per ss.508(2) and 508(A) of the Act).

Special rate - a rate consisting of an ad valorem component made by the council for meeting the costs associated with any works, services, facilities or activities provided or proposed to be provided by the council (as per section 495 of the *Local Government Act*). Examples would include water supply, sewerage services, drainage, town improvement, parking, main street, tourism, beach regeneration and loan repayment.

Vacant land - land not containing a building or impervious surfaces.

Appendix A – Legislative and policy provisions

Provisions under the Local Government Act 1993

The recent addition of section 496A to the *Local Government Act 1993* made by the *Local Government Amendment (Stormwater) Act 2005* enables councils to make and levy an annual charge for stormwater management services for each parcel of rateable land for which a stormwater management service is provided, with the exception of rateable land owned by the Crown and leased for private purposes under the *Housing Act 2001* or the *Aboriginal Housing Act 1997*.

Section 496A states:

Making and levying of annual charges for stormwater management services

(1) A council may, in accordance with the regulations, make and levy an annual charge for the provision of stormwater management services for each parcel of rateable land for which the service is available.

(2) Subsection (1) does not authorise or permit a council to make or levy an annual charge for the provision of stormwater management services for rateable land that is:

a) Owned by the Crown and

b) Held under a lease for private purposes granted under the Housing Act 2001 or the Aboriginal Housing Act 1997.

***Note:** Section 555 (1) (a) provides that land owned by the Crown is not rateable land unless it is held under a lease for a private purpose.*

Provisions under the Local Government (General) Regulation 2005

Recent changes to the *Local Government (General) Regulation 2005* made by the *Local Government (General) Amendment (Stormwater) Regulation 2006* prescribe the maximum amount that a council may charge for stormwater management services and provide for the information regarding stormwater management services that must be included in a council's draft management plan and annual report.

Clause 125A provides that:

- an annual charge for stormwater management services may only be levied on land categorised for rating purposes as residential or business
- the charge cannot apply to vacant land
- the charge cannot be levied on a parcel of land subject to a special rate or charge for which the primary purpose is to provide a stormwater management service
- the charge cannot be levied by a council if it has received a special variation from the Minister for Local Government for which the primary purpose is to provide a stormwater management service
- the charge cannot exceed the anticipated cost (if less than maximum charge) or the maximum charge (if anticipated cost greater than maximum charge)

Appendix A – Legislative and policy provisions

Clause 125A states:

Annual charges for stormwater management services

(1) For the purposes of section 496A of the Act, a council may make or levy an annual charge for stormwater management services only in respect of urban land that is categorised for rating purposes as residential or business.

***Note:** Part 3 of Chapter 15 of the Act allows a council to categorise each parcel of land within its area.*

(2) A council may not make or levy an annual charge for the provision of stormwater management services in respect of a parcel of land if:

(a) the parcel of land is vacant land, or

(b) the parcel of land is subject to a special rate or charge that has been made for or towards meeting the cost of any works, services, facilities or activities the primary purpose of which is the provision of stormwater management services.

(3) A council may not make or levy an annual charge for the provision of stormwater management services if the council has received an instrument from the Minister under section 508 or 508A of the Act which specifies the percentage by which the council may vary its income and the instrument imposes a condition with respect to that variation to the effect that the primary purpose of the variation is to fund stormwater management services.

(4) A council may not make or levy an annual charge for the provision of stormwater management services for a parcel of land that exceeds:

(a) if the anticipated cost of providing stormwater management services to the parcel of rateable land is less than the maximum annual charge in respect of the parcel of rateable land—the anticipated cost, or

(b) if the anticipated cost referred to in paragraph (a) is equal to or greater than the maximum annual charge in respect of the parcel of rateable land—the maximum annual charge for the parcel of rateable land.

(5) In this clause:

***maximum annual charge**, in respect of a parcel of land, means the maximum annual charge that may be made or levied by a council in respect of the parcel of rateable land in accordance with clause 125AA.*

***urban land** means land within a city, town or village.*

Clause 125AA provides that:

The maximum charge that may be levied on rateable land is:

- $25 for land categorised as residential
- $25 per 350 square metres (or part thereof) for land categorised as business

Clause 125AA states:

Maximum annual charge for stormwater management services

For the purposes of section 510A of the Act, the maximum annual charge for stormwater management services that may be levied in respect of a parcel of rateable land is:

(a) for land categorised as residential—$25, and

(b) for land categorised as business—$25, plus an additional $25 for each 350 square metres or part of 350 square metres by which the area of the parcel of land exceeds 350 square metres.

Appendix A – Legislative and policy provisions

Clause 200A provides that:

A council's draft management plan must include a statement about any activity relating to stormwater management services funded from the annual stormwater charge. The statement must include information about:

- stormwater management services to be funded by the charge
- stormwater management services to be funded from sources other than the charge
- stormwater management services to be funded jointly from the annual charge and from other sources, noting the proportions

If a council proposes to levy an annual charge for stormwater management services on land for which a relevant charge* is to be levied by the council to fund stormwater management activities, the management plan must additionally include information about:

- the activities to be funded from relevant charge
- how the activities differ from those to be funded by the annual charge for stormwater management services
- stormwater management services that are funded jointly from the relevant charge and the annual stormwater management service charge, noting the proportion of each.

* "relevant charge" is defined as either a rate under the *Hunter Water Act*, a river management service charge, drainage service charge or flood mitigation charge in s.10 *Water Management Act*, or a stormwater drainage area charge under the *Sydney Water Act*.

Clause 200A also provides that councils must consider any relevant catchment management plan relating to land on which they propose to levy a stormwater management service charge as part of this process.

Clause 200A states:

Additional matters to be included in draft management plans—stormwater management services

(1) For the purposes of the fifth dot point of section 403 (1) of the Act, any activity relating to stormwater management services in respect of which the council proposes to levy an annual charge is prescribed as a matter with respect to which a draft management plan must contain a statement.

(2) The statement in a draft management plan of a council relating to any proposed activity referred to in subclause (1) must include the following:

(a) particulars of the stormwater management services that are to be funded by the annual charge,

(b) particulars of the stormwater management services that are to be funded from sources other than the annual charge,

(c) particulars of any stormwater management services that are to be funded from the annual charge and from other sources noting the proportion funded from other sources,

(d) particulars of the council's proposed expenditure for the provision of stormwater management services.

(3) If a council proposes to levy an annual charge for stormwater management services on land for which a relevant charge has been, or is to be, levied to fund works or activities that have as their primary purpose the provision of storm water management services, the statement referred to in subclause (1) must also include:

(a) particulars of the activities to be funded by the relevant charge, and

(b) particulars of how those activities differ from those funded by the annual charge for stormwater management services, and

(c) particulars of the activities that are jointly funded by the relevant charge and the annual charge for stormwater management services, noting the proportion.

(4) If a council proposes to levy an annual charge for stormwater management services on land that is subject to a catchment action plan, the statement referred to in subclause (1) must indicate that the council has considered the plan when preparing the statement.

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Appendix A – Legislative and policy provisions

(5) In this clause:

***catchment action plan** has the same meaning as in the Catchment Management Authorities Act 2003.*

***relevant charge** means any of the following:*

(a) a rate within the meaning of the Hunter Water Act 1991,

(b) a river management service charge, drainage service charge or flood mitigation service charge levied under section 310 to the Water Management Act 2000,

(c) a stormwater drainage area charge within the meaning of the Sydney Water Act 1994,

(d) a catchment contribution within the meaning of Schedule 4 to the Catchment Management Authorities Act 2003.

Clause 217(1) (e) provides that:

Councils that have levied an annual charge for stormwater services must make a comparison of the actual stormwater management service carried out (measured against relevant management plan criteria) with the projected stormwater management services (as outlined in management plan).

Clause 217(1)(e) states:

Additional information for inclusion in annual report

(1) (e) if the council has levied an annual charge for stormwater management services - a comparison of the actual stormwater management services made available by the council during the year (measured in accordance with the criteria set out in the relevant management plan) with the projected stormwater management services that were proposed to be made available (outlined in the management plan relating to the year concerned), together with a statement of the reasons for any difference between them.

Department of Local Government Publications

These *Stormwater Management Service Charge Guidelines* are adopted and issued by the Director-General of the Department of Local Government under section 23A of the *Local Government Act 1993*.

Other relevant Department of Local Government publications include:

- *Council Rating and Revenue Raising Manual*;*
- *Management Planning for NSW Local Government – Guidelines;*
- *Local Government Code of Accounting Practice and Financial Reporting; and*
- *Environmental Guidelines – State of the Environment Reporting by Local Government – Promoting Ecologically Sustainable Development.*

These documents may be found on the Department's website at *www.dlg.nsw.gov.au*.

Department of Environment and Conservation Publications

The Department of Environment and Conservation is preparing a suite of documents under the *Managing Urban Stormwater* theme, published to provide guidance to councils and developers on issues ranging from treatment techniques to stormwater planning.

These documents will be located on the Department's website at *www.environment.nsw.gov.au/stormwater*

* The *Council Rating and Revenue Raising Manual* will incorporate details of the stormwater management service charge when it is next revised.

Appendix B - Worked example for estimating costs

A council spends $2 million annually to provide stormwater management services to its council area. The council area contains:

- 20,000 residential lots eligible for the charge
- 3,000 residential lots ineligible for the charge
- 2,000 residential strata lots
- 500 businesses
- other non-rateable land (schools, hospitals etc) and
- roads and public open space

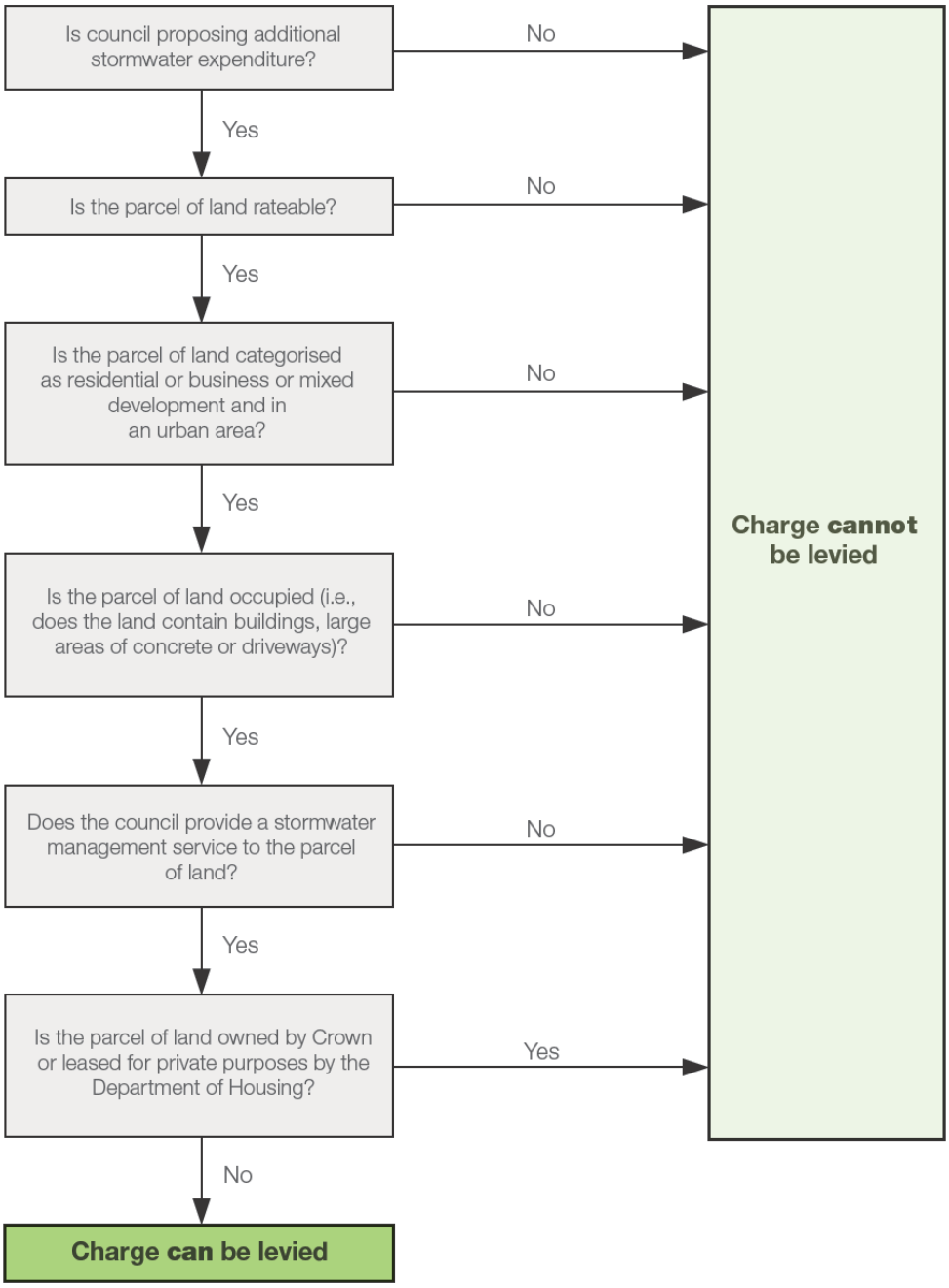
The land use breakdown is provided in the table below. Based on the approach to charging strata lots in section 5.3, the 2,000 strata lots can be considered to be equivalent to 1,000 residential lots. Council has calculated the area of the 500 businesses to be equivalent to that of 1,000 residential lots. Hence the number of actual and equivalent chargeable residential lots is 22,000.

Land use	No. of lots	No. of chargeable residential or equivalent lots	Impervious area(km^2)	Chargeable impervious area (km^2)
Residential (chargeable)	20,000	20,000	6.4	6.4
Residential (non-chargeable)	3,000	0	1.0	
Residential strata	2,000	1,000	0.3	0.3
Business	500	1,000	0.2	0.2
Special uses			0.5	
Bushland/open space			0.0	
Roads			3.0	
TOTAL		**22,000**	**11.4**	**6.9**

Based on this data, the chargeable lots represent 60% of the impervious area in the LGA (6.9 km^2 out of 11.4 km^2) and 60% of the LGA's stormwater management costs can therefore be attributed to chargeable land. Hence $1.2 million in costs (60% of $2 million) can be attributed to 22,000 lots, or $55 per lot. This $55 represents the cost of service provision for a residential lot. For a strata lot, the service provision cost can be estimated at $27.50 (half of $55). The cost for business lots is $55 per 350 m^2 or part thereof.

Council wants to spend an additional $500,000 for stormwater management services. This is equivalent to $22.73 per residential block ($500,000 over 22,000 lots). As this is lower than the cost of service provision and the regulated maximum charge, council can levy a stormwater charge of this amount.

Appendix C – Flowchart and checklist for charge



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Checklist for councils

☑ Check that council is proposing eligible **new/additional** stormwater management services. These new/additional services are relative to the council's average cost of stormwater management services over the last 3-5 years (excluding any contribution from ad-hoc external grants). Council is to take into consideration stormwater management actions in any applicable Catchment Action Plan (CAP) and should consult with their CMA when identifying the new/additional services.

☑ Determine if the charge can be levied by a council by ensuring:

- council does not have a special variation, special rate or drainage charge in place to fund projects where stormwater management is a primary component; or
- the special rate, special variation or drainage charge, if relating to stormwater management, has been discontinued; or
- general income is reduced by the total revenue amount raised through the special variation, special rate or drainage charge.

☑ Identify land to be subject to the charge. This land must be:

- urban land that is categorised as residential or business, or mixed developments
- not vacant (ie must contain buildings or impervious areas)
- land where council provides a stormwater management service
- not Crown land leased for private purposes by the Department of Housing or under the *Aboriginal Housing Act.*

Council should also establish an appeals procedure for ratepayers who believe they have been incorrectly charged.

☑ Estimate the area of business land lots and add to council's rating database by integrating land area data and rating data.

☑ Estimate the anticipated costs of providing stormwater management services to the parcels of land proposed to be charged. Councils can adopt any reasonable method to estimate these costs. An approach that could be adopted involves the following steps:

- estimate the total costs (current and new/additional) of providing stormwater management services across the LGA (this may also be done on sub-catchment, catchment or whole of LGA basis).
- apportion these costs to land subject to the charge and ineligible land, to estimate the total stormwater management service costs for all chargeable land. This can be done based on the chargeable land's proportion of the LGA's (or catchment's) total impervious area.
- Calculate the number of chargeable lots and pro-rata the stormwater management service costs to estimate the costs per lot. To help with these calculations, strata could be considered to be a fraction of a residential lot and business lots could be considered as multiples of residential lots, to determine "equivalent" residential lots.

☑ Determine charge amount as the lower of:

- the anticipated costs of providing stormwater management services; and
- the regulated maximum charge ($25 per residential lot, $25 per 350 m^2 for business lots)

Councils may choose to levy a charge below the lower of these two amounts.

Checklist for councils

- ☑ Consider relevant Catchment Action Plans relating to land on which a council is proposing to levy a stormwater management service charge
- ☑ Include specifics on the proposed new/additional stormwater management services to be funded from the stormwater management service charge in the draft Management Plan, noting other funding sources and funding proportions.
- ☑ Implement stormwater activities, ensuring that only eligible activities are funded by the charge.
- ☑ Report on charge expenditure through the Annual Report, including a comparison between projected and actual stormwater management services provided.

Appendix D – Impervious fractions

Where a council cannot accurately determine the proportion of impervious land area on a property, the following values can be used to estimate the total impervious area.

Zone	Brief Description/ Examples	Typical impervious fraction
Residential		
Residential 1 & 2 Zone	Normal range of densities	0.45
	Medium density	0.60
	High density	0.80
Low Density Residential Zone	0.4ha min.	0.20
Mixed Use Zone	Mix of residential, commercial, industrial and hospitals	0.50
Township Zone	Small townships with no specific zoning structures	0.60
Industrial		
Industrial Zone	Main zone to be applied in most industrial areas	0.90
	Garden supplies/ nurseries	0.50
	Quarries	0.20
Business		
Business Zone	Main zone to be applied in most commercial areas	0.90
	Mix of offices & multi-dwelling units	0.80

Western Riverina Stormwater and Wastewater Management Strategy

Reviewing Stormwater and Sewerage systems to maximise water reuse for a resilient Western Riverina

Western Riverina Consortium

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LEETON SHIRE COUNCIL

Murrumbidgee COUNCIL

Narrandera Shire Council

Executive Summary

Water is central to life and prosperity across the Western Riverina, sustaining our farms, towns and natural environments.

The Western Riverina Stormwater and Wastewater Management Strategy was developed to deliver on Action 1.4 of the Regional Drought Resilience Plan (RDRP)—

"Councils to review stormwater management and town sewerage discharge strategies and approaches to maximise opportunities for reuse of water resources."

This Strategy takes that directive forward, focusing on practical ways to strengthen water resilience and prepare the region for future dry periods.

Developed through a staged process combining detailed technical analysis with collaboration across the four councils, the Strategy examines how stormwater and wastewater are currently managed across the region. It identifies where improvements could best support local priorities, and assesses each option against shared criteria reflecting economic sustainability, community liveability, environmental health and water resilience – ensuring that the final outcomes balance the needs of our economy, communities and environment.

Fourteen potential opportunities were assessed, with the shortlisted options representing early priorities for further exploration. Other projects may also progress over time as feasibility and community needs evolve. Engagement to date has focused on technical and economic feasibility, with broader consultation to follow as concepts develop.

The result is a plan shaped by evidence, collaboration and regional insight. It reflects the Western Riverina's cooperative spirit and shared commitment to practical action, including continued collaboration with Griffith City Council on opportunities such as recycled water use for farming and improving the quality of local water bodies. Together, these early priorities provide a clear, regionally informed pathway for strengthening water resilience and delivering the goals of the RDRP.

The following page provides a high-level overview of the four prioritised options, illustrating how councils are collectively responding to Action 1.4 of the Regional Drought Resilience Plan.

Executive Summary Continued

These four opportunities represent the most promising early priorities, identified for their strong alignment with regional goals and potential to deliver balanced economic, community, and environmental benefits.

Murrami Water Security

Murrami's small water treatment plant requires extensive modernisation to continue supplying quality drinking water as population and demand grows. Alternatively, connecting to the larger Leeton system through new pipelines would secure a reliable and sustainable supply, lower operating costs, and remove the need to upgrade the local facility.

$15m - $25M
Order of Magnitude Cost

Fivebough Wetlands Protection through Treatment Plant Optimisation

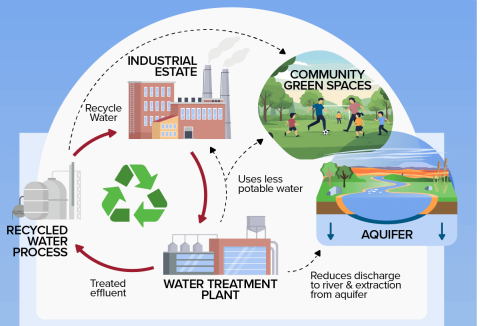
The Ramsar-listed Fivebough Wetlands rely on water from the Leeton Sewage Treatment Plant (STP), which faces quality and compliance challenges, particularly with phosphorus bacteria and other pollutants. Upgrading the STP would improve discharge quality, protect biodiversity, and support tourism, education, and recreation while meeting environmental and public health standards.

$750M - $1.5M
Order of Magnitude Cost

Lake Jerilderie Stormwater Harvesting

Lake Jerilderie is a valued community space that relies on costly general and high-security water to maintain amenity, placing pressure on limited allocations. Redirecting stormwater to the lake through new infrastructure would free up high-security water for farming or trade and maintain the lake for community wellbeing and tourism.

~$1M
Order of Magnitude Cost



Recommissioning the Narrandera Reuse Scheme

Narrandera's recycled water scheme, designed to irrigate green spaces and support industry, is currently underused. Recommissioning and expanding it would provide a reliable alternative water source, improve environmental outcomes, and reduce reliance on the Murrumbidgee River and groundwater.

$8M - $12M
Order of Magnitude Cost

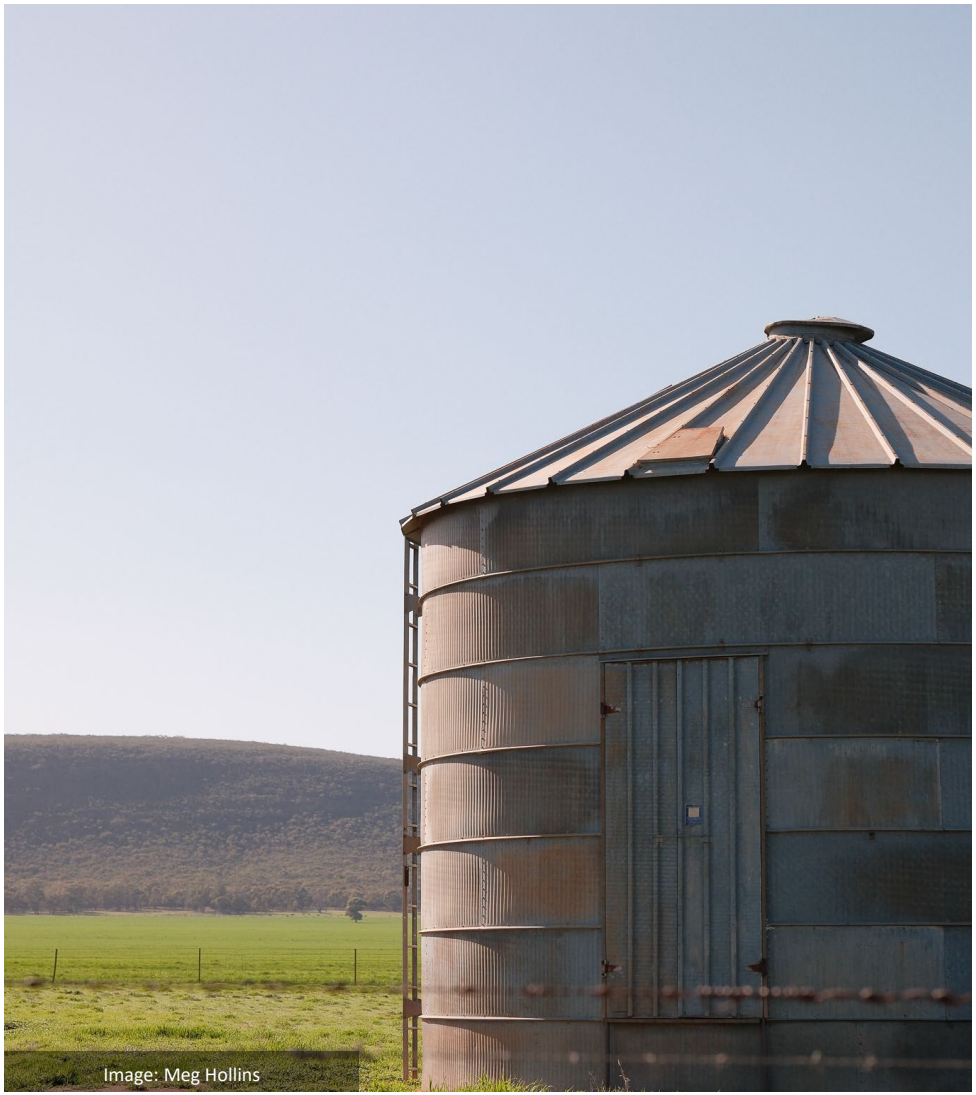
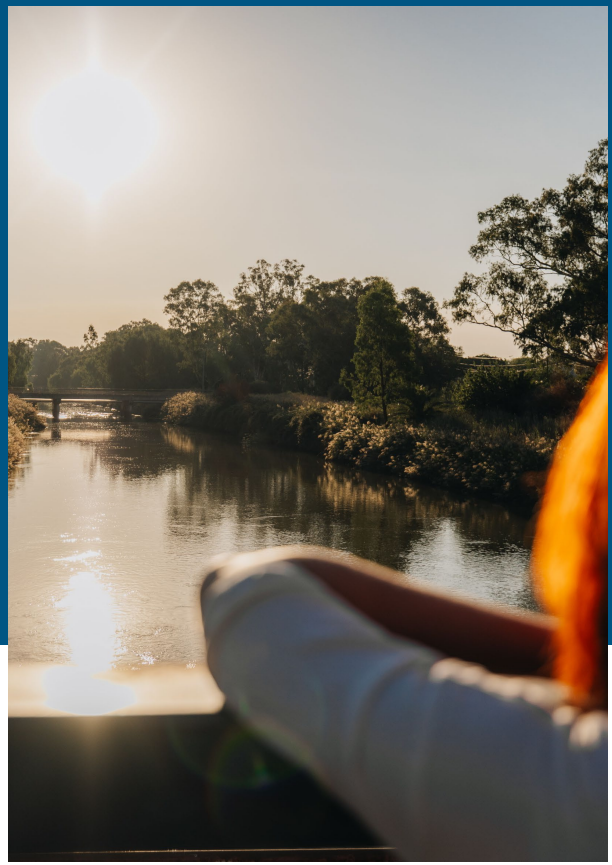


Image: Meg Hollins

Western Riverina Stormwater and Wastewater Management Strategy

01 Our Story



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Building on our Drought Resilience Plan

Moving from planning to practical steps that strengthen water resilience across the Western Riverina.

The Western Riverina — part of Australia's broader food bowl — plays a vital role in feeding the nation. Across its farms, towns and industries, water sustains around 24,000 jobs and contributes more than $3.5 billion each year through agriculture, manufacturing, utilities, health and education.

Our prosperity and quality of life depend on reliable water resources drawn from the Snowy Scheme and the Murrumbidgee Irrigation Area via Blowering and Burrinjuck Dams. These systems have long supported our communities, but are increasingly tested by drought, climate variability, changing policy and ageing infrastructure.

Building on the Regional Drought Resilience Plan (RDRP), the Western Riverina Stormwater and Wastewater Management Strategy moves from planning to implementation — reviewing how water is used, managed and reused across the region.

The Strategy and Action Plan:

> Assesses how stormwater and wastewater are currently managed across the four councils.
> Identifies opportunities for greater reuse and efficiency.
> Sets out a practical roadmap of actions to guide implementation.

It is designed to guide decision-making at both regional and local levels, giving each council clear priorities to strengthen water security and resilience into the future. In doing so, it reflects the RDRP pathways of absorbing pressures, adapting to uncertainty, and transforming for the future — turning these principles into practical steps for water resilience.

The value of water in the Western Riverina

Protecting what sustains our economy, communities and environment.

The value of water in the Western Riverina

Water is the lifeblood of the Western Riverina. It drives the farms and food industries that make this region one of Australia's premier food bowls, supporting billions of dollars of economic output and thousands of local jobs each year. It sustains our towns, keeping parks, sporting grounds and cultural spaces alive, and it nourishes the wetlands, rivers and landscapes that support biodiversity and provide places of connection for the community.

For First Nations people, water is deeply tied to culture, identity and Country, with important sites such as the Fivebough and Tuckerbil Wetlands continuing to hold cultural and ecological significance.

This unique region benefits not only from local rainfall but also from irrigation waters drawn from the Snowy Hydro Scheme and the Murrumbidgee system, creating some of the nation's most productive agricultural lands. Yet this reliance also brings vulnerability. Water uncertainty is shaped by climate variability, policy changes, and the condition of our infrastructure — including the wastewater, sewerage and stormwater systems that collect, treat and return water to the environment.

