

Riverina Region

2022-2027 Natural Resource Action Plan

Published by Riverina Local Land Services

2022–2027 Natural Resource Action Plan

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing October 2022. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Local Land Services or the user's independent adviser.

Front cover image: Jannalia McKellar–Mt Austin High School Wagga Wagga

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Acknowledgement of Country

Riverina Local Land Services acknowledges the Traditional Custodians of the land on which we work and live, and recognise their continuing connection to land, water and community.

We pay respect to Elders past, present and emerging. We also recognise the unique, diverse and enduring cultures of First Nations peoples across NSW.

The Riverina region broadly aligns with the Wiradjuri nation, and many members of our community are Wiradjuri people. Our community also includes people who are descended from other nations living on Wiradjuri land.

Traditional owners and Aboriginal people are one of the key community groups with whom partnerships will be fostered. This is in recognition of their land management practices which ensured sustainable, viable communities for over 40,000 years. Evidence of their culture continues to be found in our landscapes through modified trees, middens, artefacts, grinding grooves, etc.

A key goal for the Riverina region is connecting people and landscapes and this will be achieved through Ngangaanha – the Wiradjuri word meaning to look after, regard and care for Country.

Local Land Services in the Riverina region will continue to build strong relationships with First Nations people, seek to understand their aspirations and ensure that they have a voice to provide input into land management issues and the management of cultural values.

Artwork produced by the Narrandera Clontarf students.

Chair's Foreword

I am very proud to be associated with a team of community leaders, Local Land Services staff and Riverina landholders in delivering on our responsibilities to improve the profitability and sustainability of natural resource management in the Riverina. Riverina Local Land Service's Natural Resource Action Plan will build upon the success of achievements since the establishment of Local Land Services in 2014 and guide the strategic direction for the management of natural resources for our organisation for the next five years.

This Plan is built on a number of existing catchment and strategic planning documents including the Riverina Local Land Services Strategic Plan and Supporting Document, Local Land Services Natural Resource Management Framework, Riverina Local Land Services Agricultural Advisory Services Strategy, and the Riverina Local Land Services

Aboriginal Engagement Strategy. Most importantly, it recognises the strong links between agricultural productivity, the preservation of natural values, a prosperous community and ongoing Aboriginal ties to the land.

Sitting within the Wiradjuri nation and covering a number of land types, the Local Land Services Riverina region is uniquely diverse. This regional diversity brings with it a wide range of opportunities, challenges and risks particularly around natural resources and climate change.

This plan outlines our strategies, targets and performance measures to enable Riverina Local Land Services to deliver natural resource services to our customers and communities.



Barney Hyams
Chair, Riverina Local Land Services





Executive Summary

The purpose of the 2022–2027 Natural Resource Action Plan (the Natural Resource Action Plan) is to guide strategic actions towards the Riverina’s vision of ‘Resilient Riverina communities in productive healthy landscapes and its associated outcomes. In other words, to enable *Ngangaanha*, meaning to look after, regard and care for Country.

The document takes stock of the major challenges, threats and opportunities in the Riverina region, setting a local-scale and locally focused agenda. It draws on the knowledge and experience of local landholders, the latest technical and research advice as well as the priorities of other investors such as the NSW and Australian Governments.

This plan will be delivered by partnering with landholders, key stakeholders and community to facilitate the management of our natural and cultural resources to deliver productive, social and environmental benefits, a key goal of our strategic plan. This plan will provide guidance for Riverina Local Land Services to direct on-ground activities, based on federal and state priorities, to the most appropriate local projects.

This plan was developed through desktop review, discussion and prioritisation within the Riverina Local Land Services Natural Resource Management (NRM) and agriculture teams and is underpinned by several key plans and strategies. These include:

- Riverina Local Land Services Strategic Plan and Supporting Document, 2021
- Australian Governments Regional Land Partnerships 5-year outcomes
- Threatened Species Strategy 2021-2031 and Threatened Species Action Plan 2022-2032
- Local Land Services Natural Resource Management Framework 2021
- Riverina NRM Strategy 2019-2023
- Riverina NRM Prioritisation (in preparation)
- Riverina Aboriginal Engagement Strategy 2021
- Riverina Local Land Services, Indigenous Participation Plan, Riverina Region 2019–2023
- Riverina Regional Strategic Pest Animal Management Plan
- Riverina Regional Strategic Weed Management Plan

1.0

Development of the Natural Resource Action plan

The Natural resource Action Plan was developed out of a need for a region-specific plan to guide the implementation of the Local Land Services NRM and Agricultural Services frameworks, Riverina Local Land Services Regional Strategic Plan and the Australian Government Regional Land Partnership (RLP) Outcomes. This plan will provide a region wide approach and prioritisation of project work for the period of 2022 to 2027.

Figure 1.0 demonstrates how this plan has been developed in conjunction with other guiding documentation.