Protecting and securing water — across every part of this cycle — is therefore central to protecting what matters most to the Western Riverina: a strong economy, thriving communities and a healthy environment.

Pressures on our water future

The value we place on water is under growing pressure. Climate change is altering long-term patterns, bringing less predictable rainfall and hotter conditions that affect productivity, liveability and the health of ecosystems. Extreme events — droughts, floods and other natural disasters — are becoming more frequent and more costly to recover from, placing stress on households, businesses and natural systems alike.

Population shifts are reshaping the region, reducing revenue in some areas while increasing demand for services in others. At the same time, councils are working with ageing water, wastewater, sewerage and stormwater infrastructure and limited capacity, making it harder to maintain and upgrade essential systems. With a small rate base, major investment depends on funding support from outside the region.

Taken together, these forces test the resilience of our economy, our communities and our environment. They show why it is essential that we act now — aligning with the RDRP and taking the next step to secure the value of water for the Western Riverina's future.

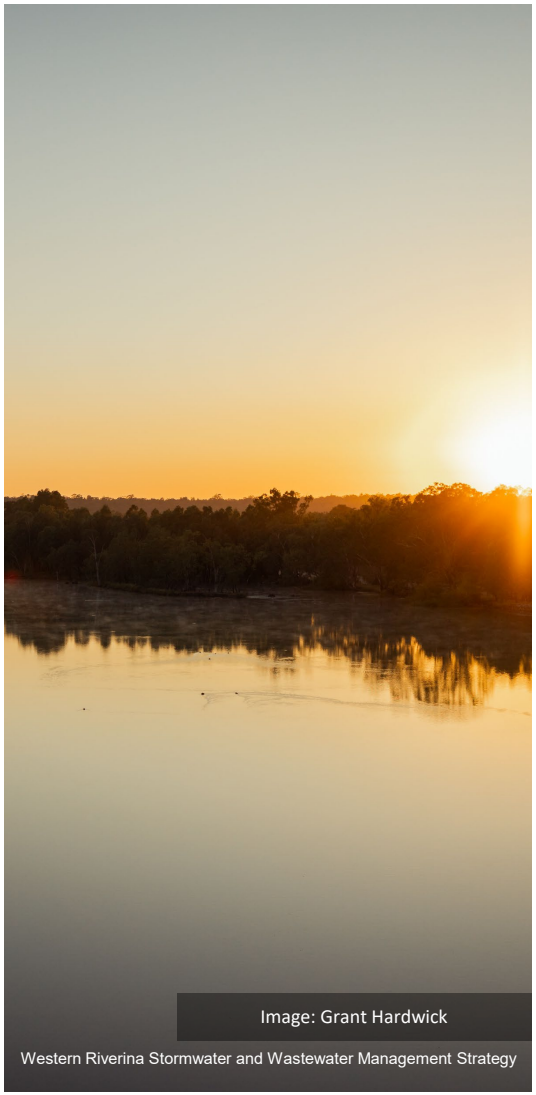

Image: Grant Hardwick

> *Drought Resilience will ensure regional Australia can endure deeper, longer droughts, and recover from them sooner. This will help Australia's agricultural industries* ***maintain national farm income, increase food security, and protect the regional jobs*** *that rely on agriculture during the toughest years. Importantly, it will also increase the resilience of rural and regional communities and improve environmental outcomes.*
>
> *(CSIRO, 2022)*

Building Resilience Together

Narrandera Shire Council

Narrandera is a proud river town on Wiradjuri Country, home to around 5,800 people. Agriculture is central to the local economy, with strong beef, dairy, grain and sheep production, alongside council's ambitions to attract new residents and industries through projects like the Red Hill Industrial Precinct. Water underpins these goals, keeping green spaces open, schools and parks irrigated, and supporting both community wellbeing and local business growth.


Image: Grant Hardwick

Current wastewater systems

Narrandera's sewage treatment plant processes about one megalitre a day which could be productively reused. Although a reuse network exists, it has not yet been commissioned, so irrigation for parks, schools and sporting fields still relies on groundwater bores.

Pressures

Reuse systems are not yet meeting the standards needed for safe use, which limits recycling benefits and increases reliance on groundwater bores. Hotter, drier conditions are also driving up irrigation demand, while Council balances daily operations with the need for upgrades. Planning is underway to improve the town's drinking water system by removing iron and manganese, which can cause discoloured water.

Opportunities

Activating the reuse scheme would reduce pressure on bores, lower the cost of producing drinking water, and defer the need for major new infrastructure. Extending supply to schools, parks and the industrial estate would support liveability and investment, while longer-term options such as stormwater harvesting and aquifer recharge could strengthen security through future droughts.

Building Resilience Together

Griffith is the largest centre in the Western Riverina and the heart of irrigated farming, food processing, and trade. Water sustains the city's role as a regional hub for business and industry, and keeps community spaces green to bring people together. Lake Wyangan is a local landmark, highly valued for recreation and tourism, and part of what makes Griffith a great place to live.


Image: Griffith City Council

Current wastewater systems

Griffith's water reclamation plant produces recycled water, though much is not yet productively reused. Council also relies on raw and drinking water to keep parks, ovals and schools irrigated. Lake Wyangan's needs vary widely, from little water in wet years to over 2,000 megalitres in very dry ones.

Pressures

Griffith's water demands are increasing, and managing water quality at Lake Wyangan is a growing challenge. Supplying the lake in dry years helps reduce salinity, yet toxic blue green algae outbreaks are more frequent, disrupting recreation. Many public spaces still rely on raw water, while large volumes of recycled water remain underused, creating missed opportunities and adding strain in hotter, drier conditions.

Opportunities

Greater use of recycled water would reduce dependence on raw supplies and keep parks, schools and sporting fields green. A clear plan for Lake Wyangan would protect a valued community space while supporting tourism and recreation. Establishing a Council-owned farm could also use recycled water productively and deliver local benefits. Together, these steps would build resilience and help Griffith thrive through future droughts.

Building Resilience Together

LEETON SHIRE COUNCIL

Leeton is the second largest centre in the Western Riverina, known for its citrus, rice, grape, nut and grain industries. Water supports the shire's farms, sustains local business, and helps maintain natural and cultural assets like the Fivebough and Tuckerbil Wetlands — internationally significant for bird habitat.

Image: Carla Gottgen

Current wastewater systems

Leeton's main Sewage Treatment Plant (STP) on Fivebough Road discharges treated effluent to the Fivebough Wetlands under an EPA licence. Wastewater systems also operate in Yanco and Whitton, with reticulated services in other areas. Council maintains stormwater systems to manage runoff, reduce flooding, and ease pressure on Murrumbidgee Irrigation's channels, helping to lower development costs.

Pressures

The STP needs upgrades to meet licence standards for nutrients, pH and pathogens, while stormwater and flooding risks are increasing with heavier rainfall, urban development and variable rainfall patterns. Limits on discharges to Murrumbidgee Irrigation channels add further costs for developers through larger detention basins, but stormwater harvesting offers a way to ease these pressures and create shared public spaces.

Opportunities

Upgrading the STP would improve compliance and support reuse of treated effluent, including maintaining healthy wetlands. The wetlands provide economic, social and environmental value to the region. Improved stormwater capture could further reduce flood risk, supply green spaces, and deliver community benefits.

Building Resilience Together

Murrumbidgee COUNCIL

Murrumbidgee is a rural shire that includes the towns of Coleambally, Darlington Point, and Jerilderie. Agriculture is central to the local economy, while water also sustains lakes, parks, and community spaces that bring people together. Lake Jerilderie is highly valued for recreation and tourism, making it an important part of local life.


Image: Karen Kalon

Current wastewater systems
Jerilderie's Sewage Treatment Plant (STP) achieves full reuse by irrigating the neighbouring racecourse, while urban runoff also flows into Lake Jerilderie. The lake is manmade and requires regular top ups to sustain its volume. At Coleambally, a small pond system is used with evaporation, while Darlington Point's plant services the township and provides water to adjacent landholders.

Pressures
Maintaining Lake Jerilderie places ongoing pressure on council, as its water needs vary with climate and can be significant in dry years. Coleambally's evaporation system provides little opportunity for beneficial reuse, and the small scale of each township means limited resources are available to invest in upgrades.

Opportunities
Harnessing stormwater to supplement Lake Jerilderie would secure its water levels, protecting a popular community asset that underpins recreation and tourism. By maintaining a healthy lake, Murrumbidgee can strengthen local resilience and ensure water continues to play a central role in community life.

02 Our Approach

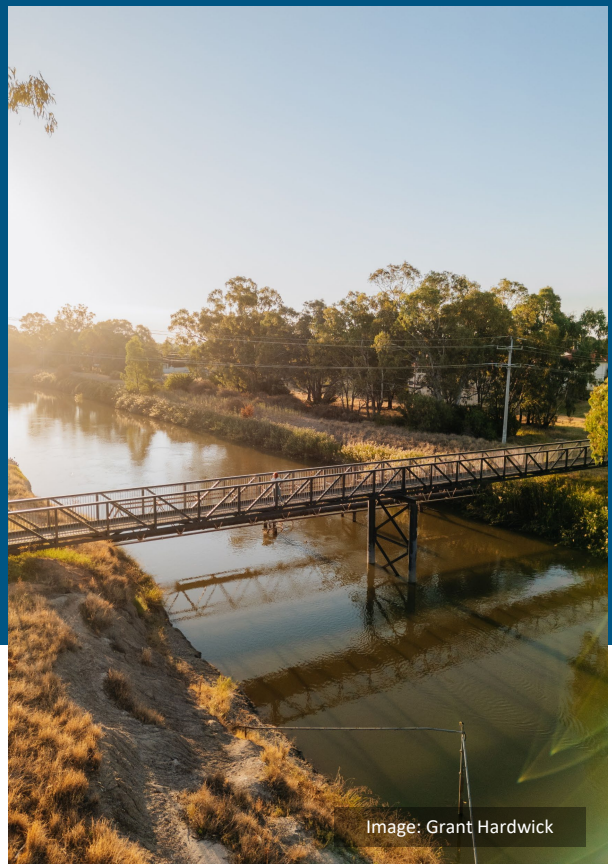
Image: Grant Hardwick

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Narrandera Shire Council

Shaping the Strategy Together

A process that combined technical review with local voices to create a practical and balanced strategy.

This strategy was developed through a staged process that combined technical review with the voices of councils and communities. The first step was to review existing studies and past investigations to capture the breadth of ideas already raised across the Western Riverina. The project team then spent time in the region visiting sites and meeting with council staff. These visits provided a clearer picture of local conditions, opportunities and challenges, and helped to shape a long list of potential projects.

A regional workshop then brought the four councils together to confirm what outcomes mattered most for the region and to assess the long list of projects. The discussion was grounded in the priorities of the Regional Drought Resilience Plan, and projects were tested against clear criteria that reflected the balance between economy, community and environment. Through this transparent process, the long list of ideas was refined to a shortlist of priority projects for further development.

The strategy is strengthened by the development of an Investment Logic Model (ILM) and technical report including project overviews, cost estimates and cost benefits analysis (CBA).

The result is a strategy shaped by both evidence and community insight. It reflects local priorities, is grounded in regional strengths, and provides a practical set of actions to build economic opportunity, community wellbeing and environmental resilience in the face of future water challenges.

The assessment criteria (on the following page), was developed and endorsed by the project control group that represented each of the councils and their communities.

Reviewed

50+

Existing documents to inform recommendations

Consulted

12

Key stakeholders across 2 workshops and interviews

Inspected

8

Key facilities and end-use sites to inform

Assessed

14

Opportunities for water reuse and other water-saving measures

Shaping the Strategy Together

Prioritising new and existing solutions against a set of criteria to ensure value and impact.

This strategy considered and assessed 14 new and existing strategies and approaches for stormwater management and town sewage discharge to maximise opportunities for reuse of water resources. Options were assessed based on the extent that they achieved each of the 5 criterion, detailed on the right. The strategies and approaches considered were:

Narrandera Shire Council

- N1 - Commission existing reuse scheme
- N2 - Expand existing reuse scheme
- N3 - Service Narrandera industrial estate
- N4 - Large scale stormwater harvesting scheme
- N5 - Managed qualifier recharge

Leeton Shire Council

- L1 - Enhance Fivebough Wetland via treatment plant optimisation
- L2 - Rationalisation of Yanco to Leeton STP
- L3 - Large scale stormwater harvesting
- L4 – Yanco Landfill Rehabilitation
- L5 - Murami water security

Griffith City Council

- G1 - Council managed farm
- G2 - Expand existing raw water system

Murrumbidgee Council

- M1 – Lake Jerilderie Stormwater harvesting

The shortlisting criteria were developed and endorsed by the project control group that represented each of the councils and their communities.

Consortia shortlisting criteria

Each project was considered for how it supports our economy, our communities and our environment.

Economic diversity
Broadening opportunities for industry and business.

Council sustainability
Realistic for councils to manage and deliver.

Water productivity
Making the best use of available water.

Liveability
Supporting green spaces, recreation and community wellbeing.

Water resilience
Protecting water quality, ecosystems and long-term supply.

03 Our Priorities

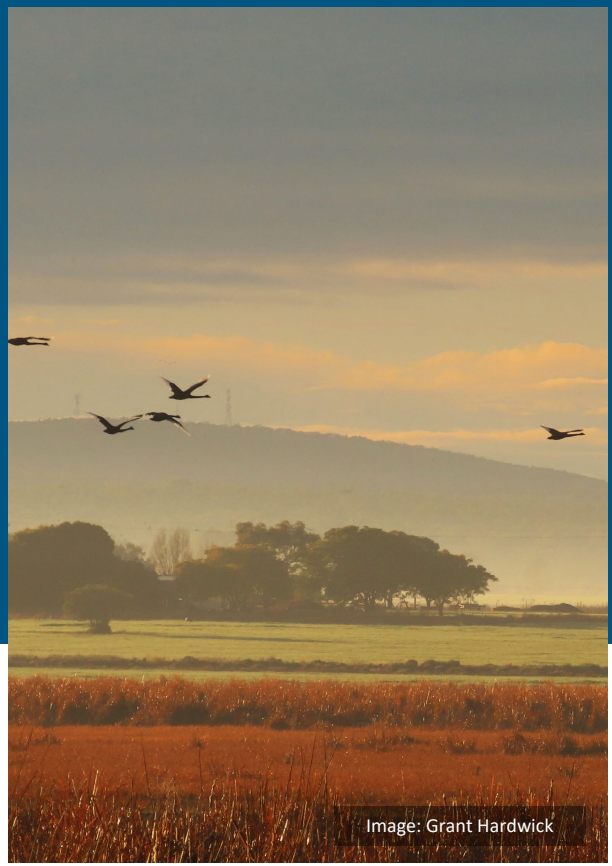
Image: Grant Hardwick

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Narrandera Shire Council

Prioritised Options Overview

Identifying options that support our economy, our communities and our environment.

As part of the Strategy and Action Plan, each opportunity was reviewed against shared criteria balancing economic, community and environmental outcomes. This process highlighted four early opportunities with strong potential for further development:

- Narrandera Reuse Scheme
- Fivebough Wetlands Protection by Treatment Plant Optimisation,
- Murrami Water Security, and
- Lake Jerilderie Stormwater Harvesting.

Together, these projects offer practical pathways toward the region's shared goals — building economic diversity, supporting council sustainability, improving water productivity, enhancing liveability and strengthening long-term water resilience. They represent the first step in an evolving program of work, with other opportunities from the broader assessment to be revisited as priorities and conditions change.

Future planning for each initiative will include deeper discussions with councils, communities and stakeholders to test ideas, refine designs and confirm local benefits.

The following pages share these opportunities in more detail, outlining their indicative benefits, considerations and costs.

Four Prioritised Options

Four options were selected for progression following assessment against the shortlisting criteria.

Recommissioning the Narrandera Reuse Scheme

Narrandera's recycled water scheme was built to supply irrigation for sporting fields, open spaces, and industrial use, but has not been operating as intended. The underutilisation creates risks for the community, including higher discharge volumes from the STP and missed opportunities to reduce reliance on potable water.

Proposed Option
Recommissioning and expanding the scheme would bring recycled water back into productive use, including supply to the Red Hill Industrial Precinct. This would provide a reliable alternative water source for community and business needs and reduce discharges to the environment and extraction of groundwater.

Benefits
Reactivating the scheme safeguards public amenity, strengthens liveability through secure irrigation for green spaces, and supports economic development by providing industry with access to fit-for-purpose recycled water. It improves environmental outcomes through reduced effluent discharges to the Murrumbidgee river and reduced bore extraction from the Murrumbidgee Aquifer.

Considerations
Water quality will need to be carefully managed to protect public health and meet regulatory requirements. Council will also need to invest in upgrades, monitoring, maintenance, and community engagement to build confidence in reuse.

Cost
The project is expected to cost $8 to $12 million, with the scale of reuse depending on demand from open space and industry users.

Fivebough Wetlands Protection by Treatment Plant Optimisation

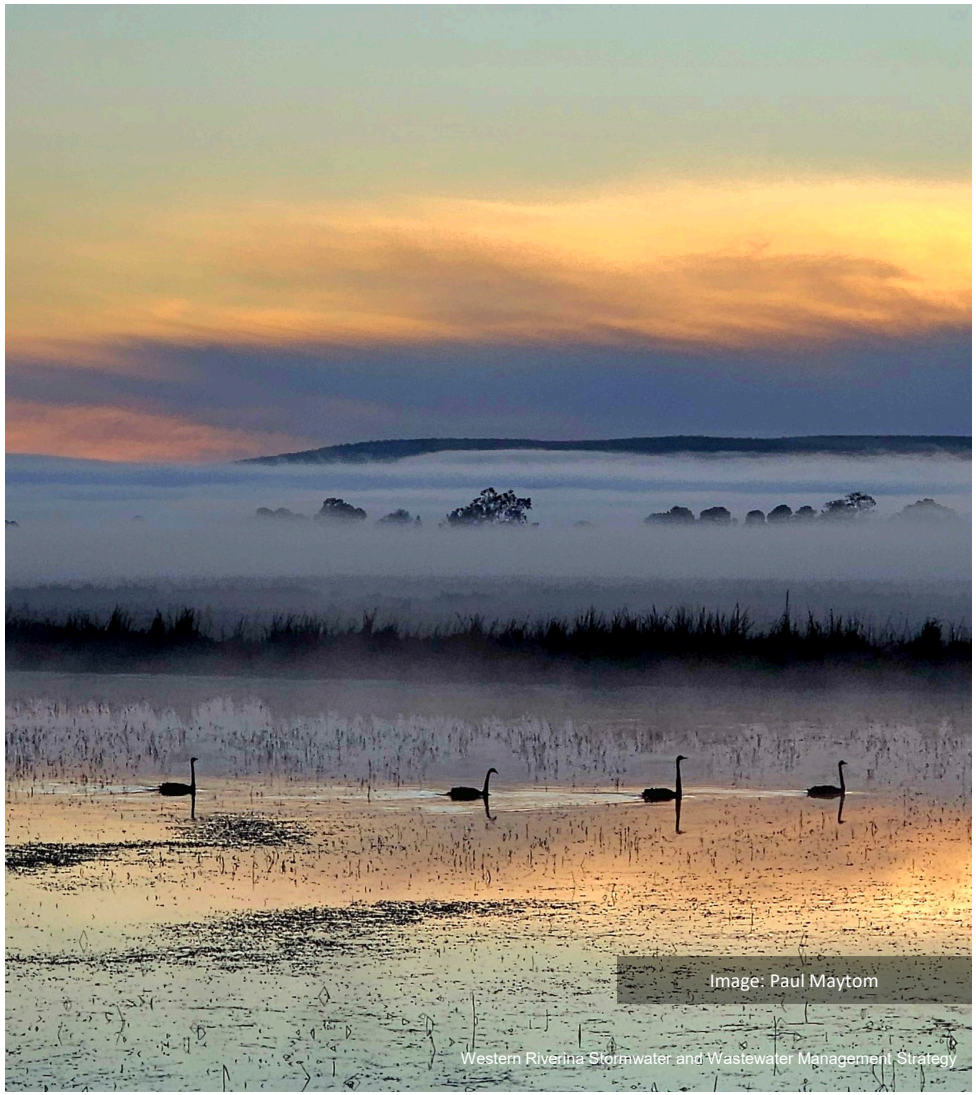
The Fivebough Wetlands are an internationally recognised Ramsar site, home to over 170 bird species, including several endangered species. The wetlands rely on discharges from the Leeton Sewage Treatment Plant (STP) ponds to maintain water levels and brackish conditions. It is suspected that as treated effluent travels through the ponds, environmental influences adversely impact the water quality. This project helps to optimise treatment to ensure a consistent quality of effluent water discharge into the wetland.

Proposed Option
This option involves upgrading the Leeton STP to improve treatment standards and reliability, reducing the risk of pollutants entering the wetlands. The scheme would secure a sustainable supply of treated water for the wetlands while meeting environmental and public health obligations.

Benefits
Improving the STP will protect the ecological health of Fivebough Wetlands and safeguard its Ramsar listing. It will also reduce compliance risks for council, improve community confidence in environmental management, and ensure this significant natural asset continues to support biodiversity, tourism, recreation, and education.

Considerations
Upgrades will require capital investment and ongoing management to meet strict environmental standards. Careful design and monitoring will be needed to balance wetland water needs with broader community and environmental priorities.

Cost
The project is expected to cost between $750 thousand and $1.5 million, depending on the level of treatment upgrades required.



Murrami Water Security

Murrami relies on a small water treatment plant that requires significant investment and modernisation to meet updated drinking water quality standards. Reliable and safe drinking water is central to sustaining Murrami's liveability, local services, and community resilience.

Proposed Option
Murrami's drinking water would either be supplied through the larger Leeton system, with new pipelines connecting the two towns or an upgraded water treatment plant at Murrami's existing treatment plant location. A connecting pipeline would remove the need for Murrami's small, ageing treatment plant and provide a more reliable and sustainable supply for the community into the future. However, a plant upgrade could provide a lower cost solution but would have higher operating costs associated with it than the new pipeline.

Benefits
This option would secure Murrami's drinking water supply. A new pipeline reduces the ongoing operating costs and simplifies management by consolidating supply through Leeton. An upgraded plant may achieve the same water security at a lower cost however it would have higher on-going operating costs and increased operational complexity.

Considerations
Connecting Murrami to the Leeton system would place extra demand on Leeton's existing supply, meaning future upgrades may be needed to keep pace with growth. The longer pipelines could also make it more challenging to maintain water quality, but with careful monitoring and management this can be addressed. Operating costs of a new treatment plant should also be considered.

Cost
The project is expected to cost between $15 and $25 million.


Image: Carla Gottgen

Lake Jerilderie Stormwater Harvesting

Lake Jerilderie is a valued community space that currently relies on high-security water to maintain amenity. This draws on scarce allocations and adds cost to council and users.

Proposed Option
Stormwater that would otherwise flow into the Murrumbidgee is redirected to the lake through new infrastructure that protects creek flows. This reduces reliance on scarce high-security water and provides a more sustainable way of maintaining the lake for community.

Benefits
The project would safeguard a key recreational asset that attracts visitors, supports local businesses, and strengthens liveability and wellbeing for residents. At the same time, it would lower demand on high-security allocations, freeing water for trade or agriculture and creating long-term economic savings for council.

Considerations
The success of this option depends on rainfall, meaning supply will vary from year to year. Careful design will also be needed to ensure water quality is safe for recreation and that creek flows are not negatively affected.

Cost
The project is expected to cost approximately $1 million. If delivered, it could reuse around 60 million litres of water each year — roughly the equivalent of 24 Olympic-sized swimming pools — depending on rainfall.

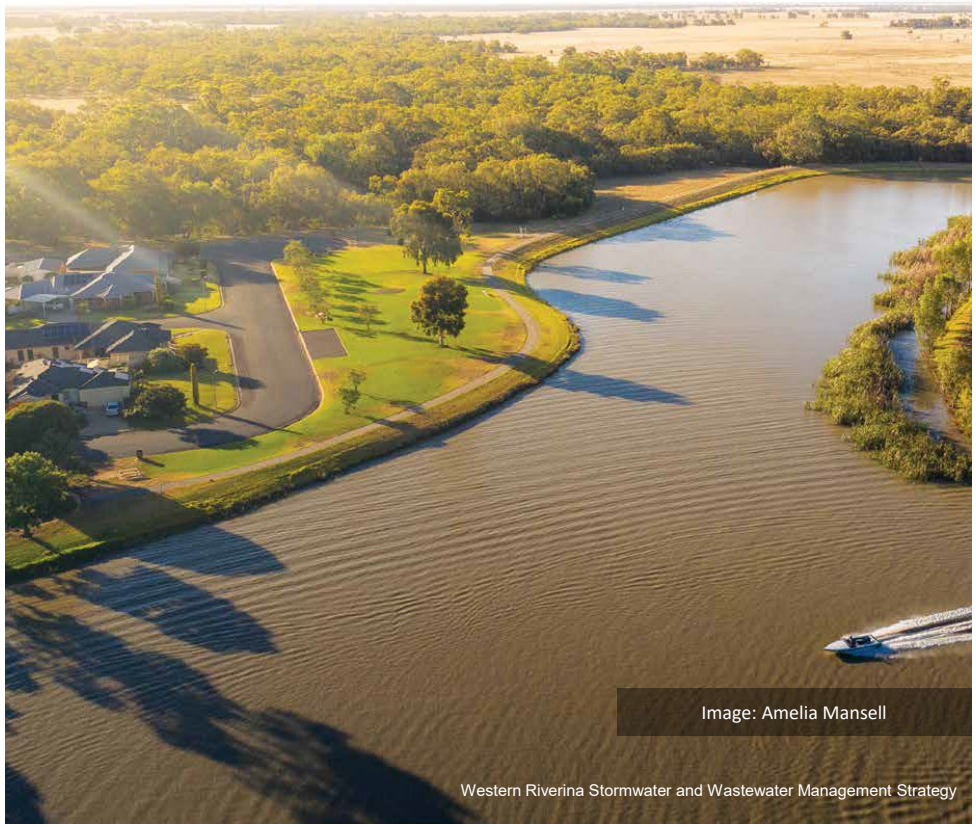


Image: Amelia Mansell

04 Our Action Plan


Image: Matt Beaver

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LEETON SHIRE COUNCIL

Murrumbidgee COUNCIL

Narrandera Shire Council

Action Plan Overview

An adaptive approach to decision-making and action as conditions and circumstances change over time.

The Western Riverina Stormwater and Wastewater Management Strategy identifies priority options and a clear pathway to secure water for our communities, now and into the future. For each prioritised option, the action plan outlines:

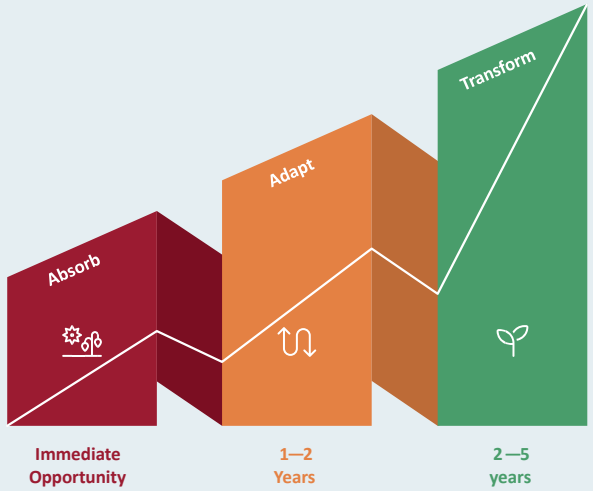
- Details of specific actions required for each option
- The alignment of the action to an implementation pathway

Timeframes are indicative and depend on opportunities, funding, and other variables. They align with the Resilience Theory of Change model introduced in the RDRP, which categorises actions by whether they absorb, adapt, or transform how the region collectively prepares for and strengthens resilience to drought effects. This scale also shows the anticipated level of effort and time required to bring each action to life.

While Council will lead and advocate for the progression of these actions, delivery will often rely on collaboration rather than sole responsibility. Many actions are broader in scale or sit beyond Council's direct operations, requiring funding, resourcing, or partnership with other levels of government and industry.

Action Plans for Prioritised Options

Specific actions were identified for each of the four prioritised options aligned to the resilience theory of change.



Resilience theory of change

Recommissioning the Narrandera Reuse Scheme

Making the most out of the water we already have

This indicative action plan outlines the steps to recommission and expand the Narrandera Recycled Water Reuse Scheme— from early design and engagement through to delivery and ongoing reliability — giving the community confidence in a safe and sustainable supply.

No.	Actions	Timeframe
1.1	**Secure Funding for Treatment Capacity Assessment and New Reuse User Engagement** Obtain funding to undertake preliminary investigations to confirm treatment improvements and network augmentation requirements	Absorb
1.2	**Capacity Assessment and New Reuse Scheme User Engagement** Reach out to potential reuse scheme users identified and understand interest and concerns. This will inform what changes to the reuse scheme network are required. A treatment performance assessment will also confirm what is required to recommission the recycled water supply	Adapt
1.3	**Secure funding and approvals** Obtain government funding and the required necessary approvals to recommission and expand reuse scheme	Adapt
1.4	**Stakeholder engagement and communication** Work with the Narrandera communities, facility managers and NSW EPA to explain benefits, impacts, timing, and measures to protect health and wellbeing of the community. Communication will be ongoing	Adapt - Transform
1.5	**Design of treatment upgrades and network expansion** Determine specifications and design treatment upgrades to improve treatment resilience. Design pipelines and network configuration to supply water to new users	Adapt - Transform
1.6	**Procurement and construction** Tender for contractors and construct treatment upgrades and network expansion	Adapt - Transform
1.7	**Monitoring and future planning (Ongoing)** Track water quality and reliability, to ensure health and wellbeing of community and environment are maintained	Transform

Fivebough Wetlands Protection by STP Optimisation

Looking after our natural environment and vulnerable waterways

This indicative action plan outlines the steps to improve the quality of water received by the Fivebough Wetland through optimisation of the Leeton Sewage Treatment Plant ponds. The effluent maturation ponds play an important role to provide disinfection of lingering pathogens – like E coli – but are susceptible to the influence of algae growth which is negatively affecting compliance with EPA discharge requirements.

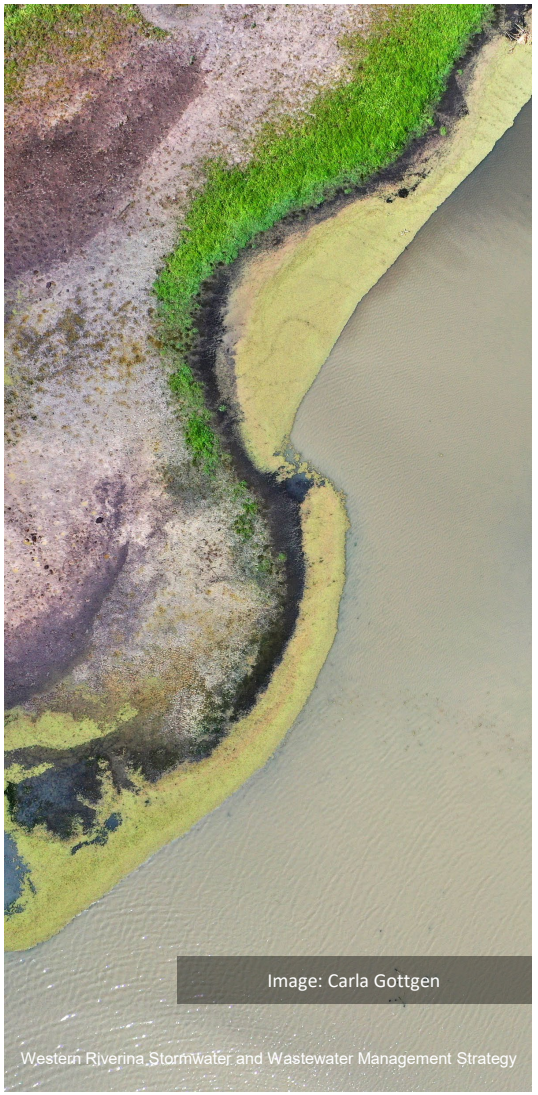
No.	Actions	Timeframe
1.1	**Secure funding for STP optimisation concept design** Obtain government funding to undertake a water quality sampling study and concept design STP optimisation	Absorb
1.2	**Design of treatment optimisation** Undertake a sampling study to understand what is happening to water quality as it travels through the effluent maturation ponds. Design the augmentations required to optimise treatment performance	Adapt
1.3	**Stakeholder engagement** Engage with relevant stakeholders to notify them of STP changes intended to improve quality of water received by the Fivebough Wetlands	Adapt
1.4	**Secure funding for design finalisation, procurement and construction** Now that changes required are better understood, this step seeks to secure additional funding to carry out changes to optimise the plant treatment process	Adapt - Transform
1.4	**Procurement and construction** Tender for contractors and construct treatment optimisation improvements	Adapt - Transform
1.5	**Monitoring and future planning (Ongoing)** Track water quality and reliability, to ensure health and wellbeing of community and environment are maintained	Transform

Murrami Water Security

Securing Murrami's water for generations to come

This indicative action plan outlines the steps to secure Murrami's future water supply — from early design and engagement through to delivery and ongoing reliability — giving the community confidence in a safe and sustainable supply.

No.	Actions	Timeframe
2.1	**Confirm scope and design** Undertake a process assessment of the existing Murrami WTP to confirm upgrade requirements and costs. Finalise the pipeline design, ensuring it integrates smoothly with the Leeton system and meets local needs. Update the economic evaluation to confirm the most cost-effective supply option for Murrami	Absorb
2.2	**Stakeholder engagement and communication** Work with the Murrami and Leeton communities to explain benefits, impacts, and timing of the recommended solution	Absorb
2.3	**Secure funding and approvals** Obtain government funding and the required necessary approvals to implement the preferred solution	Adapt
2.4	**Leeton system capacity planning** Assess Leeton's current water capacity and plan upgrades if needed to support both towns	Adapt
2.5	**Procurement and construction** Tender for contractors to build and construct the preferred solution	Transform
2.6	**Monitoring and future planning (Ongoing)** Track water quality and reliability, while planning for population growth and changing climate conditions	Transform



Lake Jerilderie Stormwater Harvesting

Enhancing the Liveability of the Community

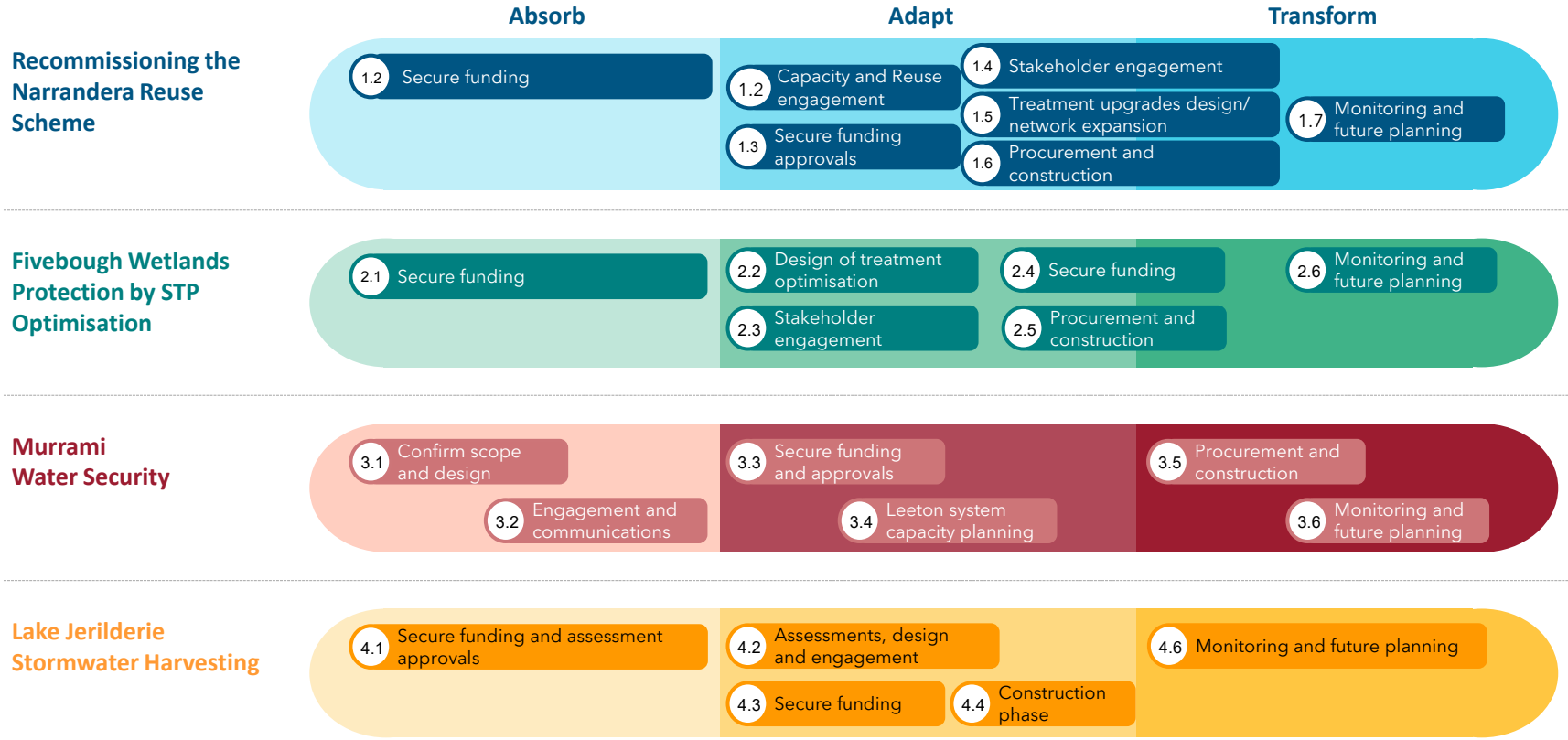
This indicative action plan outlines the steps to harvest stormwater and use it to top up Lake Jerilderie – helping us to reduce reliance on potable water and optimising how we use our water resources and provide community value.

No.	Actions	Timeframe
4.1	**Secure funding and approvals for preliminary assessments** Obtain funding to proceed with initial stages of the stormwater harvesting project	Absorb
4.2	**Preliminary assessments, design and community engagement** Undertake detailed investigation of Lake Jerilderie area to better understand how stormwater can be harvested to replenish Lake Jerilderie and infrastructure required to do so. Engaging with the community and other relevant stakeholders in the process	Adapt
4.3	**Secure funding to construct scheme** Obtain funding to procure and construct designed solution based on preliminary assessment outcomes	Adapt
4.4	**Construction phase** Procure and construct Lake Jerilderie stormwater harvesting scheme	Adapt
4.5	**Ongoing maintenance and monitoring** Ongoing upkeep and performance monitoring to maintain a fit for purpose scheme	Transform

Image: Visit NSW

Our Action Plan to a Sustainable Water Future

The roadmap is indicative and outlines how each project may progress through short, medium and long-term stages to be designed, approved, funded and delivered with lasting community benefit in mind.



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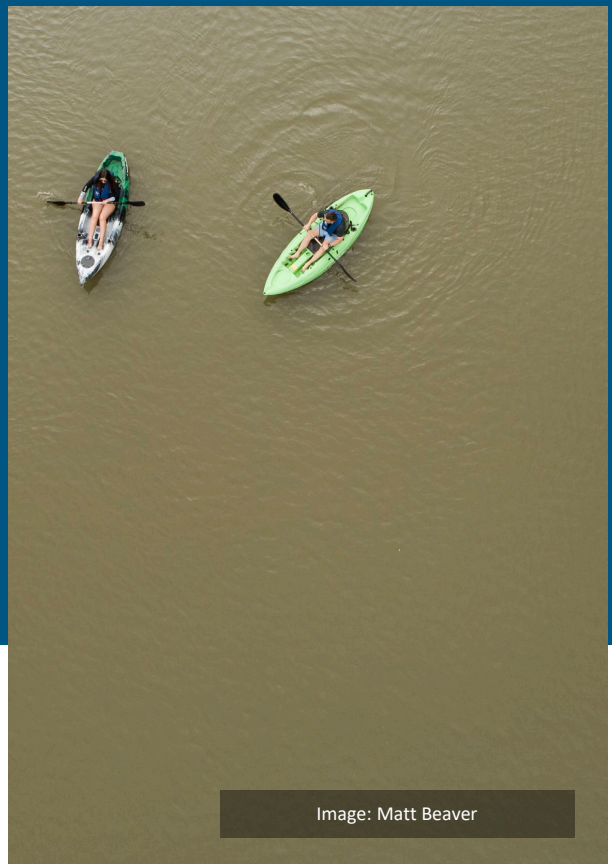


Western Riverina Consortium

Griffith city council ...love the lifestyle...

LEETON SHIRE COUNCIL

Murrumbidgee COUNCIL

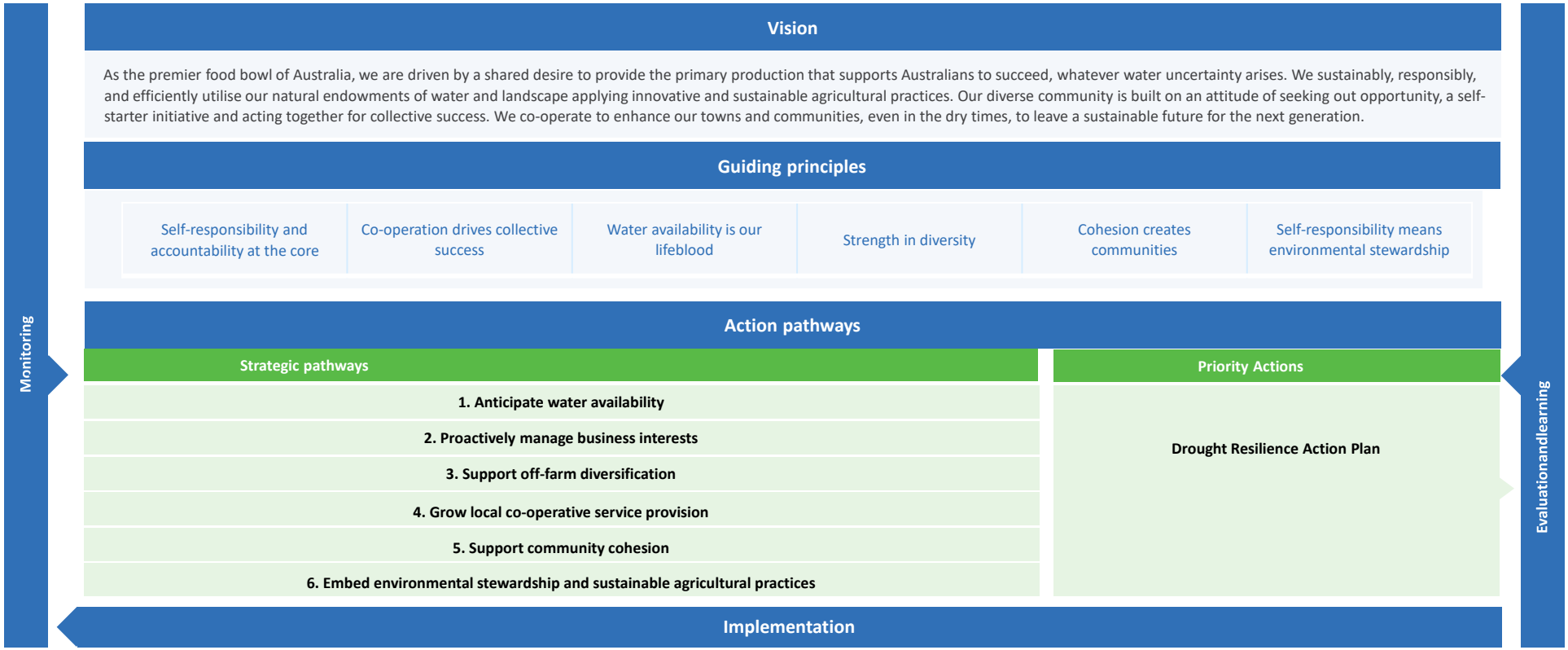
Narrandera Shire Council

Western Riverina Stormwater and Wastewater Management Strategy

Glossary

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.
Drought	Drought means acute water shortage. Drought is a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use.
Economic Resilience	The ability of the economy to absorb the economic impact of shocks and stresses without changing the economic or community system.
EPA	Environmental Protection Agency
ILM	Investment Logic Map
Intervention Options	Alternative or complementary actions, projects, programs, policies, initiatives, and investments that are planned to bring about change in the system.
LGA	Local Government Area
Local Knowledge	Local knowledge and First Nations knowledge incorporates elements of lived experience within a landscape, bearing witness to the operation of systems. It includes aspects of people, landscape, culture – how people interact with surroundings and as part of communities and processes.
MERI	Monitoring, Evaluation, Reporting, and Improvement
NSW DPE	NSW Department of Planning and Environment
RDRP	Regional Drought Resilience Plan
Resilience	The ability of a system to absorb a disturbance and reorganise to maintain the existing functions, structure, and feedback. Also see general resilience, specified resilience, economic resilience, environmental resilience, and social resilience.
Risk	The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems.
STP	Sewage Treatment Plant
Social Resilience	The ability of the human society to cope with a diverse range of shocks and stressors while maintaining existing social and community functions.
Theory of Change	Refers to theories, causal mechanisms and assumptions that explain how key outcomes and impacts will be achieved and how the implementation and production of those outcomes will generate outputs, activities, and outputs.
Trends	Major global or regional influences that are expected to affect the baseline or shape change into the future.
Transform	The process of radically changing or building a new system where the structure, function, feedback, and identity are redefined.
WTP	Water Treatment Plant

Western Riverina Regional Drought Resilience Plan Framework



Western Riverina Stormwater and Wastewater Management Strategy

Western Riverina
Stormwater and Wastewater Management Strategy

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LEETON SHIRE COUNCIL

Murrumbidgee COUNCIL

Narrandera Shire Council

Maximise water reuse for a resilient Western Riverina

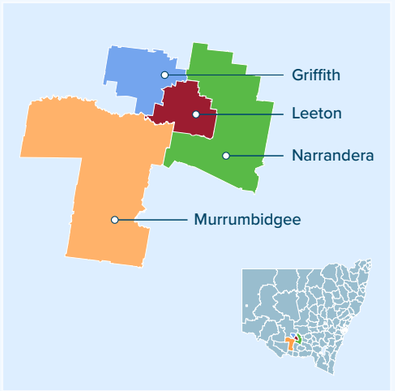
Water is central to life and prosperity across the Western Riverina, sustaining our farms, towns and natural environments

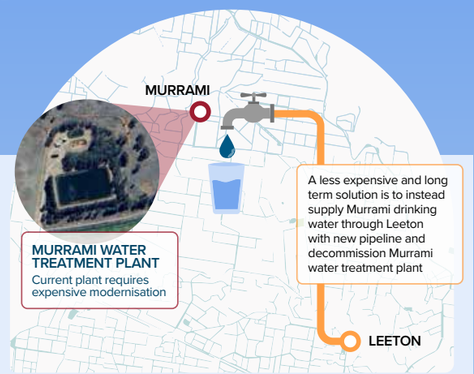
The Western Riverina Stormwater and Wastewater Management Strategy focuses on practical ways to strengthen water resilience and prepare the region for future dry periods. It was developed to deliver on Action 1.4 of the Regional Drought Resilience Plan (RDRP)—"Councils to review stormwater management and town sewerage discharge strategies and approaches to maximise opportunities for reuse of water resources."

Developed in collaboration with the four councils, the Strategy identifies where improvements to stormwater and wastewater could best support local priorities.

Each project is prioritised by how it supports our economy, our communities and our environment

- **Economic diversity:** Broadening opportunities for industry and business.
- **Council sustainability:** Realistic for councils to manage and deliver.
- **Water productivity:** Making the best use of available water.
- **Liveability:** Supporting green spaces, recreation and community wellbeing.
- **Water resilience:** Protecting water quality, ecosystems and long-term supply.





Murrami Water Security

Murrami's small water treatment plant is nearing capacity, posing risks to the community's drinking water security as population and demand increase. Ageing infrastructure further heightens the risk of breakdowns, threatening the town's liveability, essential services, and overall resilience.

Murrami's drinking water would either be supplied through the larger Leeton system, with new pipelines connecting the two towns or an upgraded water treatment plant at Murrami's existing treatment plant location. A connecting pipeline would remove the need for Murrami's small, ageing treatment plant and provide a more reliable

and sustainable supply for the community into the future. However, a plant upgrade could provide a lower cost solution but would have higher operating costs associated with it than the new pipeline.

$15M - $25M
Order of Magnitude Cost

Fivebough Wetlands Protection by Treatment Plant Optimisation

The Fivebough Wetlands are an internationally recognised Ramsar site, home to over 170 bird species. The wetlands rely on water from the Leeton Sewage Treatment Plant (STP) to stay healthy. However, the deterioration of quality in the ponds is causing NSW EPA compliance challenges, particularly with phosphorus and other pollutants. This puts the wetlands and the local community at risk of environmental harm.

Upgrading the Leeton STP would make the water cleaner and more reliable. It would help protect the wetlands from harmful pollutants and make sure they keep supporting wildlife, tourism, education, and local recreation. The upgrade would also help meet important environmental and public health standards.

$750k - $1.5M
Order of Magnitude Cost

Lake Jerilderie Stormwater Harvesting

Lake Jerilderie is a valued community space that currently depends on general and high-security water to maintain amenity. This draws on scarce allocations and adds cost to council and users.

The proposed option is to build new infrastructure that sends stormwater to the lake instead of letting it flow into the Murrumbidgee river. This helps protect creek flows and means the lake won't need as much high-security water, which is expensive and limited. It's a smarter, more sustainable way to keep the lake full for the community.

This project would protect a much-loved local spot that brings in visitors, supports small businesses, and boosts wellbeing for locals. It would also ease pressure on high-security water, freeing it up for farming or trade, and save money for council over the long term.

~$1M
Order of Magnitude Cost

Recommissioning the Narrandera Reuse Scheme

Narrandera's recycled water scheme was built to supply irrigation for sporting fields, open spaces, and industrial use, but has been underutilised.

Recommissioning and expanding the scheme would bring recycled water back into productive use, including supply to the Narrandera Industrial Estate. This would provide a reliable alternative water source for community through irrigation for green spaces, and supports economic development by providing industry with access to fit-for-purpose recycled water.

It improves environmental outcomes through reduced effluent discharges to the Murrumbidgee river and reduced bore extraction from the Murrumbidgee aquifer.

$8M - $12M
Order of Magnitude Cost

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Griffith City Council — INFORMATION REPORT

CLAUSE CL11

TITLE Western Riverina Regional Drought Resilience Plan & Sustainable Communities Program Update

FROM Karly Sivewright, Economic Development Coordinator

TRIM REF 24/132110

SUMMARY

The Western Riverina Regional Drought Resilience Plan (WRRDRP) is a consortium collaboration lead by Narrandera Council between Griffith, Leeton, Murrumbidgee, and Narrandera Councils, and their communities. The consortium has been working together to advance the region's resilience to the impacts of drought in the Western Riverina. Following a community consultation process, a final Plan has been completed by Meridian Urban and provided to the consortium. It should be noted the Plan was completed following community consultation and is not open for Public Submission, and must be submitted to the Department of Primary Industries and Regional Development in November 2024.

The Plan will assist inform applications to the forthcoming Sustainable Communities Program to be released by the Federal Government to assist communities impacted by the water recovery as part of the Restoring Our Rivers program.

RECOMMENDATION

a) Council notes the update regarding the Sustainable Communities Program.

b) Council endorse the Western Riverina Regional Drought Resilience Plan as described in this Report.

REPORT

Sustainable Communities Program

To implement the Murray-Darling Basin Plan in full, the Australian Government will be recovering 450GL of water as part of the Restoring our Rivers program by 2027. To assist communities impacted by water recovery the Australian Government have announced the Sustainable Communities Program. This program will provide $300M over 4 years to communities within the Basin. Councils and industries impacted by the Basin Plan will be invited to apply for funding, with allocations of funding per state to be announced in the coming weeks. It is anticipated the NSW government will undertake further community consultation in regard to the Program in February/March 2025. The funding will primarily support projects that will deliver long term economic and job growth.

The program funding aims to:

- Help regional communities to diversify and build resilience
- support communities to build capacity and prepare for a future with less water
- respond to local challenges, opportunities and priorities
- provide assistance at the same time as water recovery activities to proactively manage impacts.

The Federal Minister for Environment and Water announced on 8 November 2024 that the September water purchase open tender received more than 1000 responses across the southern Murray-Darling Basin, far exceeding the volume of water required. The September tender looked to purchase an additional 70 gigalitres per year across five catchments in the southern connected basin. Of the 450 gigalitres to be recovered by 2027, 27 gigalitres have been recovered to date.

The implementation of the Murray-Darling Basin Plan is being managed via the Department of Climate Change, Energy, the Environment and Water dashboard: Implementing the Murray–Darling Basin Plan dashboard - DCCEEW

The Western Riverina Regional Drought Resilience Plan

The Western Riverina Regional Drought Resilience Plan (WRRDRP) is a consortium collaboration lead by Narrandera Shire Council between Griffith City, Leeton Shire, Murrumbidgee, and Narrandera Shire Councils, and their communities. The consortium has been working together to advance the region's resilience to the impacts of drought in the Western Riverina. The Regional Drought Resilience Planning Program is being delivered as part of the Future Ready Regions Strategy, with joint funding from the Australian Government's Future Drought Fund and the Department of Regional NSW. Stage 1 is almost complete with the development of the WRRDRP ready for adoption.

A total amount of $350,000 allocated to Stage 2 implementation of the plan to be acquitted by November 2025. An expanded Project Control Group (PCG) will be established in 2025 and will include representatives from all four Councils and interested stakeholders. The expanded PCG will work collaboratively to apply for an expression of interest that includes actions to be undertaken from the plan.

A stakeholder engagement program was developed and co-designed across each local government, which included a comprehensive in-region engagement program, supplemented by additional targeted conversations and bolstered by a community wide survey, for both community members and business operators. In addition to this stakeholder engagement, significant background research was undertaken to inform preparation of the Western Riverina Resilience Assessment.

2024 PROJECT TIMELINE & ACTIONS UNDERTAKEN	
February	Funding deed executed
April	Request for quotation for consultant advertised
May	Panel assessment of quotations and consultant appointed
June	Onboarding of consultant and commence research and community consultation
4 June	Community consultation survey open (72 participants)
July	In-person consultation sessions
4 July	Drought Resilience Plan Workshop – Council Chambers (All Councillors & general public invited)
5 July	Drought Resilience Planning drop-in sessions – Dal Broi room, Council
August	Preparation of draft plan and CSIRO review
13 August	Mayor's Economic Update including Regional Drought Resilience Plan held (All Councillors & general public invited)
September	Community Consultation - Workshops with communities and stakeholders (in-person consultation)
25 September	Actions from draft plan reviewed with community members and stakeholders - Griffith Community Workshop followed by drop-in

	sessions – Murray Room, Council (All Councillors & general public invited)
October	Draft plan (including CSIRO and community edits) sent to department for review
1 November	Drought Plan completed by consultant and ready for endorsement
8 November 2024	WRRDRP due to be submitted to Department of Primary Industries and Regional Development
30 November 2025	Western Riverina consortia implementation deliverables and the final program report due.

Purpose of the Western Riverina Regional Drought Resilience Plan

The Western Riverina is unique in its drought context. Although susceptible to periods of drought, the irrigation schemes and regulation of the Murrumbidgee River differentiate the region from other parts of NSW. Water uncertainty was expressed by the community as the major factor affecting the region.

While the traditional characteristics of drought do affect the region, there are other influencing factors specific to the Western Riverina. Community engagement highlighted three kinds of 'water uncertainty' (see page 17 of the WRRDRP):

- 'Natural' drought – which is the climate-related drought experienced across Australia, and involves a deficit in the level of rainfall occurring in region.
- 'Human-made' drought – which is the lack of irrigation water due to government policy or out of-region water availability.
- Operational constraints influences – which involves the infrastructure / asset-based constraints of scheme maintenance

The effects of drought and any resilience initiative need to consider this broader context. The interplay of these factors creates uncertainty in the water landscape for this region. Whilst the irrigation schemes in the region have stabilised local and regional economic activity, water shortage and drought impacts can still be felt across the community.

Building in programs ahead of drier times, and retaining services and support beyond when a drought breaks provides the basis for ongoing community functioning. Drought planning and resilience goes well beyond actual drought periods. Importantly, there are a range of stakeholders who play a role in drought resilience. Services and programs may be delivered at different levels of government or across organisations. Continuing to advocate for local programs that have worked, and a focus on what can be done better also remains a priority for the plan.

The purpose of the plan is to:

• Increase understanding of the region's current and future drought resilience, considering the region's unique economic, environmental, and social characteristics.

• Recognise the interdependent nature of the local economy, community health and wellbeing and environmental sustainability through the drought cycle and across business types.

• Understand local signals and drought priorities in the community's voice.

• Combine local knowledge with resilience and risk data and information to make informed decisions. Identify actions, pathways and opportunities to improve regional drought resilience, mitigate risks and adapt to change.

• Help the Western Riverina Consortium of councils and regional organisations be in a stronger position to implement strategic actions and support partnerships that drive enhanced drought resilience

• Develop concrete actions to address and mitigate short-term and long-term drought impacts.

Over 60 drought resilience actions have been identified through the RDRP project. These actions are coordinated through six locally relevant pathways:

1. Anticipate water availability
2. Proactively manage business interests
3. Support off-farm diversification
4. Grow local co-operative service provision
5. Support community cohesion
6. Embed environmental stewardship and regenerative practices.

FINANCIAL IMPLICATIONS

$350,000 in grant funding in total for all participating Councils is available to identify and undertake priority actions and projects which are due for completion November 2025.

ENVIRONMENTAL IMPLICATIONS

As part of the WRRDRP, Meridian Urban (consultant) undertook a Western Riverina Resilience Assessment to assess the environmental factors impacting the Western Riverina in the event of a drought.

COMMUNITY IMPLICATIONS

Successful implementation of the plan will rely on the establishment of an active broader project control group (PCG) that has a wide collection of stakeholder representation.