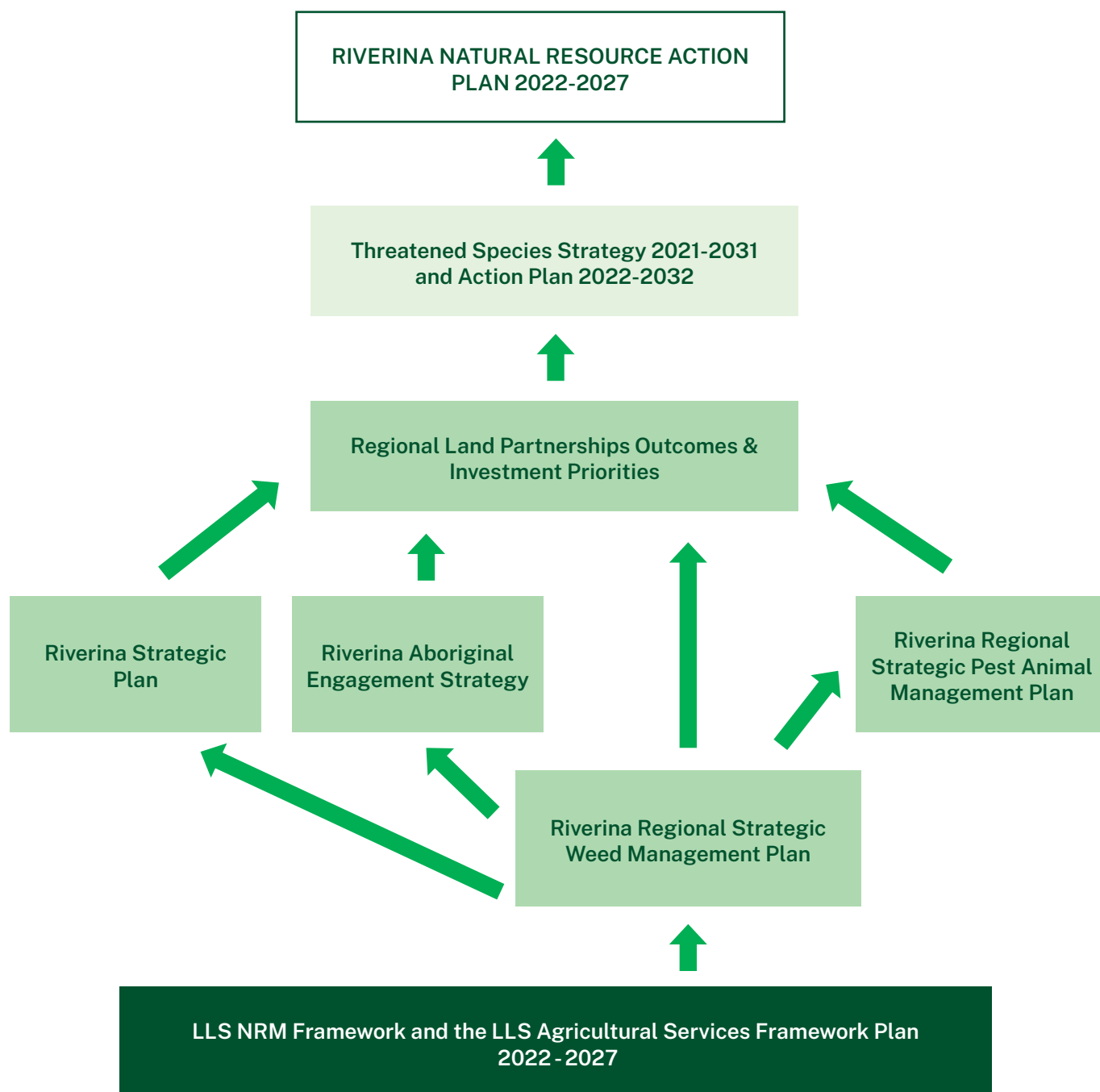


Figure 1.0: The development of this plan in conjunction with other guiding documentation.

This Natural Resource Action Plan will take into consideration all the above plans and priorities as well as state and federally listed species and communities that are relevant to the Riverina region. The plan also reflects local landscape-based resources and emerging threats and needs.

The Natural Resource Action Plan will deliver on the needs and aspirations of community and industry-based groups which was information garnered through recent community engagement that was conducted as part of the development of the Regional Strategic Plan.

2.0

NSW Natural Resource Management

The Local Land Services Riverina region is one of 11 Local Land Services regions within NSW and one of the 54 NRM organisations across Australia.

Local Land Services is a regional-focused NSW Government agency delivering quality customer services to farmers, landholders and the wider community. Local Land Services has over 1,000 staff in more than 100 locations around NSW. Our experienced on-ground officers have a great depth of knowledge about the land, conditions and people of the communities we work in.

Vision: Vibrant communities in productive, healthy landscapes.

Mission: to be a customer-focused business that enables improved primary production and better management of natural resources.