LINK TO STRATEGIC PLAN

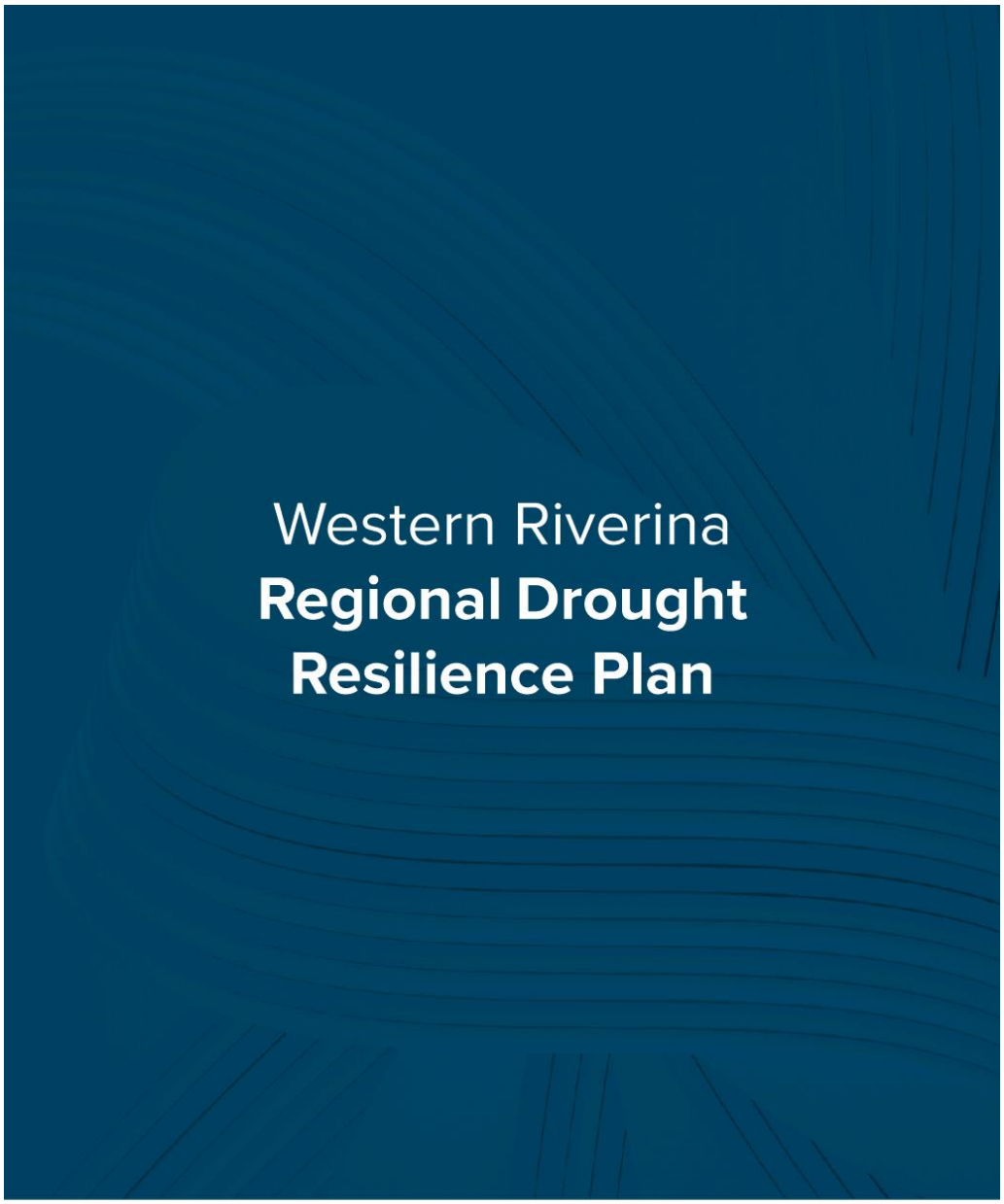
This item links to Council's Strategic Plan item 2.2 Maximise opportunities to secure external funding for partnerships, projects and programs.

CONSULTATION

Senior Management Team

ATTACHMENTS

(a) Western Riverina Regional Drought Resilience Plan (under separate cover)


Western Riverina
Regional Drought
Resilience Plan
Griffith City Council
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LEETON
SHIRE COUNCIL
Narrandera
SHIRE COUNCIL
Murrumbidgee
COUNCIL

Acknowledgement of Country

Griffith City Council, Leeton Shire Council, Murrumbidgee Council, and Narrandera Shire Council acknowledge the Traditional Custodians of the region's lands and waters, and pay our respect to Elders past and present.

We value the vital involvement of members of the primary production and broader communities of each council area to the formulation of this plan and extend our thanks to those who contributed.

This document was prepared for Griffith City, Leeton Shire, Murrumbidgee, and Narrandera Shire Councils by Meridian Urban.

This project is supported by Griffith City, Leeton Shire, Murrumbidgee, and Narrandera Shire Councils, through funding from the Australian Government's Future Drought Fund and NSW Government.

Contents

1

Glossary

Key terms used throughout this plan are defined below.

ADAPTATION	Adjustment or modification in natural and/or human systems in response to actual or expected shocks and stresses to moderate harm, reduce vulnerability and/or exploit beneficial opportunities.
ADAPTIVE CAPACITY	The ability of individuals and groups to adjust and respond to environmental and socio-economic changes.
ADAPTIVE GOVERNANCE	Coordinating iterative, flexible, and responsive interactions between systems when designing interventions and for their implementation and evaluation.
COPING CAPACITY	Communities that may be constrained in their capacity to use available resources to cope with adverse events and to prepare for, absorb and recover.
DROUGHT	Drought means acute water shortage. Drought is a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use.
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.
INTERVENTION OPTIONS	Alternative or complementary actions, projects, programs, policies, initiatives, and investments that are planned to bring about change in the system.
LOCAL KNOWLEDGE	Local knowledge and First Nations knowledge incorporates elements of lived experience within a landscape, bearing witness to the operation of systems. It includes aspects of people, landscape, culture – how people interact with surroundings and as part of communities and processes.
RESILIENCE	The ability of a system to absorb a disturbance and reorganise to maintain the existing functions, structure, and feedback. Also see general resilience, specified resilience, economic resilience, environmental resilience, and social resilience.
RISK	The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems.
SHOCK	Sudden, short-term events that threaten a city (or region). Examples include major storms, floods, bush fires, heatwaves, disease outbreaks, terrorism, and cyber-attacks'.
SOCIAL RESILIENCE	The ability of the human society to cope with a diverse range of shocks and stressors while maintaining existing social and community functions.
STRESSOR	An event that occurs gradually over a timeframe that causes an adverse effect, e.g. drought.
SYSTEMS	The interaction of processes, networks, and inter-dependencies across a complex 'whole'.
THEORY OF CHANGE	Refers to theories, causal mechanisms and assumptions that explain how and why outcomes and impacts will be achieved through use, implementation and production of proposed inputs, activities, and outputs.
TRENDS	Major global or regional influences that have driven change in the past and are expected to shape change into the future.
THRESHOLD	The point at which a change in a level or amount a controlling variable causes a system to shift to a qualitatively different regime. Also referred to as a tipping point.
TRANSFORM	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. Trigger points are usually defined in the planning phase.

2

Introduction

This Regional Drought Resilience Plan is a collaboration between Griffith City, Leeton Shire, Murrumbidgee, and Narrandera Shire Councils, and their communities, working together to advance the region's resilience to the impacts of drought.

Drought is a recurring feature of the Australian landscape. While common experiences exist, the impacts and major pressures through drought varies across geographies, and across communities.

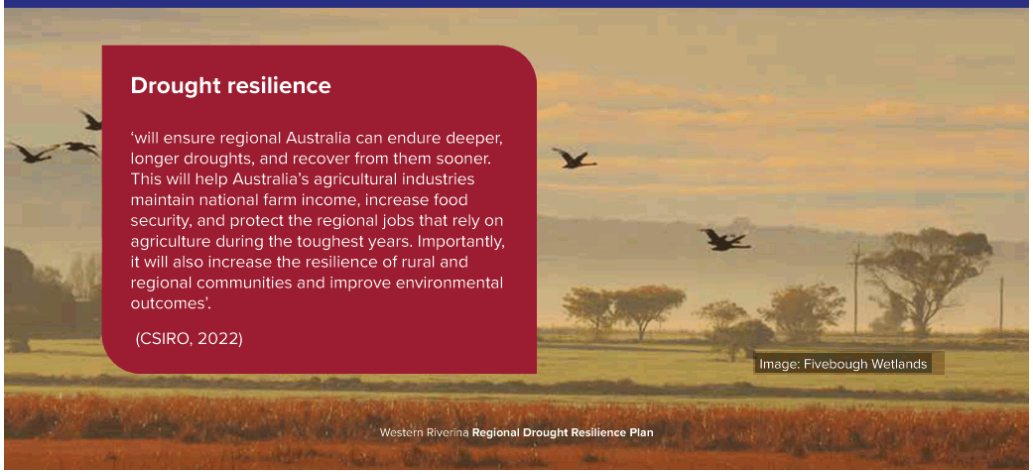
The Western Riverina region is dependent on the land, water and climatic conditions for prosperity. This highlights a need enhance drought resilience opportunities to position the region to respond to and recover from dry times. Sustainable and diverse economies, and connected communities that are responsive to drought signals, are the foundation to reduce vulnerability and mitigate potential impacts.

The Western Riverina is unique in its drought context. Whilst susceptible to periods of drought, the irrigation schemes of the region and regulation of the Murrumbidgee River set it apart from other parts of NSW. Water uncertainty in the region, as opposed to climatic events leading to drought, is a consequence of an interplay of factors. These factors, broadly grouped by climate, policy and operational infrastructure requirements, each have their own challenges but interact in combination across the drought cycle.

Within the region, vulnerabilities from drought are Within the region, future vulnerabilities to drought are indicated by downward trends in rainfall and soil moisture. Changes in the Snowy Mountains catchment area would also have effect given the flows received from the Alpine region. Across the community, challenges are voiced in the evolution of the complex water policy landscape which places its own pressures on the community. Under this broader context, the region retains a self-driven focus on harnessing co-operative community and economic opportunities. This plans seeks to build on the collective strengths and regional identity of the Western Riverina as a premier food bowl for Australia to take steps now to stem the impacts of future drought on our region.

The Regional Drought Resilience Plan program is one of five focus areas[1] of the Commonwealth Government's Future Drought Fund. The NSW Regional Drought Resilience Plan program is jointly funded through the Commonwealth Government's Future Drought Fund and the NSW Government, supporting local governments to work together regionally to plan for drought resilience proactively and pragmatically.

1 Other focus areas under the Future Drought Fund include farm business resilience, roll-out of the Drought Resilience Self-Assessment Tool, and better land management practices that support landscape resilience.



Drought resilience

'will ensure regional Australia can endure deeper, longer droughts, and recover from them sooner. This will help Australia's agricultural industries maintain national farm income, increase food security, and protect the regional jobs that rely on agriculture during the toughest years. Importantly, it will also increase the resilience of rural and regional communities and improve environmental outcomes'.

(CSIRO, 2022)

Image: Fivebough Wetlands

3

Western Riverina Regional Drought Resilience Plan Framework

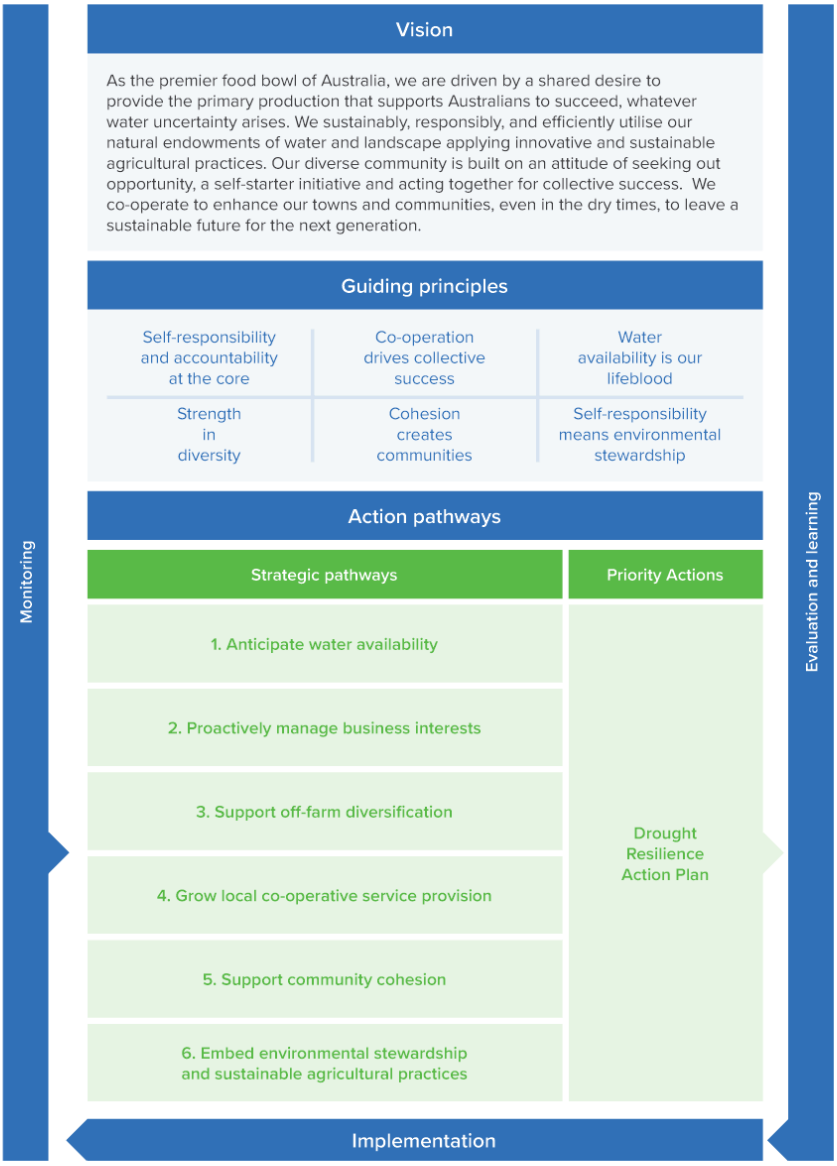


Figure 1 — Western Riverina Regional Drought Resilience Plan Framework

Western Riverina **Regional Drought Resilience Plan**

4

Purpose

The Western Riverina RDRP provides direction and options for how the community, business, industry networks, and local governments can adapt to strengthen drought resilience and transform for new opportunities.

The purpose of this plan is to:

- Increase understanding of the region's current and future drought resilience, considering the region's unique economic, environmental and social characteristics
- Recognise the interdependent nature of the local economy, community wellbeing, and environmental sustainability through the drought cycle and across business types
- Understand local signals and drought priorities in the community's voice and create stronger connectedness and greater social capital within communities
- Inform decisions based on a combination of local knowledge, and risk and resilience information
- Identify pathways and opportunities to improve regional drought resilience, mitigate risks and adapt to change
- Help Councils and regional organisations be in a stronger position to implement strategic actions and support partnerships that drive enhanced drought resilience
- Develop concrete actions to address and mitigate short-term and long-term drought impacts.

For the purposes of this plan, references to regional businesses include farms and agricultural business, contractors, suppliers, industry, retail and commercial services and references to community includes all townships, irrespective of size.

How does the plan help

The Western Riverina Regional Drought Resilience Plan combines drought history, climate analysis and local input to form a comprehensive understanding of the impacts of drought and to anticipate and prepare for the next drought cycle.

Whilst the future cannot necessarily be predicted, this plan addresses drought resilience by building in actions across the system where impacts are felt and across the drought cycles where interventions can be most effective. The plan consolidates on the range of existing programs and initiatives. It supports the ongoing collaboration between key actors who support the community through drought cycles.

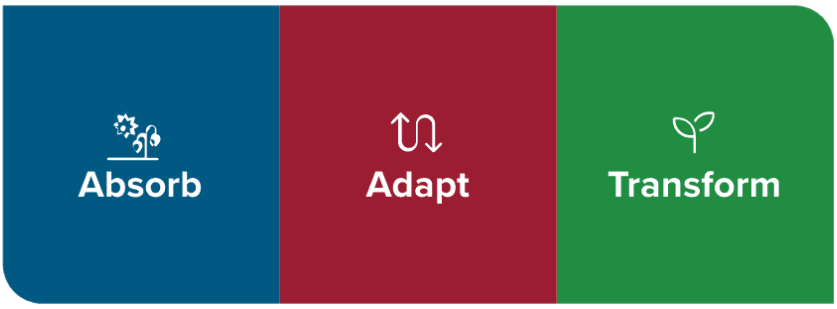
The impacts of drought can be insidious with a slow onset but prolonged effects that reach across the community. It is important we understand the warning signals of drought and retain a focus on continuous preparedness.

How previous impacts of drought have manifested across community networks, local business and the natural environment provides a guidepost for where actions are needed. This plan supports a focus on outcomes through:

- Prevention of potential impacts
- Increased preparedness and resilience through recognition of signals
- What is needed in response
- What is needed for recovery.

5

This Regional Drought Resilience Plan supports collective and cooperative measures to prepare for drought in the face of changing and uncertain futures. This is done through several intervention approaches:



These areas of absorptive capacity, adaptive capacity and transformational capacity provide a view of the priorities identified by this plan relative to different components of the drought cycle, effort and/or costs associated. Some opportunities are short-term and more immediate, whilst others are more transformative in nature and require long-term effort to generate change.

This concept forms part of a resilience 'theory of change' model[2] which helps us to break down and consider the complex elements of drought resilience and the links across issues. This makes clear both how and why its impacts run so deep. This approach also helps to inform decision-making for enhanced resilience and adaptation as conditions and circumstances change over time.

This plan supports drought resilience in the Western Riverina through approach that will:

- Understand and recognise the triggers and impacts
- Build capacity to meet challenges
- Unite in community
- Use regional voices to advance strengths and opportunities

This Regional Drought Resilience Plan provides the framework for implementation and identifies practical ways the community and businesses of the region can prepare for and respond to drought impacts. Implementation funding is available from longer-term investment under the Commonwealth Government's Future Drought Fund, as well as other funding and grant assistance opportunities.

Implementation of actions contained in this plan is dependent on funding availability.

2 The drought resilience plan integrates the 'Resilience, Adaptation Pathways and Transformation Approach' (RAPTA) developed by CSIRO which provides a framework to map resilience interventions. For more information on RAPTA, visit https://research.csiro.au/eap/rapta/


Image: Visit Griffith

6

Vision and principles

Vision

As the premier food bowl of Australia, we are driven by a shared desire to provide the primary production that supports Australians to succeed, whatever water uncertainty arises. We sustainably, responsibly, and efficiently utilise our natural endowments of water and landscape applying innovative and sustainable agricultural practices. Our diverse community is built on an attitude of seeking out opportunity, a self-starter initiative and acting together for collective success. We co-operate to enhance our towns and communities, even in the dry times, to leave a sustainable future for the next generation.

Guiding principles

Self-responsibility and accountability at the core

People in this region are frank and honest. We are very good at what we do – whether running the local café or managing a multi-million dollar diversified agri-business portfolio. The sense of responsibility and personal accountability is strong – people need practical and realistic support to keep doing what they do well.

Co-operation drives collective success

Not many parts of Australia work under such successful co-operative approaches like this region. From the irrigation schemes to the mills and even local pubs, the co-operative business structure provides a trust-based way to transform communities by growing services and prosperity in other critical sectors – like aged care, housing, and even retail – so that local services can be retained in-community, owned by community.

Strength in diversity

Farmers in this region know how to build, manage and grow diversified on-farm operations – they have been doing it efficiently for generations. Transferring this culture of diversification into off-farm economic growth that supports manufacturing and value-added employment and prosperity is a clear opportunity.

Water availability is our lifeblood

The region is unique in the way it receives its natural endowment of water – receiving both in-region rainfall and irrigation waters from Australia's snow country via the Snowy Hydro scheme. This combination of water sources supports arguably Australia's most critical and diversified irrigated and dryland country. However, uncertainty exists for both sources of water, which create similar drought-like conditions through different causes.

Cohesion creates communities

The region embodies the Australian ideals of mateship. There are tight-knit communities in towns and districts across the region that band together in a crisis to help each other through. It's a clear and common foundation of what it takes to live successfully and sustainably.

Self-responsibility means environmental stewardship

There is an awareness of the precious nature of resources with which the community is entrusted. There is increasing recognition and practice in environmental restoration, regenerative agriculture, and care for Country that will pay great dividends as efforts increase.

7

Region snapshot

Information sourced from: ABS 2021 Census data, Regional Development Australia, and AgTrack - Agricultural and Land Use Dashboard

Population
47,589

Population aged 65+
20.6%
(17.7% NSW average)

First Nations population
8.5%
(3.4% NSW average)

REGIONAL ECONOMY*
23,752 jobs (2021)
Economy **$3.5b** (2020)
Local businesses **5,608** (2022)

UNEMPLOYMENT
Griffith: **3.0%**
Leeton: **3.8%**
Murrumbidgee: **2.9%**
Narrandera: **5.2%**

VOLUNTARY WORK
(organisations)
13.2% — 23.2%
(13.0% NSW Average)

Largest industries (by employment)

GRIFFITH
- Poultry Processing
- Wine / Alcoholic Beverage Manufacturing
- Hospitals

LEETON
- Secondary Education
- Meat Processing
- Grain Mill Product Manufacturing

MURRUMBIDGEE
- Other Grain Growing
- Grain-Sheep or Grain-Beef Cattle Faming
- Local Government Administration

NARRANDERA
- Grain growing, and Grain-Sheep or Grain-Beef Cattle farming
- Local Government Administration
- Meat Processing
- Aged Care Residential Services

LARGEST INDUSTRIES (gross value add)
- Agriculture
- Manufacturing
- Health and education
- Electricity and water supply

PRINCIPAL AGRICULTURAL COMMODITIES
- Broadacre cropping
- Fruit and nuts
- Livestock

ASSETS
- Western Riverina Intermodal Freight Terminal
- Griffith Medical Health Precinct
- Griffith Regional Airport
- Country Universities Centre
- Yanco Agricultural institute
- TAFE NSW campuses
- Narrandera Fisheries Centres

AREAS OF SIGNIFICANCE
- Murrumbidgee River and tributaries
- Billabong Creek
- Murrumbidgee Valley and Oolambeyan National Parks
- Fivebough and Tuckerbil Wetlands
- Recreational lakes

*Values include Carrathool Shire LGA

Western Riverina **Regional Drought Resilience Plan**

About the Western Riverina Region

The Western Riverina, as part of the broader Riverina Murray region, is known as Australia's 'food bowl'. It is built around premium agricultural areas, and long-standing agricultural industry strengths linked to secure water and complemented by beneficial climate conditions and versatile soils. The Western Riverina Regional Drought Resilience Plan covers the local government areas (LGA) of Griffith City, Murrumbidgee, Leeton Shire and Narrandera Shire.

Griffith is the largest regional city in the Western Riverina and is one of the three regional cities in the broader Riverina Murray region alongside Wagga Wagga and Albury. A number of smaller centres support Griffith in surrounding rural communities. Leeton is the second largest centre in the Western Riverina and Leeton Shire includes the towns of Whitton and Yanco. The shire is a strong driver of the broader regional strengths, in particular through the role it plays in value-add agriculture, including agricultural education and research.

Murrumbidgee Council contains the three townships of Coleambally, Darlington Point and Jerilderie. These centres account for over 90 percent of the LGA's population, and reflect strengths through food and fibre production, benefiting from the Murrumbidgee River, Billabong Creek and water supplied from the Murray River.

Narrandera Shire is located at the juncture of the Newell and Sturt Highways, representing a transition from the broad acre agricultural areas to the east to the highly productive Murrumbidgee Irrigation Area. Narrandera forms the main town and provides a concentration of services, supported by smaller communities in Barellan, Binya, Grong Grong, and a number of rural localities.

Across each LGA the strength in agriculture is linked through connection to water, a highly evolved local industry with value-add processing, and connection to major markets and major transport infrastructure. Key assets include the Murrumbidgee River, and flows received from the Alpine Region. The Western Riverina is home to the major irrigation schemes of the Murrumbidgee Irrigation Area, Coleambally Irrigation Area, and Murray Irrigation area, alongside other private irrigators. This irrigation network supports many farms and provides some of the nation's most important irrigation areas.

Building on agricultural strengths, educational and research institutes form key assets in the region. This is includes the Country Universities Centre, Yanco Agricultural Institute, and TAFE campuses across LGAs, with the largest TAFE campus in the Riverina located at Griffith. These educational facilities and major health facilities anchor services in the region and provide for a mixture of employment options.

The position of the region has influenced its economic development and agricultural strengths, capturing major freight corridors between capital cities, and evolving its own manufacturing and transport hubs. These form the basis of future growth ambitions, with further links to emerging activation precincts across the state.

The northern part of the region (north of Jerilderie) is within the Wiradjuri Nation, the largest territory at the time of European settlement. The Nation encompasses the Central West slopes and plains and extends from Coonabarabran to the north, hugging the Great Dividing Range south towards the Murray River in the south and out to western NSW. The Nation encompasses approximately one fifth of NSW. Wiradjuri people are known as 'people of three rivers', acknowledging the three rivers that are associated with their Country: the Wambuul (Macquarie River), Kalari (Lachlan River) and Murrumbidjeri (Murrumbidgee River).

Figure 2 — Map of the Western Riverina Region and local centres

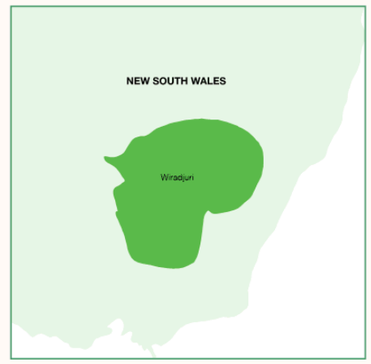


Figure 3 — Approximate extent of the Wiradjuri Nation[3]

3 Griffith City Council, 2019, Griffith City Council Reconciliation Action Plan December 2019/December 2021, Available at https://www.griffith.nsw.gov.au/page.asp?f=RES-GWK-21-15-76.

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Wiradjuri Nation

The Wiradjuri Nation is the largest traditional owner group in NSW known to have cared for the lands in the regions for at least 60,000 years. Colonisation drastically changed their way of life, leading to dispossession and cultural suppression.

The culture of the Wiradjuri people is closely linked to the land and waterways, and retains a strong belief that if we care for Country, it will care for us. There are several sites of significance to the Wiradjuri people in the area, including the Koonadan Aboriginal Place and the Fivebough and Tuckerbil Wetlands. Conservation practices are key to ensuring these sites continue to maintain an ecological balance.

Water has played a critical role in the lives of Aboriginal people, for survival in arid environments and for culture, spiritual connection to land and waters and identity. Water helped in defining language boundaries and ceremonial places, and also underpins many land management practices. Traditional Aboriginal water collection and storage practices have evolved for many centuries and continue into the present.

In collaboration with First Nations/ Aboriginal people, a state-wide Aboriginal Water Strategy is currently under development, building upon consultation over recent year. The plan will identify ways of increasing water rights and ensuring that First Nations people are empowered to contribute to water management and planning decisions.

People and community

The Western Riverina is attracting new agricultural ventures and business operators who are keen to trial innovative approaches. Across the region, the vibrancy of agricultural industry is shining.

At heart of this is a strong community co-operative style of approach to not only business, but community development. A drive to work together, and to share knowledge and benefits, is a key attribute behind some of the region's most successful economic and community ventures. Strong community identity and a sense of civic duty is foundational in this regard. It also informs the community's dedication to volunteering activities and organisations. Whilst volunteerism rates are in decline nationally, community dedication at the local-scale across the Western Riverina remains relatively strong.

Sport and recreation plays a major role in the wellbeing of people and communities in the region, displayed through the diverse range of sporting teams and sporting calendar. This goes beyond those that play, but to the broader community as avid spectators and volunteers who contribute to the local teams and the running, maintenance and administration of local venues and facilities. Other social interest groups also add to the vibrant tapestry of community spirit and provide important creative and social connections.

Green spaces, recreational and natural assets are therefore critical to community wellbeing. While maintaining water to these spaces during drought is challenging, it is also essential to underpin community cohesion and mental wellness at a broader scale. There are also significant visitor economy dividends associated with these assets, as well as the region's colonial heritage and lively arts and culture scene.

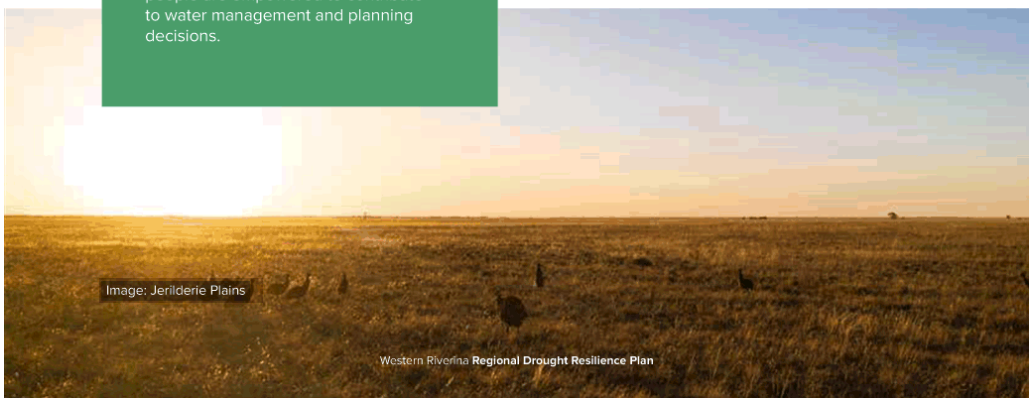

Image: Jerilderie Plains

Environment

The Western Riverina is part of the wider Riverina Bioregion which has high soil fertility and a generally abundant water supply. These aspects underly its primacy as a premier food-growing region.