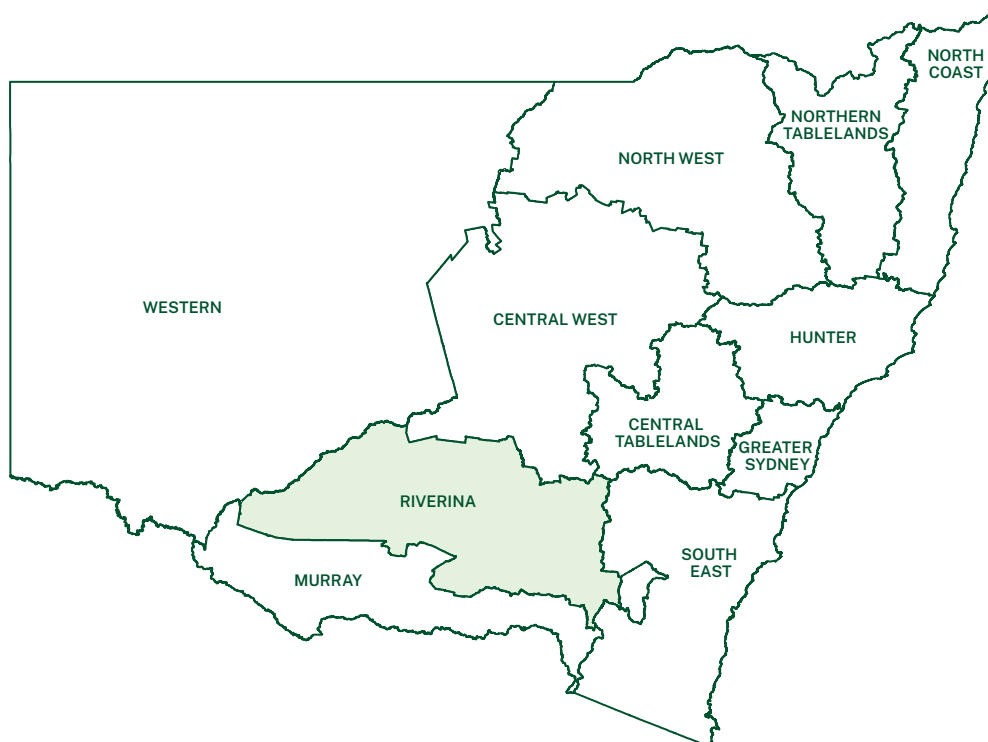


Figure 1.2 Map of Local Land Services regions.

Regional Snapshot



TOTAL AREA OF REGION

6.77 million
Hectares



POPULATION

155,793

Wagga Wagga is the largest centre, with a population of approximately

67,860



12,000

RATEPAYERS

The customers of Riverina Local Land Services include primary producers as well as public and private land managers. There are also several thousand small holdings.



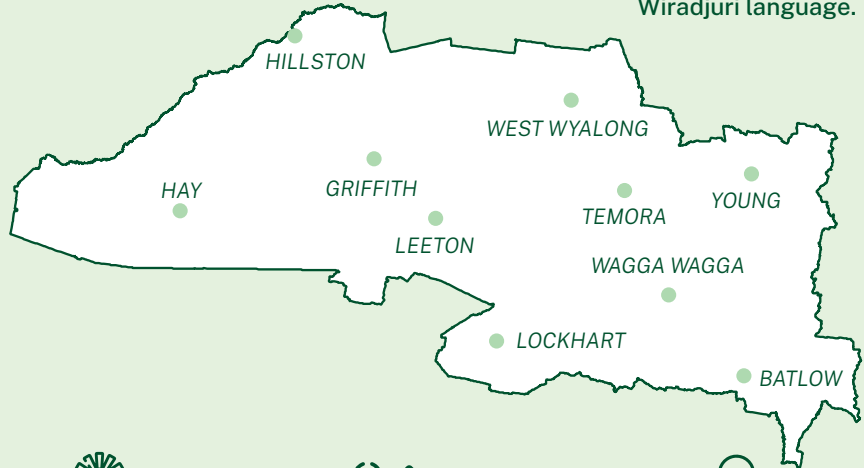
43%

LIVESTOCK PRODUCERS



The Murrumbidgee River winds through the region and is the second largest river of the Murray-Darling system.

The word *Murrumbidgee* means 'big water' in Wiradjuri language.



TRAVELLING STOCK RESERVES

86,000
Hectares



STATE FORESTS

165,000
Hectares



NATIONAL PARKS AND RESERVES

293,000
Hectares



The region is a topographically diverse area, with landscapes varying from the highlands of the Snowy Mountains to open plains, irrigation areas and western rangelands.



Natural assets of international and national importance are found in the region including the Ramsar listed Fivebough and Tuckerbil wetlands near Leeton.



141

THREATENED SPECIES
of flora and fauna of both State and Federal significance.

Some of these are protected in substantial areas of National Park such as Kosciusko, Murrumbidgee Valley, Cocopara and Kalyarr National Parks. The landscape also features highly significant indigenous cultural heritage areas, values, and elements.

85%

OF LAND USED FOR
AGRICULTURAL PRODUCTION

Major crops include cereals, maize, millet, sorghum, lucerne, cotton, rice, citrus and wine grapes.



3.0

Connections to Country

Objective - To champion opportunities for Aboriginal people and communities to care for Country and enhance contemporary land management practices

The Riverina region broadly aligns with the Wiradjuri nation, and many members of our community are Wiradjuri people. Our community also includes people who are descended from other language groups such as Yorta Yorta, Ngiyampaa and Paakantji peoples.

First Nations are one of the key community groups with whom partnerships will be fostered. This is in recognition of their land management practices which ensured sustainable, viable communities over tens of thousands of years. Evidence of their culture continues to be found in our landscapes through modified trees, middens, artefacts, grinding grooves and rock art.



The Riverina Local Land Services region contains several areas of significance to First Nations people including Bomen Axe Quarry, Bomen Lagoon, Brungle Cemetery, Doodle Coomer Reserve, Diplo Ceremonial Ground, Hannibal Hamilton Cave, Koomaringa, Koonadan, Koorawatha Falls, Mudjarn Nature Reserve, Nap Nap Burial Ground, The Rock (Kengal) Nature Reserve, Toogimbie Burial Ground, Wiradjuri Reserve and Wollundry Lagoon.

Riverina Local Land Services also manages a substantial volume (2,150ML) of surface water designated as an Aboriginal Cultural Access License. Only seven cultural access licenses have ever been issued in NSW, with only two remaining in use.

3.1 Engagement

The Riverina Aboriginal Engagement Strategy 2021 outlines 4 key outcomes to ensure that aboriginal engagement and cultural knowledge is successfully embedded into our core business. These outcomes are listed below:



1. Aboriginal peoples and communities have greater choice, access and control over their Country and its resources. Local Land Services will collaborate with Aboriginal communities to garner broader respect for Aboriginal culture through the sharing of traditional knowledge to enhance contemporary land management practices in sustainable productive landscapes.



2. Aboriginal organisations and businesses are supported to succeed and grow NSW's first economy.



3. Our Aboriginal workforce increases across all divisions and at all levels as Local Land Services becomes an employer of first choice for Aboriginal people to grow career paths in the public sector, ensure Aboriginal employees feel culturally safe and understand drivers and barriers to employment success.



4. Senior executive, managers and staff are aware and promote the importance of developing responses that address the needs and aspirations of Aboriginal peoples impacted by our work.

These outcomes together with key outcomes from the natural resource and agricultural functional areas are considered at the landscape level to develop localised actions.

Riverina Local Land Services has established the Aboriginal Community Advisory Group (ACAG) to oversee and guide the annual implementation of the Riverina Aboriginal Engagement Strategy which broadly aims to empower Aboriginal communities by building their capacity to influence change in the community. The ACAG comprises 8 members from local communities within the Riverina.

Local Actions and Initiatives

- Utilise the Riverina Aboriginal Community Advisory Group to understand community aspirations and inform NRM program design
- Riverina NRM staff will collaborate with the Aboriginal Communities Officer early in NRM project development to plan activities such as cultural burning and cultural site assessments for due diligence.



Preserving Traditional Wiradjuri knowledge

The following is an example of a project that Riverina Local Land Services initiated to support First Nations communities and the preservation of Traditional Knowledge.

<https://storymaps.arcgis.com/stories/49ea39f21d27415bbf62e8c194c428bf>



3.2 Employment

Key result 1: Our NRM programs are increasing Aboriginal community partnerships and participation within service delivery and decisions, leading to increased Aboriginal employment and/or Aboriginal-owned business procurement, as measured by the number of specific programs that involve Aboriginal people and communities in NRM.

Riverina Local Land Services has a strong history of providing employment opportunities and currently has First Nations employees in 1 ongoing role and in 6 temporary roles. Riverina Local Land Services has also heavily invested in local First Nations communities to provide training opportunities in Cultural Sites Assessment, Cultural Burning and Chemical Handling. This investment has allowed these communities to gain meaningful employment opportunities on Country through State and Australian Government project funding, as well as by providing fee-for-service opportunities for Due Diligence site assessments for local developments.

Local Actions and Initiatives

- Support business development opportunities initiated by Local Aboriginal Lands Councils that complement the operations of Riverina Local Land Services and which will result in increased employment opportunities for Aboriginal people on Country, example include Cultural Burning and weed control on Travelling Stock Reserves (TSRs).
- Support upskilling of Aboriginal workforce in Traditional Owner organisations and Local Aboriginal Land Councils in NRM, through scholarships and training assistance.
- Actively promote Riverina Local Land Services as an opportunity for Aboriginal High School and University students to undertake work experience / placement programs.
- Actively explore the opportunity to increase the number of Aboriginal-identified roles and traineeships
- Seek funding opportunities to develop Aboriginal-owned enterprises such as native grass seedbanks, Commercial native seed collection, Cultural Burning and traditional land management teams.



Engaging and employing our First nations partners



Through NSW Environmental Trust funding for the “safeguarding the Serpentine” project, Riverina Local Land Services was able to contract the Brungle-Tumut Local Aboriginal Land Council to undertake a cultural burn on Top Gobarralong Travelling Stock Reserve it was proved to be an emotionally powerful engagement.

<https://www.youtube.com/watch?v=HUXYoKb8AOo>

4.0

Pathway to Net Zero

NSW was one of the first Australian jurisdictions to commit to achieving net zero emissions by 2050. The state is on track to reach a target of cutting emissions by 50% (below 2005 levels) by 2030. Establishing 5 Renewable Energy Zones will attract 12 GW of renewables and \$37 billion in private investment, mainly in regional areas. The state is aiming for 50% of new cars to be electric vehicles in 2030-31.