The climate of the Riverina Bioregion is dry and semi-arid with hot summers and cool winters, and most rainfall occurring in winter months. Vegetation ranges from river red gums along river channels, to saltbush on the plains. National parks in the region include Murrumbidgee Valley and Oolambeyan National Parks. The region's natural assets include significant wetlands and swamps such as the Fivebough and Tuckerbil Wetlands. These areas provide important habitat for native fish, amphibians, birds, mammals and many other water dependent fauna. These areas are also of cultural heritage significance to the region's First Nations people.

Since European colonisation there has been substantial modification of the vegetation and landscape through pastoral activities, the use of ground and surface water resources, and the introduction of feral animals to the region including Carp in the river systems.

One of the most profound changes at a landscape scale was the construction and commencement of the Snowy Mountain Scheme (Snowy Scheme). The Snowy Scheme was designed to produce electrical energy. However, one of the key objectives of the Scheme was to mitigate the effects of drought on irrigated agriculture in NSW and Victoria by improving the security of water supply to farmers along the fertile Murray and Murrumbidgee Rivers.

Economy

Collectively, the Western Riverina economy supports approximately 23,752 jobs and its economic value is an estimated $3.5 billion[4] per year. The four key strengths of the region are in agriculture, manufacturing, utilities, and health and education

The high-quality agricultural lands support a long-held sector strength with significant value-add opportunities. The sector retains strong links to manufacturing, which also benefits from the linkages to large cities, distribution points of ports and airports, and links to freight and logistics hubs.

Economic assets exist through the major freight routes, freight railway lines, and links to the neighbouring regional city precincts in Albury and Wagga Wagga. The region's Western Riverina Intermodal Freight Terminal and urban industrial areas also proivde economic enablers.

Investment in the region continues with major projects planned and underway. Strengths which support the key industries are its access to water and irrigation systems, proximity to metropolitan markets, extensive road and rail infrastructure and emerging population-serving employment clusters.

Industry	Employment (2021)	Gross Value Add (2020)
Agriculture	3,926 jobs (16.5% share)	$583m
Manufacturing	3,827 jobs (16.3% share)	$526m
Health and education	4,405 jobs (18.5% share)	$390m
Electricity and water supply (including renewables)	382 jobs (1.6% share)	$144m

4 This includes Carrathool Shire in addition to Griffith City, Leeton Shire, Murrumbidgee, and Narrandera Shire

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How this plan was prepared

The Western Riverina Regional Drought Resilience Plan was prepared through the valued contribution of a broad cross section of community members, stakeholders, local government, government services, community organisations, businesses and local producers. This engagement was supported by an evidence-based resilience assessment for the region.

Resilience Assessment

- research and literature
- strategy and policy reviews
- regional characteristics
- trends and projections for drought impacts; and
- drought resilience indicators assessment.

Stakeholder engagement

- online community and business surveys
- community, industry and government workshops
- community drop-in sessions
- targeted consultations, interviews and discussions with community, industry and services representatives.

The narrative, theme and actions within the plan are directed by the conversations across community engagement. The plan builds on existing strategies through the lens of drought resilience which supports development on the identified strategic pathways.

Image: Leeton Chill & Grill Festival

Strategic alignment – state, regional and local

Looking upwards, the regional drought resilience program provides strategic alignment with international scale goals including the United Nations Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction, alongside national-scale strategies and frameworks and state-level strategic instruments. This alignment demonstrates how working locally contributes to broader sustainability and resilience outcomes for NSW and Australia.

Key plans and strategies contributing to this alignment and the preparation of the Western Riverina Regional Drought Resilience Plan has included (but is not limited to):

- Murray-Darling Basin Plan
- Riverina Murray Regional Plan 2041
- Western Riverina Regional Economic Development Strategy (2023 update)
- Draft Murrumbidgee Regional Water Strategy
- Riverina and Murray Joint Organisation (RAMJO) strategies, plans and papers
- NSW Climate Change Adaptation Strategy
- NSW Government Department of Primary Industries Drought Hub
- Department of Regional NSW Drought Signals Dashboard
- Commonwealth Government's Drought Resilience Self-Assessment tool
- Council Integrated Planning and Reporting Framework documents.

A stakeholder-driven approach

The resilience assessment which underpins the RDRP built an understanding of local context and drought impacts around the economic, natural environment and social characteristics of the region. However, impacts are not felt in isolation but rather can compound and cascade. Community consultation was key to understanding how these interactions occur and build.

The engagement process centred on community workshops, drop-in sessions, targeted meetings and discussions, and an online survey to collate experiences, insights and views from a broad cross section of community members. We spoke with growers, livestock graziers, industry and community group representatives, business operators, First Nations organisations, subject matter specialists, service providers, local and state government agencies, elected representatives and more.

Discussion was had on what was needed into the future to better position the region collectively when the next time a dry period is upon us. This discussion focussed on actions and initiatives that were required in preparation for drought, the needs during drought and then into recovery.

Figure 4 — Engagement workshops held in-region

9 workshops across weeks in July and September 2024

Coleambally / Narrandera
Barellan / Leeton / Griffith

4 drop in sessions

Darlington Point / Jerilderie
Whitton / Griffith

Online survey

Community / Business owners and operators

72 survey responses

45+ workshop attendees


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Engagement observations and insights
Key insights communicated through the stakeholder consultation process and informing the preparation of this plan include:
Co-operative community approaches are strong and working well. This sets the region apart from other areas. There is a strong desire to work together for mutual benefit.
Irrigation has stabilised the local economy over the past 50 years which has limited the impacts of drought on the region to an extent, though it is still felt.
Mental health and wellbeing ahead of the next drought should be a key area of focus. Mental health support once drought has set in is welcomed, but it can be too late. Tools to support producers ahead of drought is a clear opportunity, as well as building broader community mental health literacy.
Primary producers in the region benefit from opportunities to showcase their property management and production processes. People come from around the world to learn from Western Riverina producers.
The Western Riverina plays a key role in broader food security matters, and as a key exporter for the nation. As key players in this system we want to see what is being planned at higher policy levels.
State and Commonwealth Government services that support drought preparedness should be more actively promoted and marketed.
An improved and shared understanding of how the water market operates is needed.
To deal with reduced water availability, economic development needs to focus on non-water dependent jobs / industries. Government assistance is needed in diversifying the economy to reduce reliance on contribution from agricultural.
The key is to act early when making decisions in the face of drought, which applies to on and off-farm businesses.
The efficiency of government processes and systems places unnecessary stress on people. For example, registration of trucks (of which properties / businesses usually have many) which must be done in-person. Issues were also present with previous grant application process and timelines of such availability.
Townships have good water allocations that provide opportunities for new businesses.
Resilience is driven by efficiencies and strong self-accountability based upon business acumen, efficient management, innovation and sustainability.
Business and property succession planning is critical.
Western Riverina Regional Drought Resilience Plan

Messages from the Community

Community views are strong on how the region builds its own resilience and how it contributes to the resilience of Australians more broadly. Key messages from the community, which are central to this plan include:

- Our region was developed purposefully to provide food for Australians – and we take that legacy seriously by developing and innovating world class food production processes
- We are a critical driver of the success of cities and towns of everyday lives of people all over Australia – our resilience drives Australia's resilience
- Trust us to manage our own future, and help us to keep being as efficient as we can be
- One size fits all approaches don't work – specialised and targeted support is critical
- We need greater water certainty and availability
- Centralisation of services doesn't meet community need – we need core services in community to support our prosperity

Regional enablers

To bolster the resilience to the effects of drought, the region's ability to capitalise on its community and economic development opportunities is reliant upon key enabling attributes. Beyond water, these include access to reliable energy networks, digital connectivity and transport infrastructure.

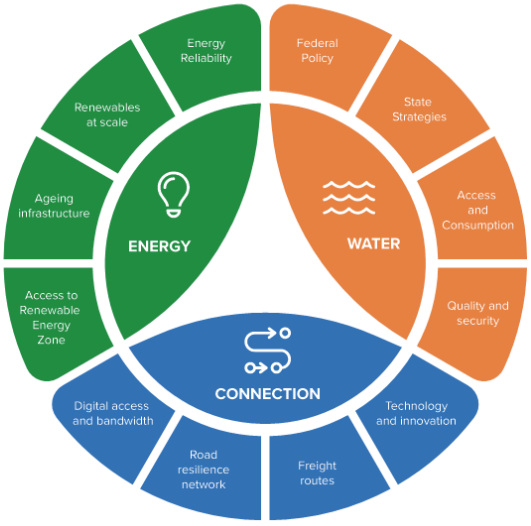

Figure 5 — Regional enabling priorities of the Western Riverina

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How our region is impacted by drought

How the Western Riverina region is impacted by drought is closely aligned to its connection with water, which is the 'lifeblood' of the region.

Natural river systems

This is a unique part of Australia. The region derives the benefit of relatively modest in-region rainfall, but also the bounty of surface water from rain and snow precipitation from far away. The Murrumbidgee is sourced from high in the Australian Alps, winding its way across the south-west slopes of NSW and across the riverine plains to where it meets the Murray River. The Snowy Scheme was originally conceived as an irrigation scheme to draw the snowmelt from the Snowy Mountains west into the Murrumbidgee and Murray Rivers, before it also diversified into hydro-electric power generation.

The Murrumbidgee River connects centres and communities across the region and is the basis for productive agricultural lands, nationally important wetlands, and hydroelectricity further beyond the Western Riverina.

The Murrumbidgee catchment is part of the southern Basin of the Murray-Darling Basin, with this basin flowing into the Murray River. The Murray River system also influences the region, supplying water to south of Billabong Creek. This supports production in and around Jerilderie and the broader Murrumbidgee Council area.

Land uses are diverse across the Murrumbidgee Valley. A high proportion of land is used for dryland grazing and cereal-based cropping. The region supports the production of over 40 percent of NSW grapes and 50 percent of Australia's rice. Given the diversity of users, and the context to which it sits as part of the broader Murray-Darling Basin system, there are competing interests which provide the backdrop for a range of issues related to regional water planning and policy in the region.

The Snowy Scheme water makes its way through the Murrumbidgee Irrigation Area (MIA) via Blowering Dam and Burrinjuck Dam on the Murrumbidgee River. Blowering Dam stores water that has been released from storages further upstream in the Snowy-Tumut Development Section of the Snowy Scheme. Water releases from Blowering and Burrinjuck Dams are managed by NSW State Water, to provide for town water supply, irrigation and environmental use requirements. On the Murrumbidgee River, as at Gundagai, the Snowy Scheme contributes inflows of around 25 percent during average inflow years, but 60 percent during drought years. Water from the two storage dams flows down to Berembed Weir, a journey taking five days and a further two days to Gogeldrie Weir. From Berembed Weir, water moves into Bundidgerry storage and onto the Narrandera Regulator, which is the start of the system owned and maintained by Murrumbidgee Irrigation.

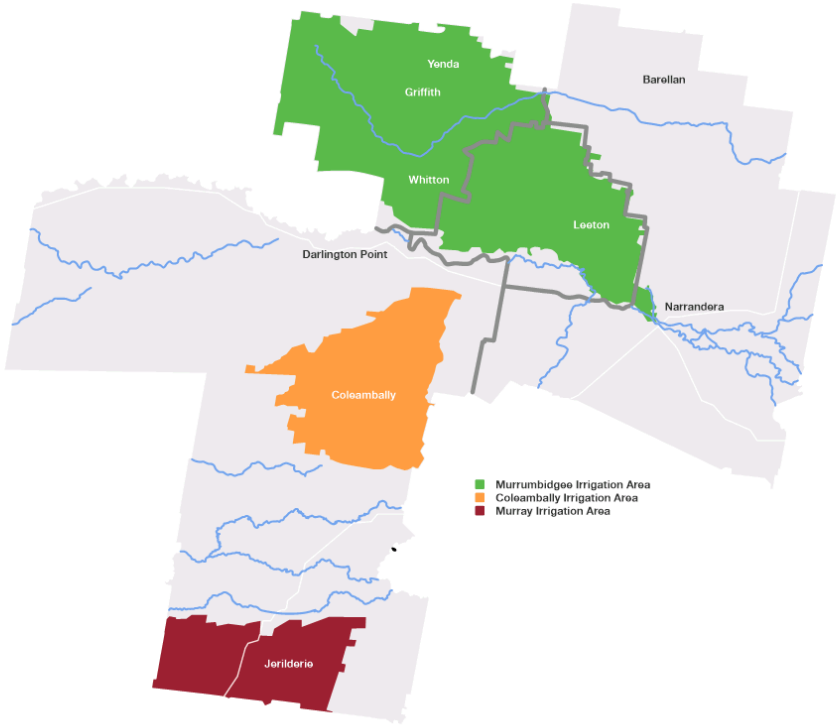
Image: Griffith Main Canal

Irrigation areas

The Murrumbidgee River acts as the natural delivery course for the major food producing areas of the MIA and the Coleambally Irrigation Area (CIA) via Blowering Dam (on the Tumut River, a tributary to the Murrumbidgee) and Burrinjuck Dams. These irrigation areas provide over one-quarter of all the fruit and vegetable production in NSW and are also one of Australia's largest exporters of bulk wine. The southern part of the region, south of Jerilderie and Billabong Creek, is serviced by Murray Irrigation which supplies to more than 740,000 hectares of farmland.

This access to water through the establishment of irrigation schemes, and other water sources, has supported the growth and scale of operations in the region both in agribusiness and associated manufacturing. Economic activity in the region, both historically and at present is strongly linked to the Murrumbidgee Irrigation Scheme, and the water infrastructure investment that support the modern-day irrigation network.

Figure 6 — Major irrigation areas in the Western Riverina



The region's different types of 'drought'

The Bureau of Meteorology notes that drought is a prolonged, abnormally dry period when the amount of available water is insufficient to meet our normal use. We typically think of drought as the absence of rainfall in a region given most other regions in Australia are predominantly dryland in nature.

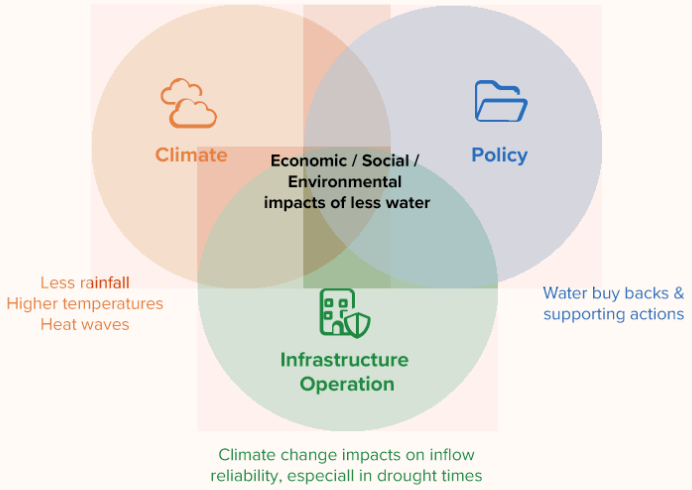
'Water uncertainty' is a preferred term in the region rather than this traditional rainfall and climate-led view of drought. This uncertainty can come from a range of different mechanisms in this region which may occur singularly or in combination. Engagement highlighted three kinds of 'water uncertainty' for the region:

- 'Natural' drought – which is the climate-related drought experienced across Australia, and involves a deficit in the level of rainfall occurring in region.
- 'Human-made' drought – which is the lack of irrigation water due to government policy or out-of-region water availability.
- Operational constraints influences – which involves the asset-based constraints of scheme maintenance and operation, an more significantly, reliability of supply.

The effects of drought and any resilience initiative need to be aligned with responses to the broader context, including policy drivers and operational implications of changing rainfall patterns in the Snowy Mountains. These may result in less water availability or a reduction in the reliability of water supplies in the region. The interplay of these factors creates uncertainty in the water landscape for this region.

Whilst the irrigation schemes have stabilised local and regional economic activity, water shortage and drought impacts can still be felt across the community. Into the future, the impact of climate change on the Snowy Mountain region is also important to the Western Riverina given the reliance on elevated inflows in drier periods from the Snowy Scheme. This emphasises a need to plan ahead to alleviate potential future impacts.

Reduced Water Availability



Policies / Programs / Actions in response to the various drivers need to be aligned to avoid unintended consequences and implementation gaps.

Figure 7 — Drivers of loss of water availability in the Western Riverina

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Drought impacts

Regardless of how drought manifests, whether it is climatic, policy or operationally-related, the impacts are largely still the same. The impacts below were identified through consultation to inform the plan.

Environmental Impacts

- Loss of topsoil through groundcover loss and wind erosion
- Increased demand on alluvial ground water
- Reduced root zone soil moisture
- Water turbidity
- Pressure on the wetlands to support a wider variety and quantity of wildlife
- Low inflows into the water courses and higher evaporation rates impacting the health of flora and fauna
- Biosecurity and pest and weed outbreaks
- Vegetation dieback
- Increased potential for bushfire and grassfire, and dust storms
- Water and food availability for wildlife

People and Social Impacts

- Social isolation
- Increased mental and physical health issues
- Increased demand on community services
- Challenges in attracting and retaining workers
- Youth retention
- Maintenance of sports and recreational facilities
- Reduced ability to partake in sporting and recreation activities
- Household financial distress, and capacity to access local services
- Population decline and loss of skills
- Increased need for community group activity with less volunteers available
- Increased potential for conflict and reduced community cohesion
- Impacts on culture and cultural practices
- Infections and illness from water quality

Economic Impacts

- Reduction in water allocations
- Limited fodder and water availability for livestock
- Reduced discretionary spending in townships
- Water uncertainty creates loss of confidence in both commercial & residential property market
- Reduction in agricultural production, reduced yields
- Loss of or reduced farm income, balance sheet impacts and reduced borrowing capacity
- Maintaining cash flow and debt servicing
- Loss or reduction in on and off farm employment
- Increased fodder and water prices
- Changes in farm ownership models
- Halting of investment and capital projects on farms and directly associated businesses
- Research and innovation can stall
- Compounding effects of other natural events such as frosts

Impacts from external trends

- Changing water policy environments including water buy backs and allocation changes
- Housing pressure and availability of land in and around towns impacting housing supply for workers
- Costs of living and rising costs of farming inputs
- Demand from overseas markets is driving the need for sustainability and accreditation
- Changes to government service delivery models which centralise employment to larger centres and results in consequences for awareness of programs and support, and access to services
- Changes to farm structures, with an increase of corporate farm and the resultant impacts to local community service provision, population and local spend
- Limited telecommunications and electricity network reliability and coverage.

Cascading impacts of drought

The effects of drought are not isolated, they are interconnected across the social and economic systems in the region and broader pressures on the landscape. Given the significance of agriculture within the regional economy, impacts to the sector have broader flow on effects to downstream industries, supply chains, and the local businesses in town that rely on discretionary spending.

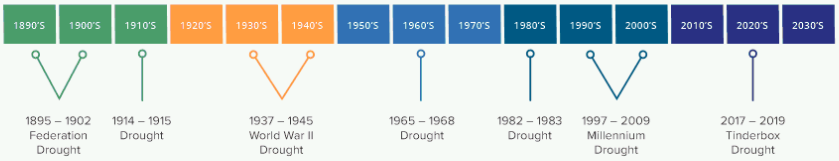
Many existing challenges within a regional area are made harder. Workforce attraction and retention can be an issue through drought. Where workers leave during drought, it can be difficult attracting these workers back which can be both timely and costly to business operations and can impede productivity in the recovery cycle.

As part of the development of this plan, it is essential to consider the relationship between drought impacts and their underlying causes, with a focus on addressing the root causes rather than merely responding to the resulting chain of symptoms. In this regard, the design and implementation of actions can address multiple challenges across the system.

Image: Banna Lane Festival Griffith - Artwork by Reubszz

Drought history

The impacts of drought can vary based on community, weather conditions, and the prevailing macro influences and trends of the time. Additionally, personal circumstances can vary significantly. Major droughts in Australian history have affected the Western Riverina region, characterised by periods of low rainfall.



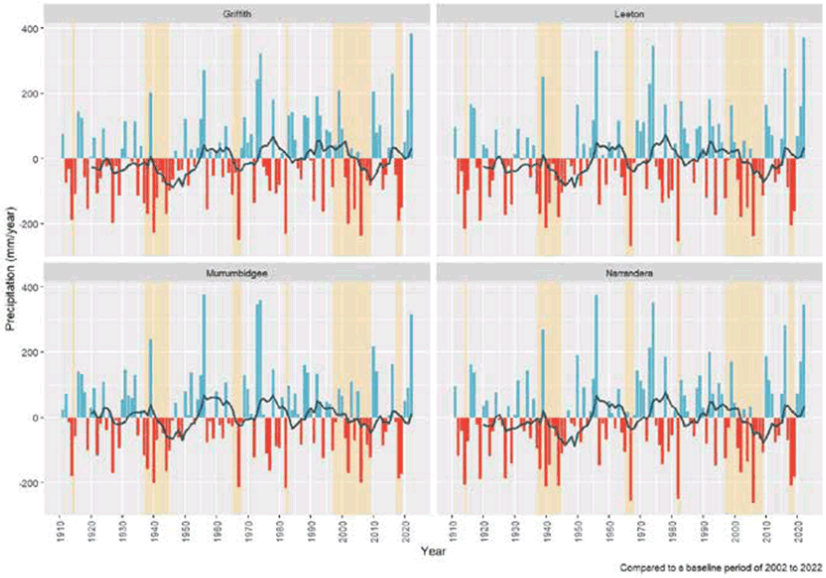


Figure 8 — Yearly mean precipitation anomaly by LGA

*Note that the data does not extend back to the Federation drought of 1890-1902

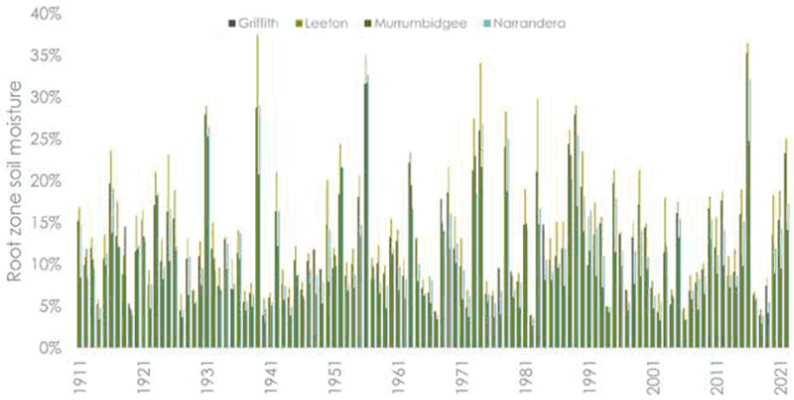


Figure 9 — Soil moisture across LGAs. Major historical droughts align with lower soil moisture levels

The region experiences some years of consistent rainfall, scattered with year-to-year fluctuations. The WWII Drought and Millenium Drought display some of the more protracted periods with notable impacts to soil moisture levels.

A comprehensive synthesis of historic drought climate data specific to the region is included at Appendix A. An analysis of this was undertaken as part of the Resilience Assessment reporting that informs this plan.

A focus on the 2017-2019 drought

During the 2017-2019 period, rainfall for much of Australia, in particular most of the Murray–Darling Basin, was substantially below average. The three years from January 2017 to December 2019 was the driest on record for any 36-month period starting January, when averaged across the Murray-Darling Basin and NSW. Average rainfall for the basin was over 100 millimetres lower than the second driest period (January 1965 to December 1967), and NSW received around 170 millimetres less rainfall than the next driest period, the Federation Drought (1900-1902).

A notable feature of the rainfall deficiencies of these three years is that they were concentrated in the cooler seasons. Both 2018 and 2019 were especially dry. The period was the driest and hottest on record for the basin as a whole. These record warm temperatures exacerbated dry conditions, at times rapidly drying soils in a matter of months. This led to periods in 2017 and 2019 that researchers have termed 'flash drought'.

Future drought

The agricultural industry is a significant economic driver for the region. The high-quality agricultural lands support a long-held sector strength with significant value-add in industries of education and manufacturing. Because of this, it is important to consider the projected impact of future climate changes to better plan for potential increased rainfall uncertainty and its impacts of associated water policy.

The further in advance we plan, build awareness and put in place redundancy measures, the more options we will likely have available to address issues down the track.

Future climate scenarios

According to the Intergovernmental Panel on Climate Change (IPCC) reporting, under all emissions scenarios considered global surface temperature will continue to increase until at least the mid-century. Increasing temperatures and energy within the climate system are projected to result in widespread changes to weather and climate patterns, including drought and all elements of the water cycle.

The below section presents projections of drought and associated climate conditions which are assessed over two possible future climate scenarios using regional climate model ensembles. Projections are shown across the region using the reference period (1976-2005) and then two timescales 2050 (2036-2065) and 2070 (2056-2085). The IPCC's Representative Concentration Pathways (RCP) 4.5 and 8.5 are used. RCP 4.5 models mean global warming of between two to three degrees Celsius and is the most likely future scenario based on current climate commitments. RCP 8.5 is a mean global warming of four degrees Celsius or more. This is considered a worst-case scenario.

Current climate models do not account for global climate tipping points. This means that the effects of tipping points are typically not included in climate projections and impact assessments. Breaching global climate tipping points represents significant risks on top of the changes typically described in climate assessments. The effects of breaching certain tipping points may include abrupt changes to the El Niño Southern Oscillation, rainfall patterns, and rainfall variability that are not represented in climate model projections, on top of the main consequences of more rapid warming and sea-level rise.

While days above 35°C and Forest Fire Danger Index (FFDI) are not direct indicators of drought, they describe weather conditions that often occur alongside drought or are exacerbated by drought.

Regional drought climate indicators:

- Generally decreasing trends in annual precipitation across the region, worsening into the far term
- Reduction in soil moisture levels across all scenarios modelled
- Increasing temperatures are likely to be the primary driver of increased frequency and severity of evapotranspiration and drought conditions
- Other climate and weather-driven events like heatwaves and bushfires / grass fire may compound broader impacts from drought events.

Below projections of these indices use an ensemble of CSIRO's Electricity Sector Climate Information (ESCI) datasets (days above 35°C and days above an FFDI of 25).[5]

Griffith City		2050		2070	
Variable	Climate model reference period	RCP4.5	RCP8.5	RCP4.5	RCP8.5
Root soil moisture	15%#	↓ 0.019 mm^	↓ 0.019 mm^	↓ 0.013 mm^	↓ 0.026 mm^
Annual total precipitation	414 mm	↑ 1 mm	↓ 7 mm	0 mm	↓ 15 mm
Days above 35°C	31	49 ↑ 18	55 ↑ 24	Data unavailable	
Days with FFDI above 25	53	67 ↑ 14	74 ↑ 21		

Leeton		2050		2070	
Variable	Climate model reference period	RCP4.5	RCP8.5	RCP4.5	RCP8.5
Root soil moisture	16%#	↓ 0.023 mm^	↓ 0.025 mm^	↓ 0.015 mm^	↓ 0.031 mm^
Annual total precipitation	422 mm	↓ 3 mm	↓ 10 mm	↓ 9 mm	↓ 19 mm
Days above 35°C	30	47 ↑ 17	53 ↑ 23	Data unavailable	
Days with FFDI above 25	51	64 ↑ 13	71 ↑ 20		

Murrumbidgee		2050		2070	
Variable	Climate model reference period	RCP4.5	RCP8.5	RCP4.5	RCP8.5
Root soil moisture	12%#	↓ 0.015 mm^	↓ 0.013 mm^	↓ 0.007 mm^	↓ 0.021 mm^
Annual total precipitation	385 mm	↓ 6 mm	↓ 3 mm	↓ 4 mm	↓ 17 mm
Days above 35°C	30	47 ↑ 17	53 ↑ 23	Data unavailable	
Days with FFDI above 25	54	68 ↑ 14	74 ↑ 20		

Narrandera		2050		2070	
Variable	Climate model reference period	RCP4.5	RCP8.5	RCP4.5	RCP8.5
Root soil moisture	14%#	↓ 0.019 mm ^	↓ 0.018 mm^	↓ 0.009 mm^	↓ 0.023 mm^
Annual total precipitation	436 mm	↓ 3 mm	↓ 9 mm	↓ 7 mm	↓ 18 mm
Days above 35°C	30	47 ↑ 17	53 ↑ 23	Data unavailable	
Days with FFDI above 25	48	62 ↑ 14	68 ↑ 20		

Mean water content as a percentage of capacity.
^ Change (mm/yr) in relative soil water content of the 1976-2005 reference period's relative soil water holding capacity.

5 CSIRO n.d., ESCI Climate Data, Department of Industry, Science, Energy and Resources. Available at: https://www.climatechangeinaustralia.gov.au/en/projects/esci/esci-climate-data/

Annual precipitation

Considering the modelled scenarios for precipitation, all see either a minimal change or a reduction in annual total rainfall by 2050. Under the RCP4.5 scenario, this annual reduction lessens in severity in Murrumbidgee and Narrandera by 2070; but, grows in Griffith and Leeton.

Under the RCP8.5 scenario by 2070, the reduction in annual rainfall grows significantly across each LGA over the course of the two decades. This is notable for Murrumbidgee, as it has the lowest rainfall rate in the climate reference period and the most significant reduction from 2050 (-3mm) to 2070 (-17mm) under this scenario (Figure 12).

Figure 12 — Annual precipitation changes across the region.

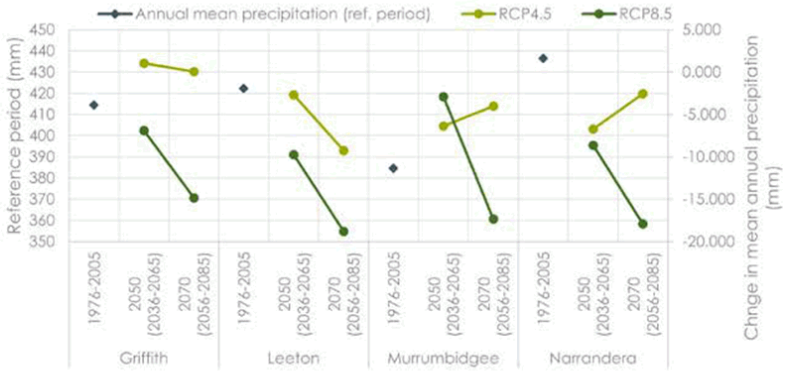
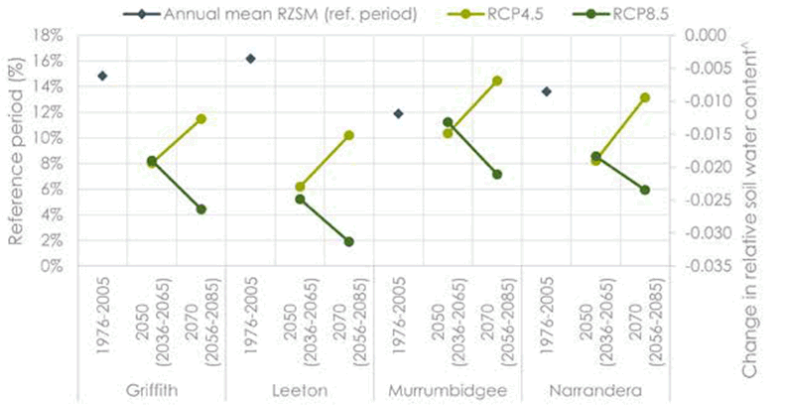


Figure 13 — Annual mean precipitation future climate projections, by LGA

Root zone soil moisture

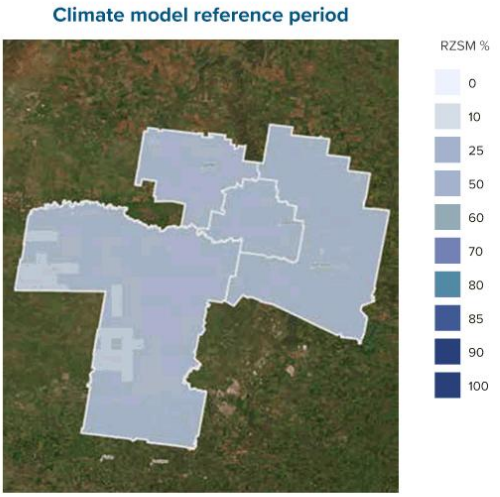
Root zone soil moisture (RZSM) is presented as a percentage of total capacity during the baseline reference period and as a change of millimetres per year of the climate adjusted scenarios.



Root zone soil moisture

Under all four future scenarios modelled, each is set to see an annual reduction in root zone soil moisture. However, under the RCP4.5 scenarios, the reduction does lessen from 2050 to 2070. Under the RCP8.5 scenarios, the annual reduction increases to 2070 (Figure 14 — Root zone soil moisture future climate projections, by LGA). The reduction, both in 2050 and 2070, is most intense in Griffith and Leeton.

Figure 14 — Root zone soil moisture future climate projections, by LGA



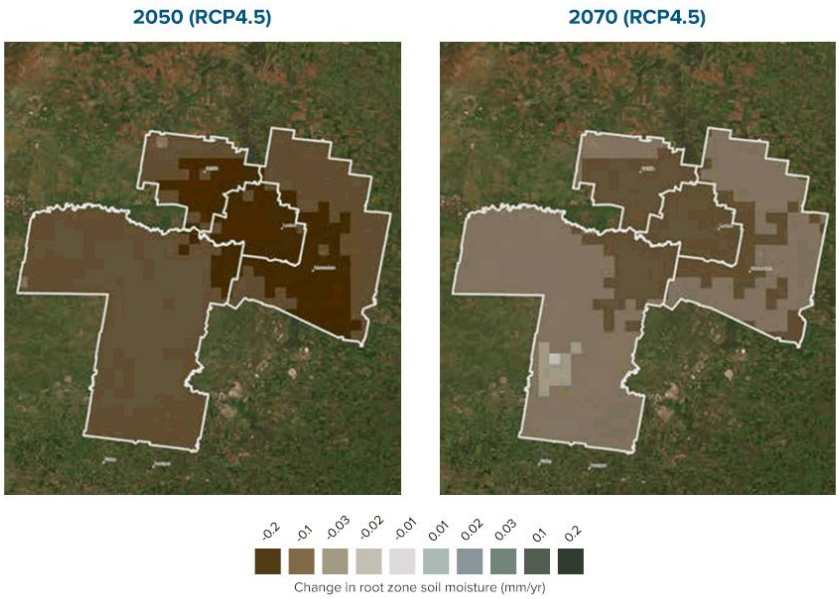


Figure 15 — Annual change in root zone soil moisture

What does the climate data tell us?

The region will continue to be susceptible to the impact of drought which can be protracted events, such as the Millennial drought, or relatively shorter time periods of high intensity.

Climate projections indicate an increase in drought risk, which worsens in the far-term under a higher emissions scenario.

Potential increases in frequency and severity of drought conditions will be largely driven by temperature, evapotranspiration and reduced soil moisture in the Western Riverina region.

Relevance of climate change in the neighbouring Alpine region

In addition to the climate projections for the Western Riverina region, climate change impacts in the Snowy Mountains (Alpine region) must also be considered given the reliance of inflows directed from the Snowy Scheme into the Murrumbidgee catchment. Over time, reduced snowpack, rainfall, changes to landform, erosion and runoff, and increased temperatures in the Snowy Mountains region is likely to have an impact on the Western Riverina.

The water from the Alps which flows through to the Basin and the irrigation schemes is of high significance, supporting ecosystem services of national economic, social and environmental importance. With the water held in high regard now, every gigalitre flowing from the Alps catchment to the Basin is likely to be more important in the future.

Climate projections for the NSW Alpine region indicate continued warming and drying – with winter temperatures increasing by more than 2°C in the far future and spring rainfall projected to decrease by 20 percent in the far future.

Through an increase in temperatures and changes to rainfall patterns, there are subsequent impacts to the quantity of both surface water and groundwater, with some projections showing that, across the Alpine region, there is likely to be a reduction in surface-water run-off in the future.

Climate change threats to the natural condition of the catchments may also impact high quality water delivery from the Alps. This includes water yield, water flow regimes and water quality.

Further investigation is needed to understand how the projected reduction in surface water run-off in the Alpine region, and other influencing processes on water yield and delivery within the Alps, interacts with the run-off generally received through the Murrumbidgee catchment. With the Murrumbidgee and Murray water catchments receiving inflows from the Snowy Scheme under the Snowy Water Licence, future reviews based on building a climate-based understanding will need to be considered.

Clear reliance is evident on the water quantity and quality from the Alpine region to other catchments, importantly the Murrumbidgee catchment, and broader considerations to the contribution it makes to agricultural production and other industries in the Basin.

Image: 'A Country Life' (Brett Collins)

Trends, stressors and shocks

To support preparedness and planning for drought we must also consider other trends, stressors and acute shocks, beyond the climate, that may amplify drought impacts into the future. These can influence our resilience to different conditions, circumstances and scenarios. It is also important in terms of governance arrangements and strategic priorities to ensure broader actions are cognisant of interaction with drought in our communities.

Economic

- Water policy and water allocation changes
- Cost of farming with rising inputs
- The state of the national economy, commodity prices, market volatility and interest rates
- Fuel prices and transport costs
- Positive impacts of strategic road connectivity on market access
- Major project investment decisions, both private and public
- Changing farm enterprise ownership models and their scale
- Energy access
- Transition to renewable energy sources

People and community

- Service availability, particularly health and community services
- Workforce shortages, and worker attraction and retention to regions
- Demographic shifts in population (ageing population and youth retention)
- Housing availability and new dwelling supply
- Costs of living pressures and local discretionary spending
- Urbanisation and population mobility trends

Environmental

- Widespread invasive species
- Feral animal numbers
- Land use conflicts, particularly on primary production areas
- Loss of riparian habitat
- Water management within the Murray-Darling Basin
- Water infrastructure projects and funding decisions
- Soil erosion
- Water licensing arrangements to improve environmental flows
- Climate change

Western Riverina in Australia's future drought context

At the national level, a consequence of the most recent drought (2017-2019) was increased pressure on Australia's food security. Grain was imported to feed stock and the nation. Similar imports in 2006-7, 2003-4, and 1994-5 correlate to the worst drought related cropping years in recent decades. Since this event in 2019, Australia's population has grown from 25.5 million to 27.2 million, with continued growth projected. This growth adds to the demand on available water and increases the pressures on food insecurity into the future. Any response to drought, particularly within the productive area of the Western Riverina, fits within the context of a strategic view of national food and water security. This would consider the potential scenarios of water availability, as well as the related potential biosecurity risks. Subsequent revisions of the Western Riverina Regional Drought Resilience Plan will monitor the development of a national policy response to this trend, and reflect community views to advocate more on this significant issue.

Our drought resilience

Drought resilience can be considered against three macro indicators, each with their own influencing factors. Considering how this plan can address all these factors ensures we can address all aspects of the system.

Economic resilience

Continuity
Employment
Diversity

Environmental resilience

Infrastructure and built assets
Natural processes
Land management

Social resilience

Personal wellbeing
Decision making capacity
Community wellbeing

A snapshot of vulnerability and resilience to drought

The Australian Bureau of Agricultural and Resource Economics and Sciences' (ABARES) has developed an index that ranks remote, rural or regional agriculturally dependent communities (at the LGA level) according to their potential to be adversely affected by drought.

The result is a snapshot based on drought exposure and drought sensitivity at the farm level (farm sensitivity), the reliance on employment in agricultural production industries (community sensitivity), the adaptive capacity of a LGA to drought based on economic diversity, and a final combination of the potential drought impact.

The data comprises data variables and indicators which have been combined and ranked. Scores are not necessarily representative of the magnitude of impact, rather it positions the sensitivity with respect to other LGAs assessed. There is a strong link to employment in agricultural production, particularly for community sensitivity which may not be representative of broader community sensitivity detailed throughout this plan.

Community Vulnerability and Resilience to Drought Index (measured from 0 [lowest] to 1 [highest])				
LGA	Farm sensitivity	Community sensitivity	Economic diversity	Potential drought impact
Griffith City	N/A*	0.30	0.53	0.20
Leeton Shire	N/A*	0.27	0.59	0.18
Murrumbidgee	0.76	0.58	0.16	0.90
Narrandera Shire	N/A*	0.32	0.47	0.22

* Insufficient data for broadacre farm samples in the region

The ABARES CVRDI scores indicate for the region:

- Some evidence of farm-based exposure, which is linked to both exposure to climate variability, and the effects that has on farm outcomes
- A low to moderate level of community dependence on agricultural activity in terms of employment
- Some demonstrated economic diversity highlighted by a strong regional centre offer, service industry and economic output
- A low to higher level of overall potential drought impact, particularly in Murrumbidgee noting it has a particularly strong agriculture sector with high value agriculture commodity output (while potential drought impact measures farm sensitivity and community sensitivity, whether there is lasting loss or harm depends on a community's adaptive capacity).

While the region is susceptible to future drought impacts, and this is more apparent for Murrumbidgee compared with other LGAs, its economic diversity supports a level of adaptive capacity in some areas of the region. Levels of community connection and social capital, along with diversified economic development opportunities, offer key opportunities to aid immediate as well as long-term drought resilience. Murrumbidgee's proximity to the regional centres of both Griffith and Albury potentially moderate drought vulnerability scoring through access to employment and services in relative proximity.

The above provides a snapshot of community vulnerability to drought, though a number of limitations are noted. As this plan details, impacts in the Western Riverina extend to broader pressures on water availability, and subsequent impacts to community and economic outputs.

Image: Northbank Bridge, Narrandera

Drought action plan

The drought action plan for Western Riverina incorporates priorities for drought resilience across strategic pathways for action. The action plan provides:

- Details of specific actions against each pathway
- The alignment of the action to an implementation pathway
- Anticipated stakeholders

Timeframes are indicative and are dependent upon opportunities and timing for funding and other variables.

While Council is listed next to a number of actions, this is generally in anticipation of advocating and leading next steps of the action rather than sole responsibility in delivery. Many of these actions are of a scale or fall outside council operations and require funding and resourcing from other levels of government or input from industry.

A program logic approach was used to match the drought resilience needs illuminated by the engagement feedback with pragmatic actions. The degree to which the actions contribute to our movement along the resilience 'theory of change' journey is also detailed. This is about whether the actions 'absorb, adapt or transform' how we collectively prepare for and grow our resilience to drought effects. This scale also helps us to understand the level of effort and the timeframes associated with each action.

Pathways for change

This drought action plan establishes a framework to guide focus and efforts in response to community needs and community strengths highlighted through engagement. The action plan spans six strategic pathways, reflecting the three systems of drought resilience of community, economic, and environmental characteristics. These strategic pathways are:

- Anticipate water availability
- Proactively manage business interests
- Support off-farm diversification
- Grow local co-operative service provision
- Support community cohesion
- Embed environmental stewardship and sustainable agricultural practices

These pathways can be approached at different scales. This can be by different actors and through a range of mechanisms over time from transformative resilience actions at a large scale to proactive resilience actions by individuals and the more formal or common pathways.

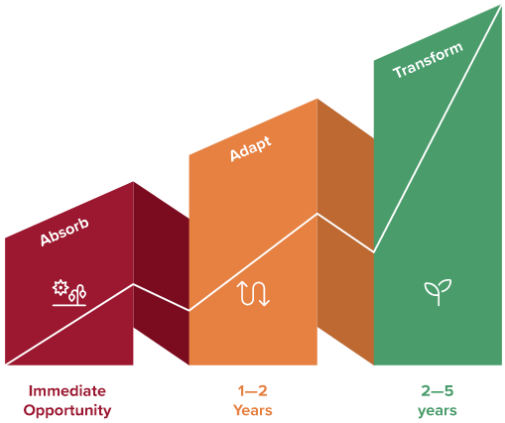


Figure 16 — Resilience theory of change

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Pathway 1 – Anticipate water availability

The region's social and economic resilience is inextricably linked to water availability. Reducing the inherent uncertainties of water availability is critical to the ongoing sustainability of the region.

This is particularly the case with the evolution of the water market in NSW, whereby water allocations have been decoupled from land ownership. The ability to trade water unlocks an additional revenue stream for those farmers who hold those allocations, but it also creates challenges for those farmers who have to purchase both land and water allocations. In times of drought, they could be left with a farm (and its associated debt obligation) and having to purchase water temporarily at a high price due to reduced availability.

Key actions under this pathway to build resilience include:

- Increasing collective understanding of water market dynamics – including communicating the risks of temporary allocation purchases
- Improving water allocation forecasting
- Improving access to and awareness of climate forecasts for dryland farmers
- Considered and well-informed planning for water infrastructure programs and management

ID	SPECIFIC ACTION	IMPLEMENTATION PATHWAY	STAKEHOLDER(S)
1.1	Develop an agreed approach for drought fodder management/distribution with improved governance arrangements overseen by a local independent authority (e.g. using Stock Saleyard operations as a model)	**Adapt** to strengthen preparedness and ensure coordination of processes	Council
1.2	Councils to review town water supply restrictions policies and approaches to providing emergency water supplies, recognising the wellbeing benefits of towns being "green" even during dry times, and include water use efficiency approaches.	**Adapt** to strengthen preparedness and support common good outcomes	Council
1.3	Undertake an independent assessment of the Lake Coolah development proposal with consideration to multiple objectives including flood mitigation, wetland enhancement and water delivery system efficiency	**Transform** the long-term economic stability through catalyst projects	Council
1.4	Councils to review stormwater management and town sewerage discharge strategies and approaches to maximise opportunities for reuse of water resources	**Adapt** to strengthen preparedness through continuous improvements	Council
1.5	Work with International Commission on Irrigation and Drainage Australia and Irrigation Australia to promote the bench marking of irrigation scheme delivery efficiencies, and explore a "5 Star" approach – that will support regional marketing of agricultural products	**Adapt** to leverage existing strengths	Industry groups
1.6	Deliver continuing education / training program on the operation of water markets, with irrigators as the target audience	**Adapt** through increased local understanding of the system	Industry groups Irrigators
1.7	Work with the NSW Government to introduce training and programs for primary producers to further develop rainfall and weather intelligence using drought signals / indicators for use in conjunction with soil moisture and other weather data.	**Adapt** through improved processes to complement planning	Council State Government
1.8	Promote engagement with the One Basin CRC projects delivered through the Griffith Hub, and explore the possibility of a Centre of Irrigation Excellence building upon the existing Irrigation Research and Extension Committee model.	**Transform** through increased capacity and recognition of local strengths	Council

Pathway 2 – Proactively manage business interests

Strength of small business is a feature of the region whether it's fuel, cafes, hairdressers, mechanical or the local accountant. While drought generally impacts farmers first, the flow-on effects are felt across towns and communities through business impacts and in-turn, employment and expenditure.

Resilient, diverse and prepared businesses are better positioned to ride the peaks and troughs when they are planned for and anticipated. A range of pressures exist outside of drought times which requires strategic long term planning to address, while more agile initiatives provide interventions during drought, and are effective where planned for in advance. Priority action areas include:

- Support for businesses to adapt and prepare
- Ensuring the region has the right skills, and attracts new skills for confident business growth
- Ensure business has the information they need to operate effectively.

ID	SPECIFIC ACTION	IMPLEMENTATION PATHWAY	STAKEHOLDER(S)
2.1	Investigate the reintroduction of previous Services Australia farm exit program	**Adapt** to facilitate business transition	Council Services Australia (Federal Government)
2.2	Investigate potential to fund local application (using a co-operative approach) of the NSW Farmers' Federation "Ag Career Start" program	**Adapt** to strengthen preparedness and build local capacity	Council
2.3	Undertake a more detailed analysis of economic flows / benefits done by ABARES prior to the next drought (taking milling and downstream activities into account)	**Adapt** to strengthen preparedness through understanding of the system	Council
2.4	Undertake a review across all the local education service provider course and curriculum offerings to meet local agricultural industry and supply chain needs including opportunities for rural cadetships, apprenticeship advisors, and how to increase housing with a link to trade apprenticeships	**Transform** the long-term economic stability through catalyst projects	Council TAFE NSW Local education providers
2.5	Support small businesses with computer and internet training	**Absorb** immediate action to support community capacity	Council State Government
2.6	Promote the benefits of "lifestyle" driving the purpose of business / financial / succession planning, and promote the benefits and delivery of business plans e.g. for improved access to capital	**Adapt** to strengthen preparedness	Council
2.7	Promote drought assistance programs or financial subsidy programs to "supply chain" businesses when they are impacted by agricultural clients who are impacted by drought	**Adapt** to support endurance during drought	Council Business owners and operators
2.8	Engage a project officer to help local businesses (small to large) develop their own drought resilience plan - and facilitate access to grant funding from various agencies	**Adapt** to strengthen preparedness	Business owners and operators Council
2.9	Provide training to local providers on responding to tenders	**Absorb** immediate action to support local capacity	Council
2.10	Provide local support to Services NSW / Concierge service to provide opportunities for workers displaced by drought to get other local short-term work	**Adapt** to strengthen preparedness and mobilise workforce supply	Council State Government
2.11	Promote the need to broaden the rules for "backpacker" workers to attract more workers for agricultural related industries	**Transform** the long-term economic stability through catalyst projects and ensure workforce supply	Federal Government
2.12	Promote opportunities in alternate industries that suit available soils, water and climatic conditions.	**Transform** the long-term economic stability through catalyst projects	Council State Government
2.13	Review / update regional economic development strategies to include promotion of non-water based industries, agricultural industries that align with available soils and water, and others that take advantage of available products	**Transform** the long-term economic stability through catalyst projects and diversification of economy	Council State Government
2.14	Undertake regional internet/phone service audit for digital access, along with an energy access audit and advocate for improved connectivity	**Absorb** immediate action to inform advocacy of key barriers	Council
2.15	Advocate for improved consistency in funding for the Rural Financial Counselling Service to support local business operators to take proactive steps toward enhanced drought resilience	**Absorb** immediate action to provide continuity of services	Council
2.16	Develop a "Generation Ag Link" program modelled on the CSIRO program "Generation STEM Link"	**Adapt** to strengthen preparedness by building capacity and local industry understanding	Industry groups

Pathway 3 – Support off-farm diversification

The region boasts many economic development opportunities which over time will offer varied income and productivity opportunities. Some of these opportunities are truly transformative and offer long term prospects for change, growth and stability. As an agriculturally based economy, there is benefit in:

- Leveraging existing tourism assets as a major economic pillar
- Building the financial strength of all businesses regardless of sector or scale
- Diversifying the regional economy through manufacturing and value adding agriculture
- Keeping our towns active and attractive.

ID	SPECIFIC ACTION	IMPLEMENTATION PATHWAY	STAKEHOLDER(S)
3.1	Councils to have a strategy for future land release and development, potentially adopting a "cooperative model" approach	**Absorb** immediate action to identify site potential	Council
3.2	Build on the Regional Arts Development Program - Regional Cultural Tourism report	**Absorb** immediate action to build existing work foundations	Regional Arts Network Council
3.3	Advocate for public service remote area benefits to attract and retain critical services and workforce	**Transform** the long-term economic stability through continuity of services	Council
3.4	Develop an Ag Industry focussed "Job Keeper" type program (taking principles from the Farm Household Allowance program delivered by Services Australia) for application during drought.	**Transform** the long-term economic stability through continuity of operations	Industry groups State Government
3.5	Promote agritourism and a viable diversification strategy	**Adapt** to strengthen preparedness through economic diversification	Council Tourism organisations
3.6	Promote value added manufacturing for existing and emerging agricultural commodities, such as almonds, grapes, citrus, sugar plum etc	**Adapt** to strengthen preparedness through economic diversification	Industry groups
3.7	Investigate a Geographic Indicator designation that would support sustainability accreditation for the Western Riverina agricultural industries	**Adapt** to leverage existing strengths	Industry groups
3.8	Develop public works / maintenance program of works e.g. town revitalisation, roadside clean-up / maintenance, farm clean outs to be done during drought	**Adapt** to inform preparedness through ready made actions with impact	Council
3.9	Schedule training during "down time" to upskill people in the agricultural industry	**Adapt** to strengthen preparedness	Farm business owners and operators
3.10	Outside of drought, promote availability of water in towns as an opportunity for new businesses – include in Economic Development strategies	**Adapt** to strengthen preparedness through economic diversification	Council
3.11	Promote National and State support for regionalisation strategies such as the Regional Development Australia "Country Change Riverina and Murray" strategy (to encourage movement from cities to regional areas)	**Transform** the long-term economic stability through continuity of services	Federal Government State Government
3.12	Facilitate affordable housing, fast track land development, explore community cooperative approach and private / public partnerships with Council	**Transform** the long-term economic stability through catalyst projects	Council State Government
3.13	Upskill and build capability of local providers in diverse business areas to allow them to compete in the tender and procurement process during drought that support broader business offers.	**Adapt** to strengthen preparedness through economic diversification	Council

Pathway 4 – Grow local co-operative service provision

The co-operative model of business and service provision in this region is truly unique. It is not found in many other parts of Australia at such a significant scale and could support the region's long-term resilience and prosperity. It is borne from a generational legacy of the collaboration needed to operate and maintain the complex irrigation schemes that thread through the landscape. Without co-operation, in this landscape, water availability would not exist.

Expanding this co-operative model beyond its irrigation roots is already evident, with pubs and rice mills already emerging to trade using this model of ownership and operation. Extending this model further into retail, grocery, aged care, and possibly even housing is arguably not too much of a stretch to achieve.

This pathway seeks to focus on this demonstrated strength of collaboration and cooperation in Western Riverina communities. This builds on these existing tangibles and non-tangible cultural assets to maintain baseline service provision for key sectors, and support social and community fabric and morale during drought times through enabling mechanisms that drive locally cooperative outcomes.

ID	SPECIFIC ACTION	IMPLEMENTATION PATHWAY	STAKEHOLDER(S)
4.1	Establish ongoing "Wellbeing Hubs" connecting community organisations to landholders, business and the community and develop action plans for priorities of each hub	**Transform** into the long term supporting continuity of services and community network capacity	Community organisations Council
4.2	Develop cooperative structure models for a range of situations along with guidelines to encourage people and corporations to co-invest in community services	**Transform** into the long-term supporting continuity of services and community network capacity	Community organisations
4.3	Promote programs, financial planning advice and funding available from providers including Services Australia	**Adapt** to broaden clarity and uptake of programs	Services Australia Council
4.4	Councils to consider the provision of more 'drop in' style community services to support locals especially in drought when costs can prohibit travel	**Absorb** to strengthen local access to support	Council
4.5	Link community-based investment in local infrastructure (e.g. ongoing social activities) with LGA programs including for social connectivity and for places of refuge linked to floods / bushfires etc.	**Adapt** immediate actions to support ongoing preparedness	Council
4.6	Undertake an audit of Council roads to identify priorities for an "Infrastructure Betterment" program to make access to farms more resilient to droughts, floods and other events	**Adapt** to direct future funding and support movement networks	Council Landowners

Pathway 5 – Support community cohesion

Cohesive and connected communities are a key ingredient to support drought resilience. Drought, as opposed to other hazards, can divide communities through isolation. Strong community connections are therefore critical in ensuring community care and wellbeing, looking out for mates and providing mutual relief.

This was a clear priority identified by the community through the plan engagement process. Community connection, participation and identity are already strengths of the Western Riverina and need to be maintained and bolstered.

This pathway seeks to build on the existing community strength of the Western Riverina region to support cohesiveness of the social fabric and morale during drought times by:

- Supporting strong social cohesion
- Attracting and retaining social and cultural events
- Maintaining an inclusive community.

ID	SPECIFIC ACTION	IMPLEMENTATION PATHWAY	STAKEHOLDER(S)
5.1	Include delivery of hard copy documents to households in communications strategies (where requested)	**Absorb** immediate action support accessibility	Council State Government
5.2	Advocate for additional subsidies during drought for youth sport and support similar initiatives such as "Active Farmers"	**Adapt** to utilise existing initiatives and programs	Council
5.3	Councils and community groups to drive / facilitate / promote volunteerism and develop a steering committee (or similar) to direct volunteer deployment in times of drought	**Adapt** to strengthen preparedness and capability to respond	Council Community groups
5.4	Develop written and visual history of the region (providing a way for intergenerational involvement and connection)	**Transform** into the long term through retaining regional identity	Council
5.5	Develop a list of groups and associations seeking volunteers, based on examples such as SES community actions teams – link to "Community Hub" Actions	**Adapt** to strengthen preparedness and capability to respond	Community groups
5.6	Council to promote and deliver free "Big Social" events	**Adapt** to strengthen preparedness and support role of community networks	Council Community organisation
5.7	Support existing and promote new "Food Festival" programs to show case locally grown products – invite celebrity chefs	**Adapt** the long-term economic stability through catalyst projects	Council Destination groups
5.8	Develop a local "Drought Self Help" kit (similar to Red Cross kit)	**Adapt** to strengthen preparedness	Council
5.9	Build on and expand the "Teach the Teachers" program relating to agricultural production and experiences of living in rural communities	**Adapt** to strengthen preparedness and connection to the region	Council Industry groups Schools
5.10	Support excursions from city schools to the region and continue to support "Boys to the Bush" program	**Adapt** to strengthen preparedness build understanding across region to urban areas	Council Community organisations Department of Education
5.11	Explore opportunities for mentor programs for both men and women, and promote existing programs focused on rural leadership and change makers	**Adapt** through capacity building of locals	Council Community organisations
5.12	Support delivery of drought resilience programs within schools	**Absorb** immediate action to strengthen preparedness	Schools
5.13	Continue to invest in the maintenance and enhancement of community facilities to support community cohesion during times of drought	**Absorb** immediate action to strengthen preparedness	Council
5.14	Work with Indigenous groups to "co-solve" water issues	**Transform** the long-term economic stability through catalyst projects	Council First Nations groups

Pathway 6 – Embed environmental stewardship and sustainable agricultural practices

The health of the landscape is integral to our economic and community wellbeing. Retaining soil moisture in the landscape and topsoil retention are clear drought impact reduction pursuits. Pest and weed management offer further opportunities to stem landscape degradation.