To achieve its overarching goals the NSW Government finalised its Net Zero Plan Stage 1: 2020-2030 and in June published the NSW Climate Change Adaptation Strategy.

The land use sector serviced by Riverina Local Land Services is directly impacted by climate change and contributes significantly to emissions. The sector also holds many opportunities to contribute to the solutions. Direct access to land such as the 86,000 hectare Travelling Stock Reserve network managed by Riverina Local Land Services, presents opportunities to drive projects which support decarbonisation and carbon sequestration, for example by revegetation.



Locally, Riverina Local Land Services operates across 15 different Local Councils each with varying emphasis on sustainability and commitments. 70% of NSW Councils are currently committed to reaching net zero emissions before 2050 and many have introduced sustainable procurement policies to reduce impact on Council supply chains.

Wagga Wagga Council has adopted a corporate net zero emissions target by 2040 and a target has also been set for the Wagga Wagga community to achieve net zero emissions by 2050. Wagga Wagga Council is developing an Urban Canopy Cover, Heat Map Strategy. They have partnered with its Urban Landcare group to trial the planting of climate adapted species.

As more local councils set net-zero goals, the accountability to report on and understand emissions will increase.

Riverina Local Land Services is taking the following steps to achieving net zero

- Creating a carbon inventory to understand and measure our current emissions levels.
- Analysing our current emissions levels and identifying opportunities for reductions.
- Setting goals in line with the Science Based Targets initiative.
- Developing and implementing a reductions roadmap to meet our targets and embed the strategy into our core operations.
- Monitoring our progress through regular reporting and governance, and
- Encouraging our clients, partners, suppliers and organisations within the Riverina region to set targets as well.

SUMMARY OF GHG EMISSIONS (TONNES) FOR LOCAL LAND SERVICES

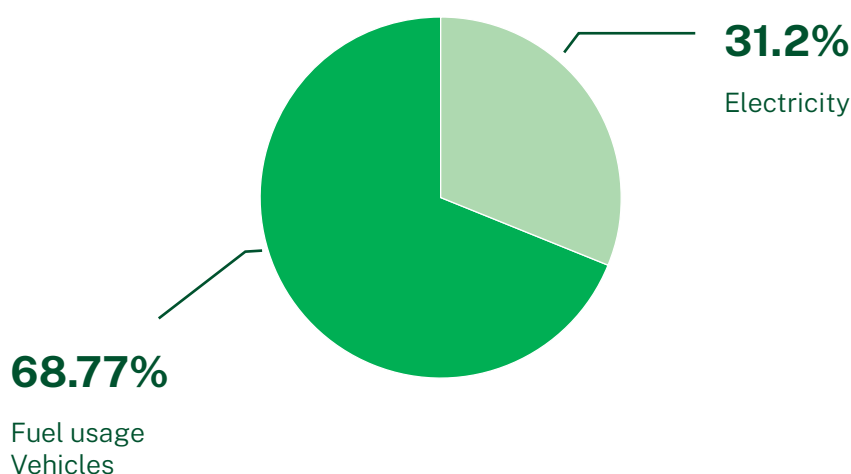


Figure 4.1: Riverina Local Land Services Scope 1 and 2 Emissions.

YEARLY EMISSIONS TREND FOR LOCAL LAND SERVICES



Figure 4.2: Riverina Local Land Services Scope 1 and 2 Emissions trend (2019-2021).

Moving forward, Riverina Local Land Services will undertake further analysis to define and manage our Scope 3 emissions and then establish a formal Net Zero Target. The actions, collaborations and partnerships defined within this Natural Resource Action Plan will greatly assist Riverina Local Land Services in meeting its target.

5.0

Future Climate Impacts

The Riverina region is considered likely to be one of the regions of New South Wales, most severely impacted by climate change because of increasing temperatures, changes in the volume and distribution of rainfall, reduced snowfalls, and decreases in river flows. The latter is particularly important given the dependence in this region on irrigation.

Climate Projections

Consistent with national projections, the temperatures in the Riverina Murray region are predicted to rise with average daily maximum temperatures of 1.5–3.0°C higher in all seasons by 2050. Rainfall in the Riverina is likely to increase moderately in summer but decline substantially in spring, autumn and winter with a high risk for increases in extreme rainfall events. The number of extreme fire-weather days is also projected to grow in southern Australia. For example, a warming of 1.5°C and an 8% decrease in rainfall (a moderate scenario for 2030) would make the climate of Wagga Wagga similar to the current climate of Forbes.





Grazing

South-eastern Australian broadacre livestock production is highly sensitive to climatic factors and variability due to its dependence on the supply of forage from dryland pastures. However, impacts vary significantly within and between regions -being most severe in the lower rainfall parts of the wheat sheep zone, but positive for some currently higher rainfall/colder areas. Relatively modest changes in rainfall and pasture production under climate change will result in much larger reductions in sustainable stocking rate and profitability. It is important to note that no single adaptation provides all the answers, with a combination of adaptations likely to work best.