Areas for action include supporting land management and maintaining and enhancing biosecurity.

ID	SPECIFIC ACTION	IMPLEMENTATION PATHWAY	STAKEHOLDER(S)
6.1	Promote and support Landcare in providing opportunities for landholders to demonstrate the benefits derived from their business and land practices (including use of photo diaries)	**Adapt** to support resilient landscapes	Landcare
6.2	Support Landcare and associated programs and advocate for continuity of funding on programs that focus on climate ready revegetation and improving native seed supply	**Adapt** to support resilient landscapes	Landcare
6.3	Promote a policy for fixed riparian zone / corridors for reconstruction and restoration	**Adapt** the long-term economic stability through catalyst projects	Council
6.4	Support actions for on-going carp management within the region's waterways	**Absorb** immediate actions to support ongoing efforts	State government agencies
6.5	Advocate for and ensure understanding of the impacts of future reviews of the Snowy Water Licence	**Adapt** into long-term to maintain economic stability	Council Industry groups
6.6	Link Landcare with Regional Services Australia to identify funding opportunities for involvement in farm management professional development opportunities	**Adapt** the long-term economic stability through catalyst projects	Landcare
6.7	Promote the landscape and production benefits of sustainable and restorative agricultural practices and focus on driving buy-in through initiatives such as mapping of land use capability.	**Adapt** to support resilient landscapes	Industry groups Landcare
6.8	Work with First Nations peoples to bring First Nations ecological practice back to Country	**Transform** through actions building partnerships and resilient landscapes	First Nations groups
6.9	Support the establishment of Landcare groups across each of the council areas	**Adapt** to support resilient landscapes	Council Landcare
6.10	Develop a program to focus on improvements to road side revegetation for connected corridors	**Adapt** to support resilient landscapes	Council

Implementation

The Western Riverina Regional Drought Resilience Plan relies on collaborative implementation approaches involving a range of stakeholders.

The action plan for drought resilience spans the drought cycle and its interaction with the community, that is before, during and recovery from drought. The actions to implement cover levels of government, community and industry groups, service providers, not-for-profits, landowners, and local communities with actions that have effect at different points of the drought cycle. This includes short, medium and long term opportunities, and interventions that are strategic by strengthening preparedness or are agile and ready to be implemented when enduring drought.

Pathways implementation

The purpose of the action plan is to inform future drought funding and ongoing preparedness across the region. Stakeholders work together regionally to build drought resilience in the economy, environment and our communities, proactively and pragmatically.

The action plan has been drawn together through community expression, existing initiatives and background data. In developing this action plan, it is noted that:

- actions are purposefully listed with multiple stakeholders, and unspecified timeframes or funding to acknowledge that delivery is dependent on a range of variables
- implementation will occur through participation of all stakeholders over time as priorities, resources and funding arise
- as a regional plan, the actions are collective and collaborative
- roles and responsibilities are flexible, including for local governments. The plan is owned by the region. Any stakeholder can start an action that is within their capacity
- some actions are indeed underway by various stakeholders, the purpose of maintaining them in the action plan, is that the community has advised that the action is integral to drought resilience.

Stakeholder roles in implementation

DESCRIPTION
An **advocate** actively supports a position, action or policy. The task is outside the advocate's jurisdiction, capacity or resourcing and advocacy is required to engage with those parties with capacity to deliver. For example, telecommunications advocacy.
A **partner** joins others in a common cause or action where roles and responsibilities are shared across areas of expertise. Each partner brings an element to the action for joint delivery. For example, region-wide strategic initiatives.
A **lead** is in control of an action. The action may still involve partners or other roles, but the action is reliant upon a lead party due to their technical or other expertise. E.g. Health or counselling matters
An **owner** is the only party that can undertake or permit the action. E.g. local government as public asset owners
A **supporter** is united with others in the need or benefits of the action but potentially does not have a major role. The action is led or owned by others. E.g. A supporter may provide assistance in kind, technical advice or donations to action leaders
A stakeholder is anyone who has an interest in the project, program or action. Stakeholders will have varying degrees of involvement from owner to advocate and all points between.
A **deliverer** is responsible for implementation and outcomes of an action or funded program. e.g. Community agency delivering social aid programs.
A **funder** provides the funding arrangements. The party is not involved with scoping, executing or delivering the program but may require some outcome reporting or evidence. e.g. the government grant funding for a pest control program delivered by others.

Governance structure

Implementation of the regional drought resilience plan is to be driven by a collaborative and multi-disciplined drought resilience project control group (PCG). Membership will be broadened to provide an integrated and coordinated approach to drought resilience efforts.

This will enable the PCG to adopt agile approaches and shift priorities as needed depending on changing circumstances, and as opportunities arise. Despite this, all actions remain relevant in terms of maximising funding opportunities. This also allows expertise across the strategic pathways, and for partnerships to evolve as funding and priorities arise

A Chair of the PCG will be selected.

A PCG Terms of Reference is to be prepared for its membership to guide its function. The Terms of Reference could include:

- Role and purpose and connection to the RDRP
- Stakeholder and membership lists
- Meeting arrangements, (potentially quarterly) and responsibilities of attendees
- The circumstances of a quorum and decision making protocols
- The election or rotation of a chair person
- An action plan for the first 60 days or 12 months including delivery of the priority actions with the implementation funding; and
- A process for reflection and nominating next priority actions.

A Memorandum of Understanding may also be required.

PCG meetings should be held in different localities across the region over time.

Monitoring, evaluation and learning framework

The drought action plan incorporates a large suite of projects and actions, some offer immediate opportunity, some are medium-term items and others are longer-term transformational opportunities. Not all actions can be focused on or delivered at once. The 'absorb, adapt, transform' framework will guide the PCG in terms of its implementation and coordination of activities and funding pursuits, and will enable a flexible and agile approach as drought conditions change, guiding the focus.

Other stakeholders are able to use the plan to support funding and grant applications at any time, as desired. Opportunities for collaborative delivery partnerships, where two stakeholders may wish to provide similar projects, should be explored

This system will:

- Provide regular opportunities to define when conditions are changing locally; and
- Catalyse a change in focus to respond to the needs of the changing conditions.

This ensures a level of agility is adopted with regard to the implementation approach. Local governments may wish to apply more objective targets for immediate actions or further incorporate the outcomes of this plan into the local government reporting framework to ensure delivery.

As immediate efforts in response to the action plan are delivered, broader efforts across collaborators is guided in its approach, underpinned by this plan which enables stakeholders to work towards and contribute to regional drought resilience outcomes, including those at the local and property level.

The drought resilience action plan also requires that a 'lessons learned' posture is adopted, ensuring new information, knowledge, approaches and science is rolled into implementation delivery as a guiding principle. This will mean that over time, the drought resilience action plan may be adapted to reflect new learnings and the adjustment of intervention pathways as required. The PCG is responsible to conduct an annual lessons learned review, with changes to inform action moving forward.

The drought resilience action plan has been thoughtfully designed to not only guide collective effort and action but to enable adaptation through ongoing monitoring, evaluation and learning.

The Regional Drought Resilience Plan is a 10-year plan, to be reviewed after five years.

An annual monitoring program to inform adaptive learning is outlined below. Addendums to this plan can be made, to reflect these learnings over time and ensure the document maintains pace with changing circumstances and maturation of drought preparedness activities.

Tracking progress and reporting

Action-based project tracking against the drought resilience action plan, the principles and objectives of the plan should be undertaken on an annual basis. This tracking and reporting shall be the responsibility of the implementation PCG chair, unless otherwise delegated. Likewise, an annual evaluation process will be conducted by the PCG, guided by the evaluation questions that follow.

Key evaluation questions

These key evaluation questions are high level questions designed to frame the analysis of progress and performance of the Western Riverina Regional Drought Resilience Plan against the above framework. These key evaluation questions may help to structure annual tracking and reporting.

PROPERTY	EVALUATION
Effectiveness and Outcomes	What have been the outcomes (intended, unintended, positive and negative) of the plan implementation process and progress?
	To what extent has progress contributed to or furthered the principles and objectives of the regional drought resilience plan?
	Has the plan been used for or otherwise supported successful funding and grant applications?
	To what extent have stakeholders outside the PCG responded to the plan's content?
	Have any barriers or challenges been identified throughout the implementation of plan, and what solutions to address these have been identified?
Drought resilience maturation	To what extent has efforts in implementing the plan contributed to: › Creating stronger connectedness and greater social capital within communities, contributing to well-being and security? › Empowering communities and businesses to implement activities that improve their resilience to drought? › Supporting more primary producers and land managers to adopt whole-of-system approaches to natural resource management to improve the natural resource base, for long-term productivity and landscape health?
Stakeholder engagement	In what ways are the PCG and other stakeholders collaborating and collectively contributing to efforts outlined by the action plan?
	In what ways has the plan provided inclusive involvement across sectors, disciplines and communities?
	In what ways has the plan been able to support individual stakeholder goals, objectives and aspirations with regard to drought resilience?

The reporting may be undertaken using a range of tools to capture experiences and perspectives from across the PCG, allied stakeholders as well as the communities of Griffith City, Leeton Shire, Murrumbidgee and Narrandera Shire more broadly. These tools may include:

- Meetings and event data capture
- Targeted meeting / interviews with stakeholders
- Survey data
- Case studies and data from the PCG
- Media, including social media; and
- Funding and grant applications.

Achieving the plan's outcomes

A further opportunity for the PCG to measure the contribution to or achievement of the plan's outcomes is by using local data to assess specific outcomes. The data sources or indicators will need to be selected by the PCG and can provide insights as to how the plan is tracking against the resilience theory of change. Outcomes include (but are not limited to):

STRATEGIC PATHWAYS	OUTCOMES
Anticipate water availability	1 Community infrastructure is resilient and helps to reduce disruptions
	2 Capacity to make informed decisions through local knowledge, access to data, intelligence and innovate tools is increased
Proactively manage business interests	3 Agricultural productivity in the region is sustained
	4 Increased capacity to meet local procurement demands and local employment
Support off-farm diversification	5 Employment loss is avoided or minimised, ensuring livelihood are maintained
	6 Reduced decline of gross regional product relative to: › Non-drought periods › Previous drought periods › Other regions in NSW, Victoria and South Australia
Grow local co-operative service provision	7 Community partnerships are strengthened through program delivery
	8 Services are retained in the region, and offered in local centres
Support community cohesion	9 Capacity and capability of community groups is strengthened
	10 Mental health services are available and are accessible
Embed environmental stewardship and sustainable agricultural practices	11 Environmental degradation of landscapes and waterways is reduced throughout and emerging from drought
	12 Increase in activities relating to environmental restoration

Learning

Regular (annual) monitoring provides the ability for reflection and learning. The progress tracking and reporting methodology, using key evaluation questions, will present specific insights in terms of those opportunities to build in 'lessons learned' through engagement across stakeholders with a role in drought resilience. These lessons should, on an annual basis, be contemplated with regard to the drought action plan to determine any relevant updates, new insights, intelligence and technologies that can be integrated to ensure the action plan keeps pace with a growing drought resilience maturation across systems and sectors.

This process will ensure the action plan remains a 'live document' that appropriately supports and services the needs of all stakeholders and importantly, those of the Western Riverina communities in preparation for, endurance of, and recovery from drought.

Concepts to guide adaptive learning as part of plan implementation are included at Appendix B. These items will help navigate maturation of this plan over time.

Appexdix A — Drought history

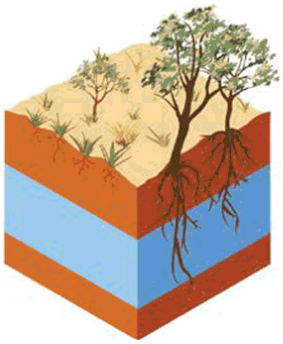
Precipitation and root zone soil moisture are considered as indicators of drought according to the Bureau of Meteorology's Australian Water Resources Assessment Landscape (AWRA-L) service. Root zone soil moisture is a calculation of the upper and lower soil layers in the AWRA-L, which represents the water-holding capacity of the top one metre of soil. Root zone soil moisture and precipitation rates are each useful indicators of future drought potential.

Locally, some of the most impactful periods of drought include the late 1910s, the World War II drought, 1967, 1982 to 1983, 2006 and and the 2017-2019 drought.

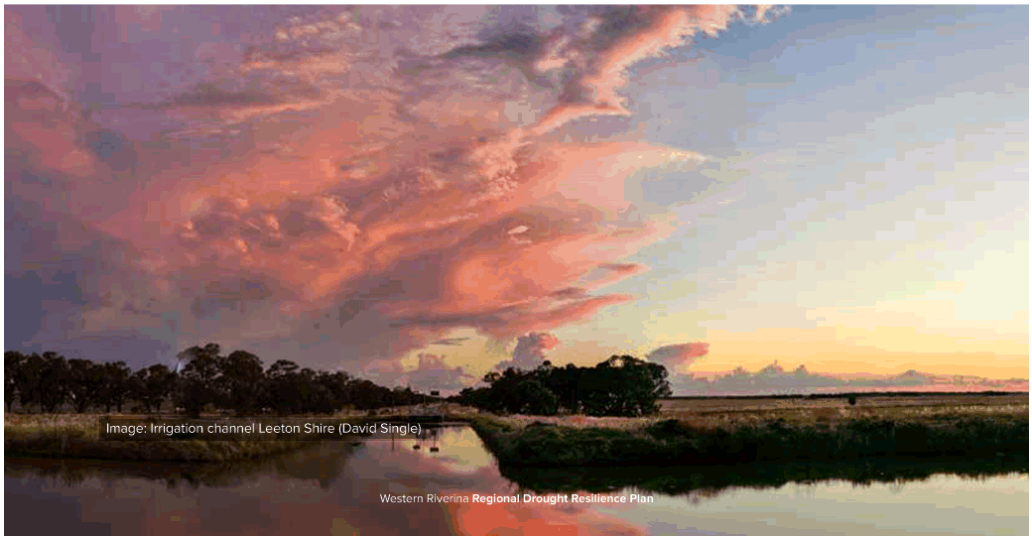
Some of the continent's most impactful droughts in recent recorded history have affected the region. Here, we consider the significant drought periods identified by the Bureau of Meteorology:

- 1914 to 1915
- 1937 to 1945 (World War II drought)
- 1965 to 1968
- 1982 to 1983
- 1997 to 2009 (Millennium drought)
- 2017 to 2019

Below, we consider these droughts and the changes in conditions against a present-day baseline of 2002 to 2022*.



(Source BoM, 2024)



1914-1915

Nationally, this drought was short but notable, primarily due to the failure of national wheat crop. This drought was driven by a strong El Nino, with drought conditions first becoming evident in 1914. Rains improved in 1916 but began to decrease again over the subsequent years (1918 and 1919).

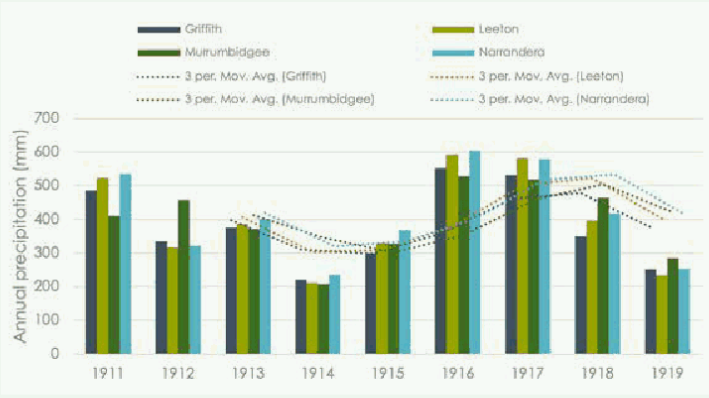
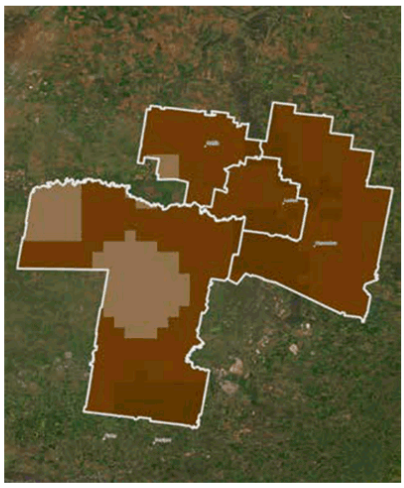


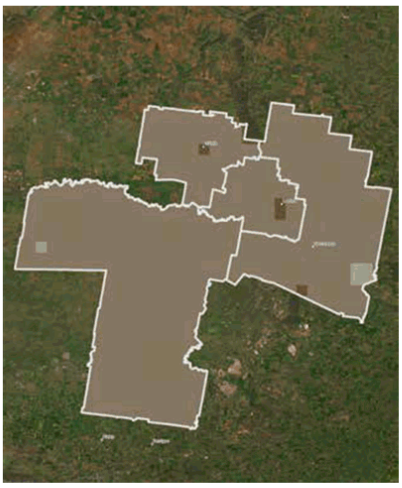
Figure 17 — Yearly precipitation (absolute), by LGA (1910 to 1918)

Precipitation (mm)



Precipitation, change during drought period (mm)

Soil moisture (mm/yr)



Historical change, root zone soil moisture (mm/year)

Figure 18 — Changes in conditions during drought against a present-day baseline of 2002 to 2022

1937 to 1945 (World War II drought)

This drought period was characterised by several breaks (1939 and 1942-1943), but significant periods of dryness. Rainfall rates were lower in 1937-1938 and 1940-1941. For the Western Riverina, 1940 was the most notable year, with extremely low rainfall totals across the entire region.

Figure 19 — Yearly precipitation (absolute), by LGA (1934 to 1948)

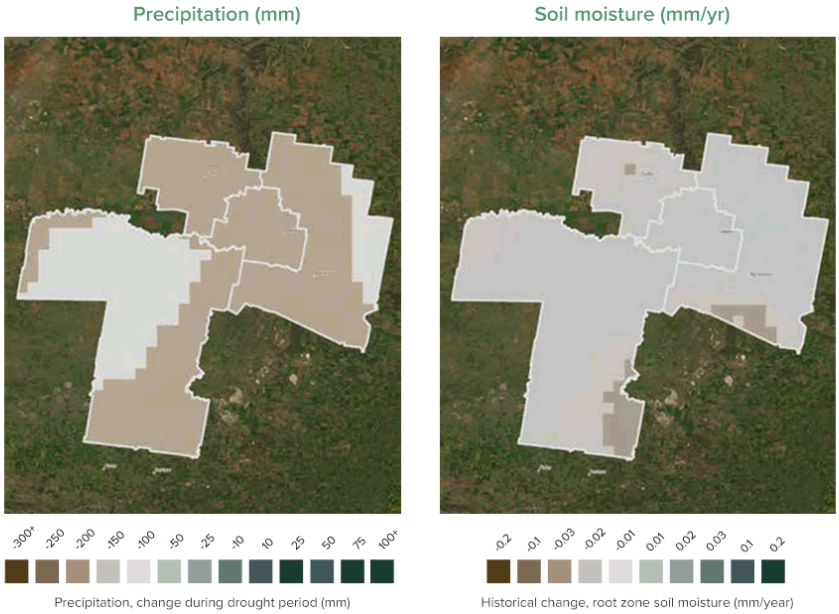


Figure 20 — Changes in conditions during drought against a present-day baseline of 2002 to 2022

1965 to 1968

The 1960s was generally dry across the continent. Drought developed in 1964 in northern New South Wales and had extended across most of the country by the following year. This was evident across the region, with lower rates of rainfall and soil moisture across much of the region. 1967 was the most severe year, with annual rainfall rates across each LGA below 200 mm.

Figure 21: Yearly precipitation (absolute), by LGA (1962 to 1971)

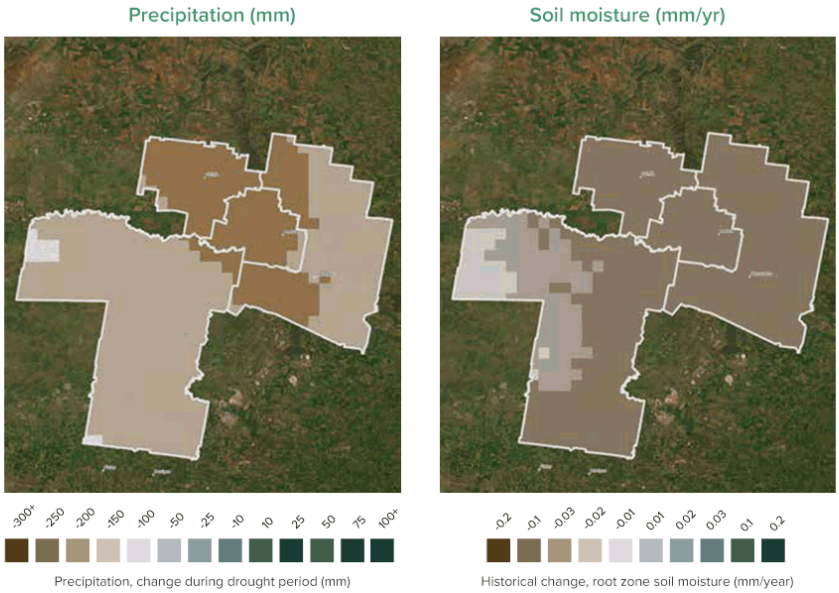


Figure 22: Changes in conditions during drought against a present-day baseline of 2002 to 2022

1982-1983

Despite being only one year long this was one of Australia's most severe droughts in the 20th century. A very strong El Nino led to these drought conditions. The region experienced widespread dryness.

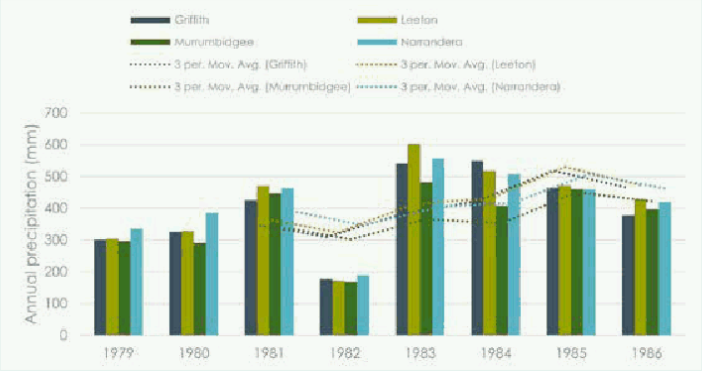


Figure 23: Yearly precipitation (absolute), by LGA (1979 to 1986)

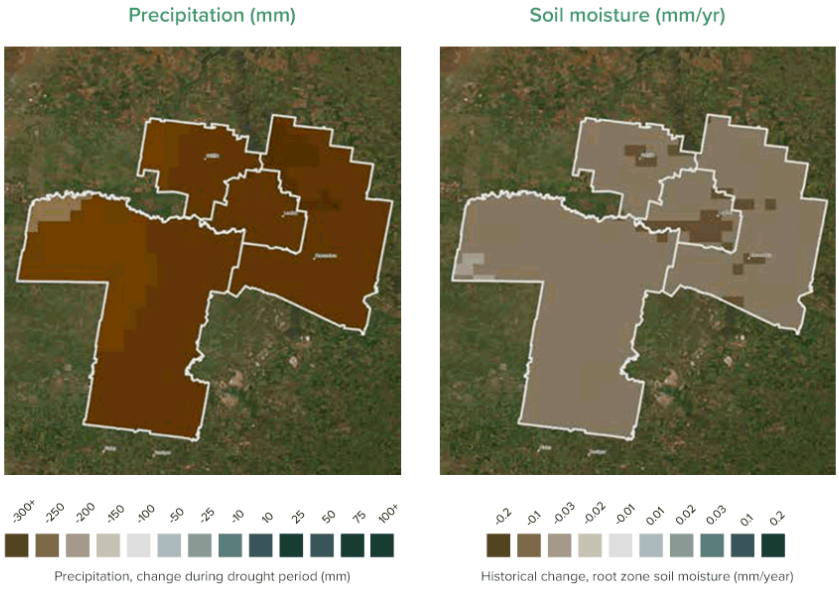


Figure 24 — Changes in conditions during drought against a present-day baseline of 2002 to 2022

1997 – 2009 (Millennium drought)

The Millennium drought was a long-lasting period of dryness, most severe in densely populated areas of the south-east and south-west of the country. For the Western Riverina region, the beginning of this period was relatively unimpactful, as from lower levels in 1997, based on rainfall and soil moisture figures. It is not until 2001 when there is a dry spell into 2005, and then a severe dry year in 2006.

Editor's note: The maps below show significant rainfall and higher soil moisture over this period, despite it being identified as a drought. This discrepancy is likely due to the reference period used to produce these maps (2002 – 2022) and that there was significant dryness in the latter half of that period. This result is then compounded by the short-lasting periods of rainfall decline during this long drought period (1997 – 2009). Therefore, leading to the appearance of increased rainfall and soil moisture compared to the reference period.

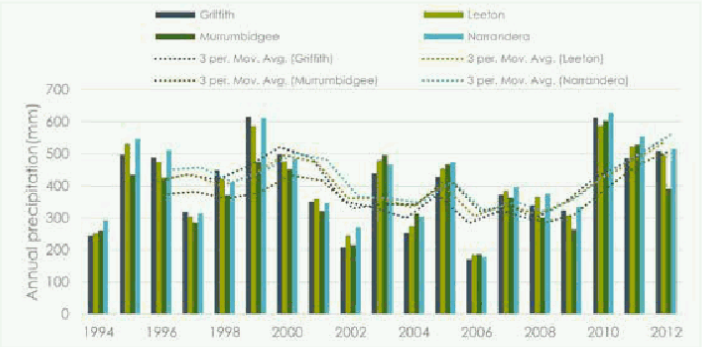
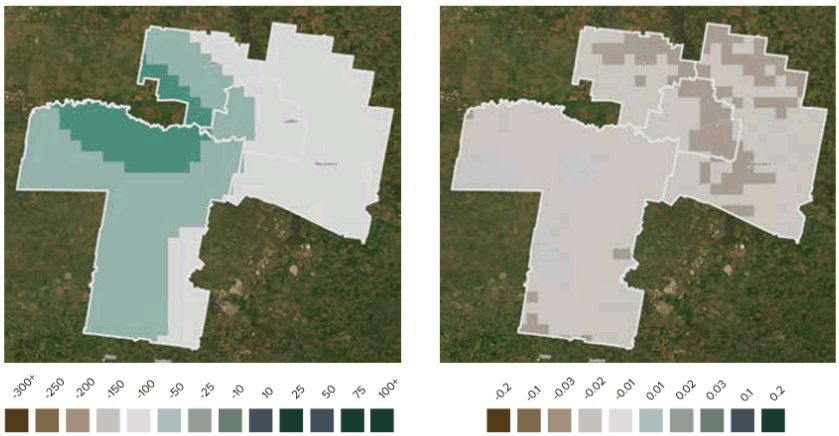


Figure 25: Yearly precipitation (absolute), by LGA (1994 to 2012)

Precipitation (mm)

Soil moisture (mm/yr)



Precipitation, change during drought period (mm)

Historical change, root zone soil moisture (mm/year)

Figure 26: Changes in conditions during drought against a present-day baseline of 2002 to 2022

2017-2019

Following a wet 2016, dry conditions returned in 2017 across south and eastern Australia. This was a sustained multi-year period of dryness, unprecedented in recorded history. A strong Indian Ocean Dipole was a significant contributor to dry conditions the second half of 2019, leading into significant 2019/2020 bushfire season. The region was similar affected during this period, with widespread low rainfall and low soil moisture.

Figure 27 — Yearly precipitation (absolute), by LGA (2014 to 2022)

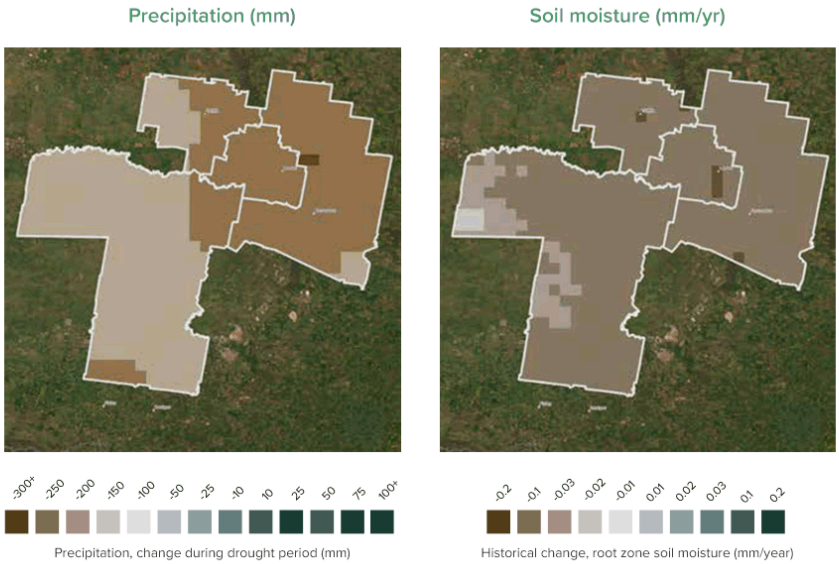


Figure 28 — Changes in conditions during drought against a present-day baseline of 2002 to 2022

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Appendix B – Concepts to guide adaptive learning

As part of learning processes through the implementation, this appendix provides key considerations to guide further iterations and amendments to this RDRP.As drought resilience processes mature, the ability for further robust adaptation pathways to be implemented will emerge.