Combinations of adaptations will be required to maintain the productivity of livestock production across southern Australia to 2030. By 2050 and 2070, on the other hand, it is likely that new technologies or systems will need to be found if livestock production at the drier end of the farming zone is to remain viable. While mitigation options exist for intensive dairy systems (e.g. feeding dietary supplements), options to reduce net emissions of methane (CH₄) and nitrous oxide (N₂O) are limited in more extensive grazing systems. There are some obvious options that will both reduce emissions intensity and improve overall productivity including animal (e.g., early finishing, improved weaning %) and dietary manipulation. However, while offset methods are being developed, opportunities for graziers under the Carbon Farming Initiative (CFI) are currently limited.



Broadacre Cropping

Impacts on crops vary and regional variability plays a key role. Effects of climate change on crops (i.e. grain, cotton and rice) include the positive effect of higher carbon dioxide (CO₂) concentrations impacts on plant and crop growth, impacts on the water-use efficiency of dryland and irrigated crop production, and potential effects on biosecurity, production and quality of product via impacts on endemic and introduced pests and diseases, and tolerance to these challenges. There are a range of technical adaptations available such as changed crop management practices, selecting new varieties, altered rotations and improved water management. Maintaining a flexible research and development base to inform policy adaptations as well as farm-level changes is essential to deliver potential adaptation benefits. Mitigation options under the Carbon Farming Initiative are currently limited for broadacre cropping.



Intensive Livestock

Warmer and drier conditions are projected for most intensive livestock-producing regions, raising the likelihood and incidence of heat stress in stock and challenges to irrigation and stock water. To achieve effective adaptation, stock shade and shelter will be essential, water use efficiency will need to improve and low emissions and alternative energy options should be identified and developed. Livestock enterprises must have the flexibility to rapidly change management systems in response to dynamic environmental, economic and social conditions. Farmers and producers need to have a greater awareness of environmental, economic and social conditions beyond their farm gates than ever before. Mitigation options for intensive livestock are either focused on manure management or diet supplementation. These are detailed in the livestock section or manure management for feedlots, pigs and poultry.



Horticulture

Site suitability may change for some horticultural crops as a result of climate change. There will be effects on flowering, pollination, harvest dates, sunburn incidence, colour development and fruit size. Varietal selection can be used to match crops to new climate regimes. Utilising existing varieties or breeding new varieties can facilitate adaptation. Specifically for wine grapes, shifting to cooler sites will alleviate some warming impacts. As vineyard blocks have an average life of 30+ years, this option will need to be considered with some urgency. Options for mitigation are limited to improved nitrogen fertiliser management for the horticulture industries at this stage.



Non-Agriculture Land-use

Higher temperatures and drier conditions are likely to cause major changes in ecosystems. Riverine, floodplain and wetland ecosystems are highly vulnerable. Freshwater resources and stream flows in southeastern Australia are predicted to decline. The river flows in the southeastern section of the Murray Darling Basin (MDB) are expected to further decline by 5–15% over the next 20–50 years. Wetland-dependent colony birds are therefore likely to decline. The decline of wetland ecosystems in the Riverina is likely to affect ecosystem services. The Riverina's reduced vegetation cover, caused by a reversal of seasonal rainfall patterns and overall drier conditions, is likely to leave many soils vulnerable to increased erosion, making these more vulnerable in extreme events. Vulnerable areas include the alluvial plains of the Riverina and susceptible gullies on the southwest slopes and plains. Extreme heat and reduced water availability will be significant drivers of future biodiversity loss and will increase the risk of local species extinctions.



Implementation Case study

The **Future Climate Impacts** report prepared for the Riverina region with funding from **Stream 2 of the Regional NRM Planning for Climate Change Fund** provided the foundational knowledge for the development of the “Paddock, Farm, Landscape -building our communities natural capital from the soil up” project which has been successfully funded under the Future Drought Fund: Drought Resilient Soils and Landscapes Grants Program.

This project will develop a drought resilience farm planning package that expands the demonstration of 3 mature management practices known to support higher agricultural productivity & profitability during/after droughts whilst maintaining or improving natural capital. These practices include grazing pressure management (confinement feeding/grazing management), landscape rehydration (farm dam/riparian enhancement) and native vegetation diversification (shelterbelts) which are all strategic interventions identified within the Future Climate Impacts report that will help Riverina landholders adapt to the changing climate.

Effectively integrating climate change projections into regional NRM planning processes is challenging as it is often not possible to apply standard probability-based approaches to water infrastructure planning or other decisions. Concepts such as Integrated Catchment Management (ICM) and Integrated Water Resources Management (IWRM) appear to embrace a more holistic approach. Significant opportunities exist under the Carbon Farming Initiative for the establishment of carbon sinks in trees and vegetation, and these should be further explored.

Interventions by Riverina Local Land Services

The focus of government has shifted more towards managing the short-term impact of extreme events on agriculture, rather than long-term plans for transformational adaptation. However, as these impacts are local and regional, there is a clear role for Riverina Local Land Services to identify assets, systems, industries and regions at risk and to work with land managers to raise awareness of these risks and facilitate implementation of regionally relevant adaptation and mitigation options.

Riverina Local Land Services also has a role in using their engagement with land managers to identify opportunities that require more regionally relevant mitigation and adaptation research, bridging this knowledge with relevant research providers and industry. In such a complex policy environment where land managers find it hard to navigate, Riverina Local Land Services can provide support to ensure a consistency in mitigation and adaptation extension messages, thus avoiding conflicts and confusion around good practice guidelines.

Riverina Local Land Services regional adaptation efforts will focus on empowering stakeholders in a way that increases resilience of the landscape system, involving both people and natural systems. Transfer of information needs to be supported by acceptance and ownership of the concept of change.



Adjusting to Drought: Underground Grain Storage

Riverina LLS Agricultural services Team are always looking for local storytellers and examples of how they manage for dry times.

<https://youtu.be/PCVL02xpU7M>





6.0

Priority Programs and Frameworks

The Riverina region has a great diversity of landscapes from the sub-alpine to the arid; from pristine natural environments to productive irrigated land; from small remote towns to large inland cities. The main native vegetation classes vary from alpine herb fields, native grasslands, wet forests and woodlands to semiarid chenopod 'saltbush' shrublands and river red gum forests. The most widely distributed native vegetation classes within the Riverina region are Box Gum Grassy Woodlands and Grey Box Grassy Woodlands.

The Murrumbidgee and Lachlan rivers provide the living linkage between all these landscapes. They are working rivers as well as natural assets with the waters generating energy and providing water and recreation for cities, towns, and farms. Our region contains natural assets of international and national importance including the Ramsar listed Fivebough and Tuckerbil wetlands near Leeton, mid Murrumbidgee and low Bidgee wetlands

There are currently 141 threatened species of native flora and fauna in the Riverina Local Land Services region.



As the predominant land use in our region is agriculture, landholders are a key stakeholder. Riverina Local Land Services is working with landholders to improve the management of on-farm natural assets such as native vegetation, rocky outcrops, and waterways, as well as habitat for significant species.

Through the development of our Strategic Plan, our priority program for natural resource management is:

Support land managers and community to protect and enhance soil, water, and biodiversity through education, advice, programs, and partnerships.

The Local Land Services Natural Resource Management Framework (2021-2026) outlines five key objectives to ensure that our activity is working towards the outcomes of productive and sustainable land use. These objectives are listed below and will be considered in the development of this plan.



1. To drive widespread NRM practice adoption by understanding and addressing our customers social and behavioral drivers.



2. To help our customers realise returns from adoption of improved NRM practices.



3. To act on the top threats to the health and resilience of NSW landscapes and catchments.



4. To champion opportunities for Aboriginal people and communities to care for Country and enhance contemporary land management practices.



5. To be the NRM service provider of choice and a trusted broker of NRM partnerships.

The Riverina is an agricultural region and the heartland of the wheatbelt in south-western New South Wales (NSW). Agriculture, agribusiness, forestry, horticulture, and associated service industries including transport and logistics drives employment. The Murrumbidgee River delivers water for irrigation to the food producing areas of the Murrumbidgee Irrigation Area (MIA) and Coleambally Irrigation Area (CIA).

The Riverina produces broadacre winter and summer crops. Winter cropping includes cereal crops such as wheat, barley and oats, oilseed crops such as canola, and a suite of pulse crops. Summer cropping in the MIA and CIA includes cotton, rice, soybeans, and maize. The Riverina/MIA region has become a reliable contributor to the state's cotton production. The horticultural industries of cherries, stone-fruit and berries are grown in the Hilltops and Snowy Valleys local government areas (LGA's) and citrus, nuts and wine grapes in the Griffith, Leeton and Hillston areas.

Extensive livestock production of prime lambs, fat lambs, wool-growing and beef cattle is managed by livestock producers in the Riverina. The region is also home to other more intensive animal industries of poultry, beef cattle feedlots, dairying and pig production.

Riverina Local Land Services is working with our primary producers to enable our farming systems to remain viable by supporting producers and industry with best practice advice, innovation and collaboration.

Through the development of our Strategic Plan, our priority programs for primary production aim to:

- Explore opportunities to enable producer adaptations to seasonal variability and climate change
- Deliver incentive programs, products and advisory services to support industry best practice
- Provide a skilled extension and advisory service to grow our partnerships with our stakeholders
- Provide adequate biosecurity options to maintain farm productivity
- Grow partnerships with industry, research, agribusiness and producers across key farming systems.

The Local Land Services Agricultural Services Framework (2021-2026) outlines three key objectives to ensure that our activity is working towards the outcomes of productive, profitable and sustainable agriculture. These objectives are listed below and will be considered in the development of this plan.



1. Increase farm productivity and sustainability, enhance natural assets and improve production processes.
2. Producers and businesses are better prepared from climate variability and better manage and recover from major business disruptor events.
3. Build strategic partnerships that drive solutions to industry scale issues and deliver services that lead to the adoption of innovation.



7.0

Landscapes of the Riverina Local Land Services region

To ensure that this plan is relevant across the varied landscapes of the Riverina, four landscapes have been identified based on climate and land use. Assets, threats, local priorities and actions have been identified for each landscape based on the NSW NRM and Agricultural Services Frameworks, the Riverina Local Land Services Strategic Plan and the Australian Government priorities.