The table below captures specific items identified for integration as part of future plan iterations.

NO.	ASPECT OF CONSIDERATION
	Expansion of drought resilience relative to diverse stakeholder groups
1	Expand on what drought means to different segments of the region's community and industries, and adaptation pathways to 'maintain, modify or transform' to grow drought resilience. As implementation of this foundational RDRP occurs, and monitoring, evaluation and learning processes are undertaken, opportunity will arise to advance the concepts of resilience theory, and make more clear how the adaptation pathways are continuously improving and escalating to underpin drought resilience maturation.
2	Continue to engage with diverse community and industry groups to advance implementation of the plan. Future plan updates could capitalise on the community's desire to be engaged and involved in the plan's delivery by acknowledging the role that key knowledge holders could play. Stakeholder engagement could be expanded to include direct participation of different drought vulnerable groups including gauging their capacity to participate and how best to engage with them moving forward. This information could be used to better target vulnerable residents and ensure adequate supports are in place to involve different community segments.
	Expansion of resilience adaptation pathways
3	Use diverse quantitative and empirical evidence on the potential impact of the interaction of historical and projected drought with key economic and social variables over time, such as demographic changes, shifts in the diversity of businesses, and livelihoods and employment opportunities for different community segments, in emergent versus declining types of industries, and in labour mobility among different industry and sectors.
4	Further develop the theory of change to aligns the plan's objectives and actions towards reaching its intended outcomes, including the degree to which the proposed actions contribute to adaptation and transformation.
5	Expand on the interrelationships between economic, social and environmental factors across existing and updated documents, plans and strategies, and describe how these relationships influence potential cascading impacts of drought.

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NO.	ASPECT OF CONSIDERATION
	Expansion of resilience adaptation pathways (cont)
6	Future plan updates could profile drought impacts for those non-agricultural sectors identified as key sectors in the community, such as mining, renewable energy, health care and social assistance and tourism sectors. Such a profile could include an exploration of how these sectors can build resilience or drive transformation through learning, preparedness and planning.
7	Future plan updates could develop a suite of plausible future scenarios through a participatory process and based on climate, drought and other drivers of change. The development of future scenarios could consider how trends, shocks or stresses (including drought) will interact with and likely affect the region's economic, social and environmental characteristics, and the implications for diverse stakeholder groups. This exercise will also assist these stakeholders to explore and identify actions and pathways that assist with building resilience under different plausible future scenarios.
	Resilience action planning
8	Establish resilience indicators for each of the plan's 'priority areas', using baseline observations drawn from the MEL process within the initial years of plan implementation.
9	Future updates could provide more information to substantiate the assumed mechanisms by which its actions can be achieved, and to what extent they align with the broader objectives and outcomes of the plan.
	Implementation
10	As implementation advances, expand the implementation content of the plan with respect to its governance arrangements and the function / operation of the PCG.
11	As partnership arrangements and relationships are built through this foundational plan, more information could be built on the main purpose of each collaboration setting clear intent and requirements, alongside specific measures. This can provide greater structure to partnerships, which may be a focus under each pathway. The types of partnerships and activities sought may influence these reporting arrangements. Review of partnership may be ongoing to ensure appropriate representation of groups, including First Nations communities and non-farming populations.
12	Future plan updates could provide more explicit descriptions of what external support is required for successful implementation.
13	Future updates to the plan may provide further detail on the sequencing of actions, as these are prioritised and refined and as funding becomes clearer.

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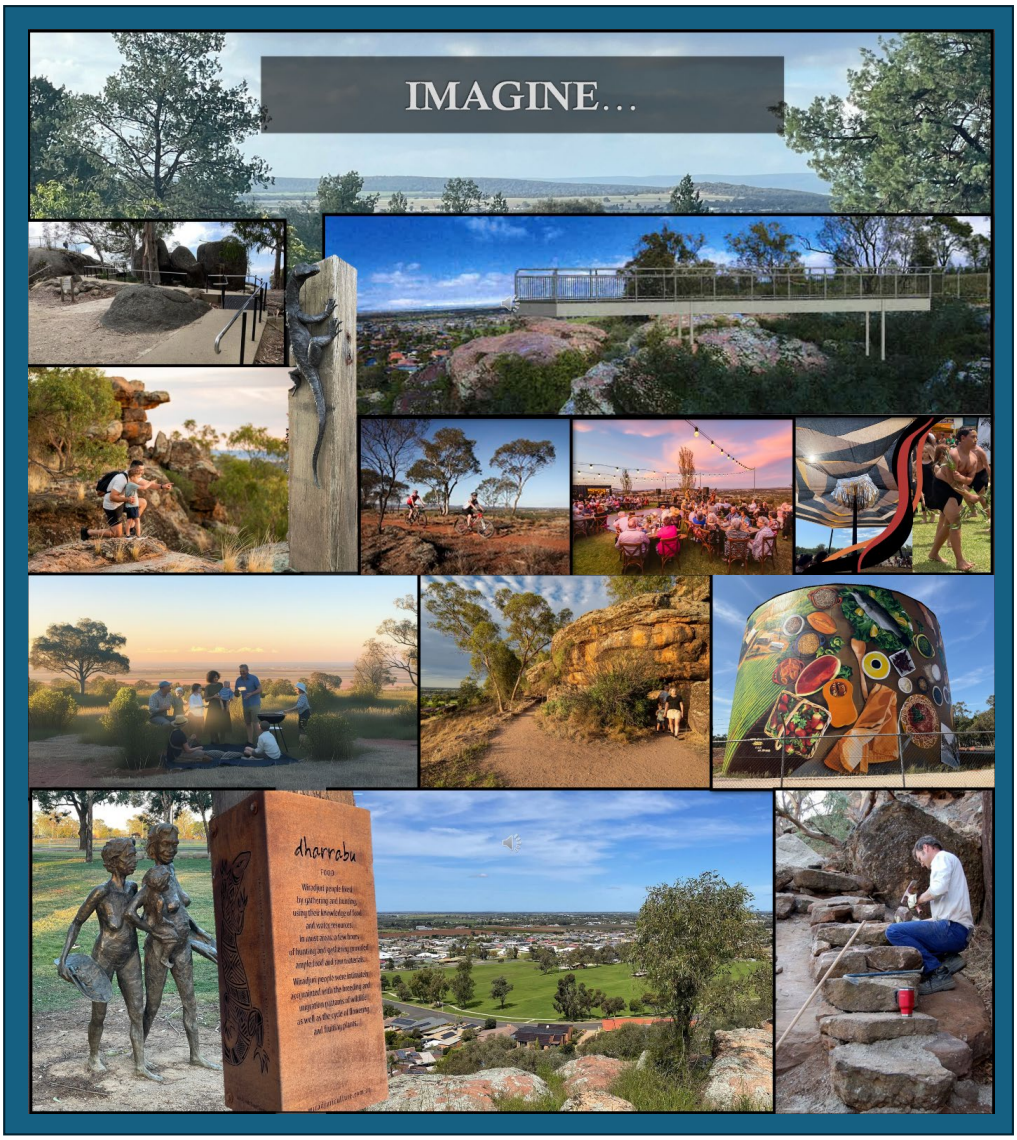
NO.	ASPECT OF CONSIDERATION
	Monitoring, evaluation and learning framework
14	Further develop structured approaches to capturing lessons from performance measures, linked with monitoring in addition to lessons from annual evaluations currently identified in the MEL. Integrate lessons learned from the plan's existing evaluation questions back into the plan's actions. Continue to enhance and mature the plan's MEL processes over time as the plan transitions from foundational into a performance posture.
15	Further develop performance indicators tied to actions in the plan's MEL plan. This will improve accountability by showing the degree to which proposed priorities and actions contribute to the plan's articulated vision and outcomes. This could include using quantitative and empirical evidence for key economic and social variables over time. This could include evidence that helps to track demographic shifts, changes in the diversity of businesses, livelihoods and employment opportunities for different community segments in emergent versus declining types of industries. It could further include evidence of labour mobility among different industry and sectors in order to assess actions focused on economic diversification.
	Resilience assessment
16	Ensure future iterations of the plan are qualified by a review of the Resilience Assessment components to identify key circumstantial changes which have occurred.
17	Continue to build upon and refine the program logic approach embedded within the Resilience Assessment that supported the development of the current plan, into a well-developed theory of change that provides a detailed and explicit causal mechanisms and valid assumptions by which the plan, through its implementation, will deliver the desired outcomes and impact.


IMAGINE...
dharrabu

Scenic Hill Masterplan Suggestions

(Information collected at a couple of "walkshops" held by the Scenic Hill Advisory Group Committee on 5th July and 23rd August 2025.)

Scope of Works

This plan covers the area from the water tank mural at the corner of Remembrance Drive and Scenic Drive to the Hermits Cave precinct.

Key Infrastructure Ideas and Input

- Water Tank Mural: Installation of lighting, historical information, and a designated viewing area.
- Pioneer Park: Addressed by a separate committee and masterplan.
- Lookouts: Five identified lookout points (refer to maps and images), including the Hermits Cave lookout.
- Hermits Cave Precinct
- Walking Tracks and Signage
- Wiradjuri Cultural Centre and Event Space: Located on land next to Pioneer Park.

Global Issues and Opportunities

- Rubbish accumulation
- Infestation of prickly pear and other weeds
- Containment of domestic cats
- Management of motorbike and car access

- Protection of endangered local flora and fauna
- Recognition of Aboriginal history on Scenic Hill
- Preservation of modern history and landmark identification
- Expansion of recreational opportunities (Maintenance of tracks for jogging and mountain biking)
- Aboriginal Land Claims needing resolution.

Project Details

Water Tank Mural

This project, already funded in the 2025/26 budget, is not under this committee's purview. However, it could serve as the starting point for a historical trail, incorporating features like QR codes or audio presentations.

Pioneer Park

While Pioneer Park is addressed by another committee, future increased use of the Hill may justify the addition of a kiosk or coffee bar.

Lookouts

Objective: Enhance lookouts to make them safer and more inviting for tourists and locals, encourage gatherings and discourage littering from parked vehicles.




Rotary Lookout

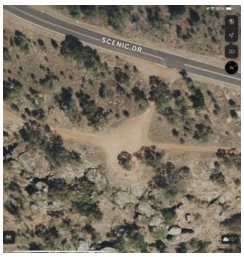
- The primary stop for visitors viewing Griffith
- Potential starting point for a circular walkway connecting to Hermits Cave and back
- Opportunities for a Welcome to Country display
- Comprehensive signage for all walks, including difficulty and estimated time
- Seating, yarning circle, BBQ facilities, and native landscaping
- Currently owned and managed by Crown Land; designated as a trigonometry site, which will need revision
- Existing infrastructure is outdated; metal lookout frame requires safety assessment
- Interest from Rotary clubs and other community groups in land stewardship
- Denis Couch's regular mowing and rubbish collection (2-3 times per week) have greatly improved the site's appearance (refer to before-and-after photos above)



Lookout 2 ("Old Tip" or Unofficial Lookout)

- Second lookout along Scenic Drive; multiple entry points
- Highest amount of rubbish dumped by vehicles
- Offers a wide, 180-degree view of Griffith and surroundings
- Great view for marking local landmarks
- Large, open area suitable for a recreational park, BBQ, and compost toilet facilities
- Challenges include too many entrances, broken fencing, and historical use as a landfill (may limit building options)
- Not subject to an Aboriginal Land Claim

Lookout 3



Lookouts Three, Four, and Five

- Smaller points, ideal for picnic tables, seating, and bins
- Improved road entrances with gravel to create a more official feel
- Potential for yarning circles, sculptures, and storyboards
- Signage to warn of hazards on rocks
- Less litter, but vehicle management may still be required – consider blocking car access

Lookout 4

Lookout 5

Ron Anson on the rock he was married on 22 years ago (lookout 5)

Hermits Cave Lookout

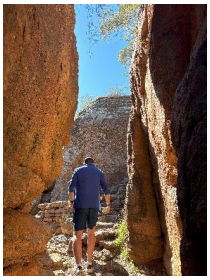
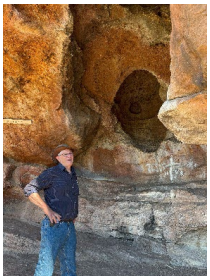
Current with two suggestions

- Primary tourist attraction in Griffith and the site with the most complaints
- Requires an accessible lookout for elderly and wheelchair users
- New signage funded in the 2025/26 budget
- Ongoing issue with rubbish

Hermit's Cave Precinct

- All signage updated, including directions and walk warnings
- QR codes link to historical photos and narration
- Pathway and stairs to main house repaired
- Circular path to Rotary Lookout with time/ability signs
- Entrance accessibility studied for disabled and elderly from below.
- More bins added
- Additional seating considered
- Heritage NSW Grant available from 2028

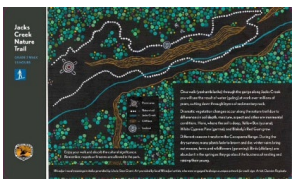



Walking tracks and signage

- Select and clear one circular track from Rotary Lookout (or water tank mural) to Hermits Cave.
- Install signs with directions, walking times, and difficulty levels.
- Add interpretive signs about local flora, history, and Aboriginal heritage.
- Place art installations or sculptures, possibly using leftover centenary granite.
- Provide seating donated by locals and community groups.
- See examples below:

Existing circular track



Example of local Wiradjuri inspired signage from Cocoparra National Park

Example of path and seating




Wiradjuri inspired artwork and yarning circle examples from Forbes NSW

Granite sculpture from Griffith Centenary

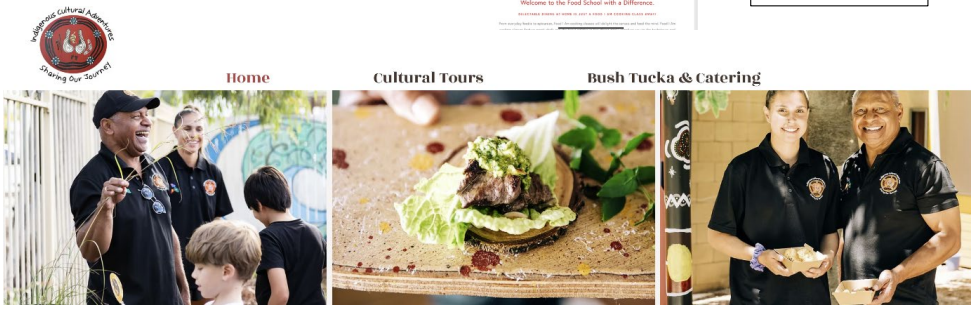
Wiradjuri Cultural Centre of Excellence/ Event Space

- "Highest hanging fruit"
- Partnership with GLALC
- On land next to Pioneer Park
- Crown Land earmarked for Museum/ Botanical Garden
- Aboriginal Land Claim is currently over the land.
- Great opportunities for Indigenous Tourism, Events, Indigenous inspired restaurant, Bush tuck er plantings etc.
- Rangers could do tours of walks across Scenic Hill.


Stunning view from the land over canola fields out to Cocoparra


Example of a Wagga Wagga business that offers a similar view and experience

"Food I Am"



Indigenous Cultural Adventures in Orange offer a business model that could be used here in Griffith

Global Issues

Rubbish Accumulation

- Most litter appears to be left by individuals arriving by car. Fast food wrappers are commonly found at the "Old Tip" Lookout, which has three entrances and multiple tracks suitable for parking vehicles. This area currently lacks rubbish bins, cameras, and signs indicating fines. On the opposite side of the hill, garden and household waste is sometimes deposited along fire trails that are accessible to the public due to the absence of gates. Signs warning of fines are often damaged or missing.
- Council clean-ups are scheduled to occur twice a year, but the committee has not been informed of any council-managed clean-up events for several years, during which time the relevant budget remains unspent.
- Some community groups and residents have organised their own clean-up activities, though litter is sometimes observed at cleaned sites soon after these efforts.

Suggestions:

- Implement an education campaign targeting schools, the wider community, and migrant groups. Involve fast food venues in campaign?
- Improve signage regarding fines.
- Increase accountability and enforcement of fines for those who litter.
- Provide more bins.
- Design bin lids with wider openings.
- Restrict access to fire trails to prevent unauthorised vehicle entry.
- Reduce the number of entrances at Old Tip Lookout.
- Maintain and enhance lookouts to encourage greater use by the local community and visitors, potentially reducing informal parking.
- Establish a volunteer roster involving schools, service groups, sports clubs, and families to support ongoing clean-up efforts and foster a culture where littering is discouraged. Explore similar programs eg City of Hobart's Bushcare Program.
- Apply for an EPA grant (Due March 2026).
- Install CCTV cameras in high-risk locations.
- Increase lighting in targeted areas.

Rubbish at "old tip" parking spot

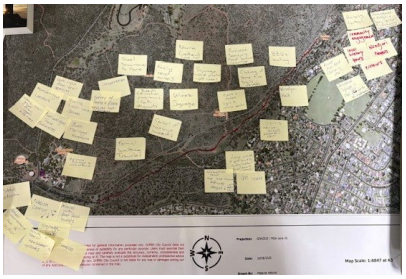
Hole too small for those trying to clean up area

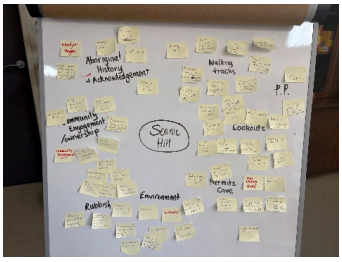
Damaged signs warning of illegal dumping

Example of gate that gives access to RFS and authorised vehicles

Dumped household items, and garden refuse, reported in January still there in August 2025.

Other Suggestions and notes from Walkshops:





- Seek input from local agencies: Murrumbidgee Landcare, Riverina Local Land Services, Bush Heritage Australia, Murrumbidgee Field Naturalists, Wires.
- Investigate tourism possibilities: ecotours, Indigenous Tourism, Local History tours
- Wiradjuri Rangers/ Wiradjuri walk, with signage to show both flora/fauna and Aboriginal History at the site
- The hill possesses both contemporary narratives and historical significance that can be communicated, which may serve to foster a sense of ownership among local residents.
- Work with GLALC
- Investigate places where new native plantings would be recommended
- Investigate the possibility of planting endagered species of trees.
- Continue to work with State Government in regards to cat containment policies. Run an education campaign on the benefit of keeping domestic cats indoors.
- Clean up the following directional monument (on separate part of hill)

Griffith City Council

Request for Quotation (RFQ)

Scenic Hill Masterplan

Project Name:	Scenic Hill Masterplan
Location:	Griffith City Council

Lodgement details:

Closing Time:	4.00pm
Closing Date	14 November 2025
Lodgement:	Email submission to admin@griffith.nsw.gov.au

Council Contact Person:

Name:	Joe Rizzo
Position:	Director Sustainable Development
Telephone:	1300 176 077
Email:	Joe.rizzo@griffith.nsw.gov.au
Address:	PO Box 485 Griffith NSW 2680

Confidentiality

This RFQ, including any attachments, is made available on a commercial in confidence basis. Any person in receipt of this document must ensure that all information whether written or verbal concerning this document is kept confidential, except any information which is in the public domain (other than as a consequence of a breach of this confidentiality obligation).
The Contractor must keep confidential any information concerning Griffith City Council as a result of or in connection with its submission of a Quote, unless otherwise agreed in writing.
Copies of this document or related documents must not be distributed except with the prior written consent of Griffith City Council.
The Quote and any accompanying documents become the property of Griffith City Council.
These obligations apply equally to any sub-contractor used by the Contractor.

Griffith City Council

1. GENERAL INFORMATION

1.1 Purpose of this RFQ

Griffith City Council (hereby known as the 'Council') seeks professional services from a service provider to prepare a masterplan for Scenic Hill.

1.2 Griffith City Council's Contact Person

Any requests for information concerning this RFQ should be made to the contact person nominated on the cover of this RFQ. Any information given to a Contractor to clarify any aspect of this RFQ will also be given to all other Contractors if in the Council's opinion the information would unfairly favour the inquiring Contractor over other Contractors.

Contractors should notify the Council's Contact Person in writing on or before the Closing Date and Time if they find any discrepancy, error or omission in this RFQ.

1.3 The Council's discretion

- The Council may change any details in this RFQ or issue an Addendum.
- Council reserves the right to modify the prepared document and retains ownership of material contained in detailed engineering plans.
- The Council may discontinue the RFQ process at any point for any reason, without making a determination regarding acceptance or rejection of any Quotes.
- The Council may invite fresh quotes based on the same or different criteria.
- The Council is not bound to accept the lowest or any Quote.
- The Council has discretion whether or not to accept Quotes which do not comply with all of the requirements of the RFQ documents, or which contain conditions or qualifications.
- The Council may enter direct negotiations with one or more preferred Contractors.

1.4 Work Health & Safety

The Contractor must conduct its own assessments and investigations regarding the work health and safety of all persons affected by the services sought under this RFQ. The successful Contractor (if any) will be required to comply with the Work Health & Safety Act 2011, any related regulations and codes of practice, and any directions, policies and guidelines given by the Council.

Griffith City Council

2. LODGEMENT

2.1 Instructions for Contractors

- Contractors must read all parts of this RFQ document and submit all required information.
- A Contractor must satisfy itself that the Quote, including the quote price is correct, and that it is financially and practically viable for the Contractor to enter into and perform the proposed contract if it were chosen to do so by the Council.
- All pricing information provided in the quote must be **inclusive of GST**. GST must be separately identified in the quoted prices. All prices must be quoted in Australian dollars.
- Contractors must provide any attachments to their Quotes clearly labelled and cross-referenced.

2.2 Extension to Closing Date and Time

The Council may, in its discretion, extend the Closing Date and Time.

2.3 Late Quotes

The Council may consider late quotes where the Council is satisfied that the integrity and competitiveness of the RFQ process has not been compromised.

2.4 Electronic Lodgement

If the method of lodgement stated on the cover of this RFQ includes electronic lodgement, quotes submitted electronically will be treated in accordance with the Electronic Transactions Act 2000 (NSW), and given the highest level of confidentiality and probity.

Quotes are to be submitted to: ***admin@griffith.nsw.gov.au***

2.5 Minimum Validity Period

All Quotes must remain valid for a minimum of 90 days from the Closing Date.

2.6 Further information

The Council may request a Contractor to provide further information after the Closing Date to assist the evaluation process. The Contractor should submit such information in the format and by the time requested.

2.7 Variation of Quotes

At any time before the Council accepts a Quote, a Contractor may vary its Quote by providing the Council with further information by way of explanation or to correct a mistake (so long as the original Quote is not substantially altered or the Contractor is not given an unfair advantage over other Contractors). The Council may provide all other Contractors whose Quotes have similar characteristics with the opportunity of varying their Quotes in a similar way.

2.8 Evaluation of Quotes

Evaluation will be conducted to identify the quote that best meet the Council's requirements and represent the best value for money for the Council.

Griffith City Council

3. OUTCOME

3.1 Negotiations
Before making any determination as to acceptance or rejection of Quotes the Council may, at its discretion, elect to conduct limited negotiation with preferred Contractors or a preferred Contractor.

3.2 Public disclosure
The Council may be required to publicly disclose details of any Quotes submitted in response to the RFQ, and details of any contract awarded, in accordance with the Government Information (Public Access) Act 2009.

4. Project Specifications / Scope of Works

4.1 BACKGROUND

Griffith City is a thriving regional capital located in the Murrumbidgee Irrigation Area with a vibrant lifestyle and diverse economy; embracing community, heritage, culture and the environment. The estimated population of Griffith in 2023 was 27,132.

Located in the Riverina, Griffith is 584km from Sydney, 458 km from Melbourne and 358km from Canberra; and is the largest regional centre in the Western Riverina region. Griffith is located in the heart of Wiradjuri Nation – the largest nation of Aboriginal and Torres Strait Islander people in Australia.

Griffith City Council is responsible for the care and control of many parcels of community land. Scenic Hill represents a significant natural asset for both the City of Griffith and its wider community, offering approximately 795.086 hectares dedicated to formal recreational use, cultural engagement, natural environments, and outstanding visual appeal. Historically, these areas were of great importance to the Wiradjuri Nation prior to irrigation development and continue to serve as an essential connection to Country within the region's contemporary social and physical landscape. Located at the southernmost extent of the MacPherson Range, Scenic Hill forms a prominent visual backdrop against Griffith's predominantly flat terrain.

The management and stewardship of numerous parcels of community land, including those within Scenic Hill, rest with Griffith City Council. Following the implementation of the Crown Land Management Act 2016, the Council, as the designated Crown Land Manager, oversees Crown Reserves under the provisions of the Local Government Act 1993.

The broader Scenic Hill precinct is highly valued by local residents, various user groups, and visitors alike. It provides abundant opportunities for recreation and tourism, including bushwalking, cross-country running, cultural activities, environmental studies, mountain biking, and photography. The recreational landscape is enhanced by existing infrastructure designed to support tourism—such as handrails and interpretive signage at Sir Dudley de Chair Lookout and Hermit's Cave—as well as directional signage along the many walking trails dispersed across the site. Additionally, an extensive network of fire trails is maintained for access and grassfire mitigation purposes; these trails are also frequently used for bushwalking, jogging, and mountain biking.

While "Rotary Lookout" is commonly associated with Scenic Hill, it is in fact located on part of Lot 7012 DP 1024031—a Trigonometrical Reserve (R.34177) managed separately by the Minister.

Multiple Aboriginal Land Claims are present across the wider Scenic Hill area. Any proposed developments must consider existing or future claims to ensure that activities do not have adverse effects if a claim is upheld by the relevant authorities.

Council faces budgetary constraints that challenge its ability to meet the ongoing financial obligations necessary for maintaining Scenic Hill to expected community standards. As the area comprises natural bushland, it does not generate revenue, thus relying on annual Council budget allocations or external grant funding. The Hermit's Cave complex, included within the broader Plan as Natural Area – Bushland, requires substantial restoration to enhance visitor appeal. Given its heritage listing, any improvement works should be undertaken by appropriately qualified professionals in heritage conservation.

4.2 SCOPE OF WORKS

The Scenic Hill Masterplan is to cover the area from the Water Tank Mural on Remembrance Drive (-34.27673 146.05413) to the Hermit's Cave precinct (-34.26756 146.07518) and address the following:

Infrastructure & Visitor Experience

- Lookouts: Assessment and upgrade of five identified lookout points (including Rotary Lookout and Hermit's Cave).
- Hermit's Cave precinct: Preservation and interpretation of cultural and historic features, signage, accessibility, safety upgrades, and heritage pathways.
- Walking tracks & signage: Development of a circular track linking major features, directional and interpretive signage (flora, fauna, Aboriginal heritage, history), and installation of seating and sculptures/artworks.
- Wiradjuri Cultural Centre of Excellence & Event Space: Integration of cultural tourism opportunities in partnership with GLALC, including Indigenous tours, bush tucker plantings, and event facilities.
- Water Tank Mural precinct: Enhanced viewing area, interpretive displays, and potential as a trail starting point.

Environmental & Land Management

- Weeds & pests: Strategies for prickly pear control, flora/fauna protection, and domestic animal management.
- Rubbish & illegal dumping: Identification of high-risk areas, recommendations for education campaigns, signage, enforcement, lighting, cameras, and volunteer programs.
- Vehicle access: Management of motorbike and car entry, particularly at Old Tip Lookout and fire trails.
- Sustainability: Rehabilitation of degraded sites, native landscaping, and habitat restoration.

Cultural & Historical Significance

- Recognition of Wiradjuri heritage, language, and stories.
- Preservation and interpretation of modern history, including the Hermit of Hermit's Cave.
- Integration of storyboards, Welcome to Country, and yarning circles at key sites.
- Governance & Partnerships

- Engagement with the Scenic Hill User Group Committee, Griffith Local Aboriginal Land Council, Crown Lands, and relevant stakeholders.
- Alignment with the existing Plans of Management for Scenic Hill.
- Identification of funding pathways (e.g., Crown Reserves Trust, EPA Illegal Dumping Grants, Heritage NSW Grants, rPPP).

4.3 BUDGET

Council has budgeted $40,000 (incl GST) to prepare the Scenic Hill Masterplan.

4.4 DOCUMENTS TO RELY ON

- **Scenic Hill Masterplan Suggestions – Walkshops Held by Scenic Hill Advisory Group Committee**

Link to be provided

- **Scenic Hill Reserve – Zone 3 – Natural Areas - Plan of Management**

Scenic Hill (Zone 3) - Natural Areas Plan of Management

- **Griffith Heritage Study**

HeritageStudyApril04

4.5 CONSULTATION

- Community/Public;
- Griffith Local Aboriginal Land Council;
- Scenic Hill User Group;
- Community Focus Groups within Scenic Hill User Group;
- Council staff and Councillors.

4.6 QUOTATION

To be included in the quotation:

- Any costs associated with visits to Griffith to undertake the work. As a minimum a site visit for face to face consultation with groups (as a minimum) identified in Section 4.5 and a presentation to the Scenic Hill User Group;
- Cost estimates for works identified in the Masterplan;
- Detailed breakdown of costs associated with the scope of works;
- Project Schedule – provide an estimated project schedule and throughput to be completed by March 2026;
- Allowance for contingency.