These landscapes are: Southwest Slopes and Highlands, Mid Murrumbidgee, irrigation and floodplain and rangelands. The map below outlines the location and extent of each landscape.

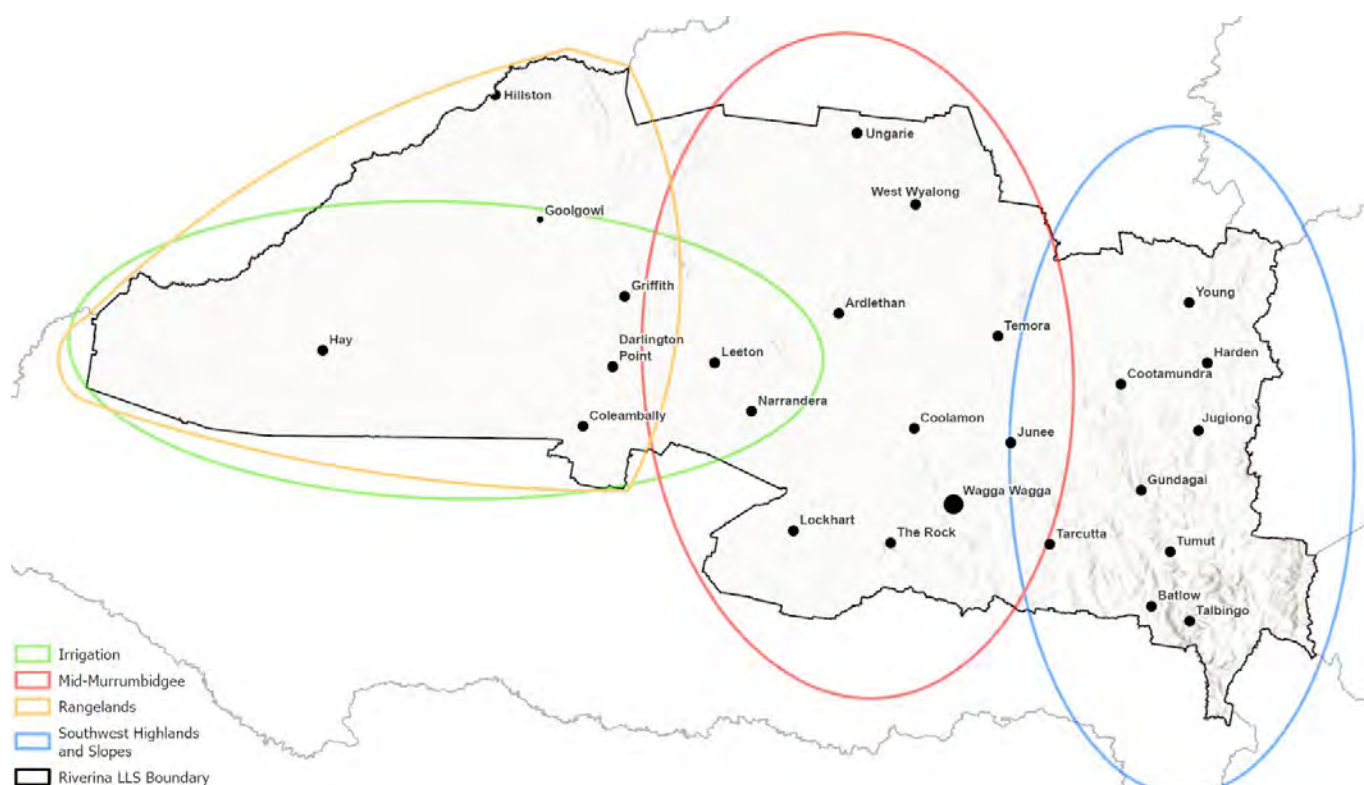


Figure 7.0: Landscapes of the Riverina region

7.1 Southwest Slopes and Highlands Landscape

The vision for the Southwest Slopes and Highlands landscape is healthy, well-managed watercourses surrounded by a variety of productive land uses and natural environments.

The Southwest Slopes and Highlands incorporates the landscapes within the Southwest Slopes bioregion of NSW and the areas northwest of the Kosciusko National Park. In the south, substantial portions of the vegetation have become fragmented although some large conservation areas remain, particularly in the Tumut and Batlow areas. The northern portion of this landscape has been extensively cleared for agriculture, resulting in a patchy landscape of mixed farming enterprises with small remnant patches and revegetation areas.

The landscape contains several significant species that occur only in the Riverina region, including the Wee Jasper Grevillea, the Tumut Grevillea, the Northern Corroboree Frog, and the Coolac-Tumut Serpentine Shrubby Woodland.

This landscape is characterised by high rainfall and is a traditional and stable livestock and mixed farming system. The headwaters of these catchment are heavily vegetated predominantly by plantation forestry and horticulture, including stone fruits, cherries and apples. The mid and lower catchment were cleared and are grazed by both cattle and sheep. Fodder crops, cereals and oilseeds are the main cropping enterprises predominantly grown on the lower floodplains.



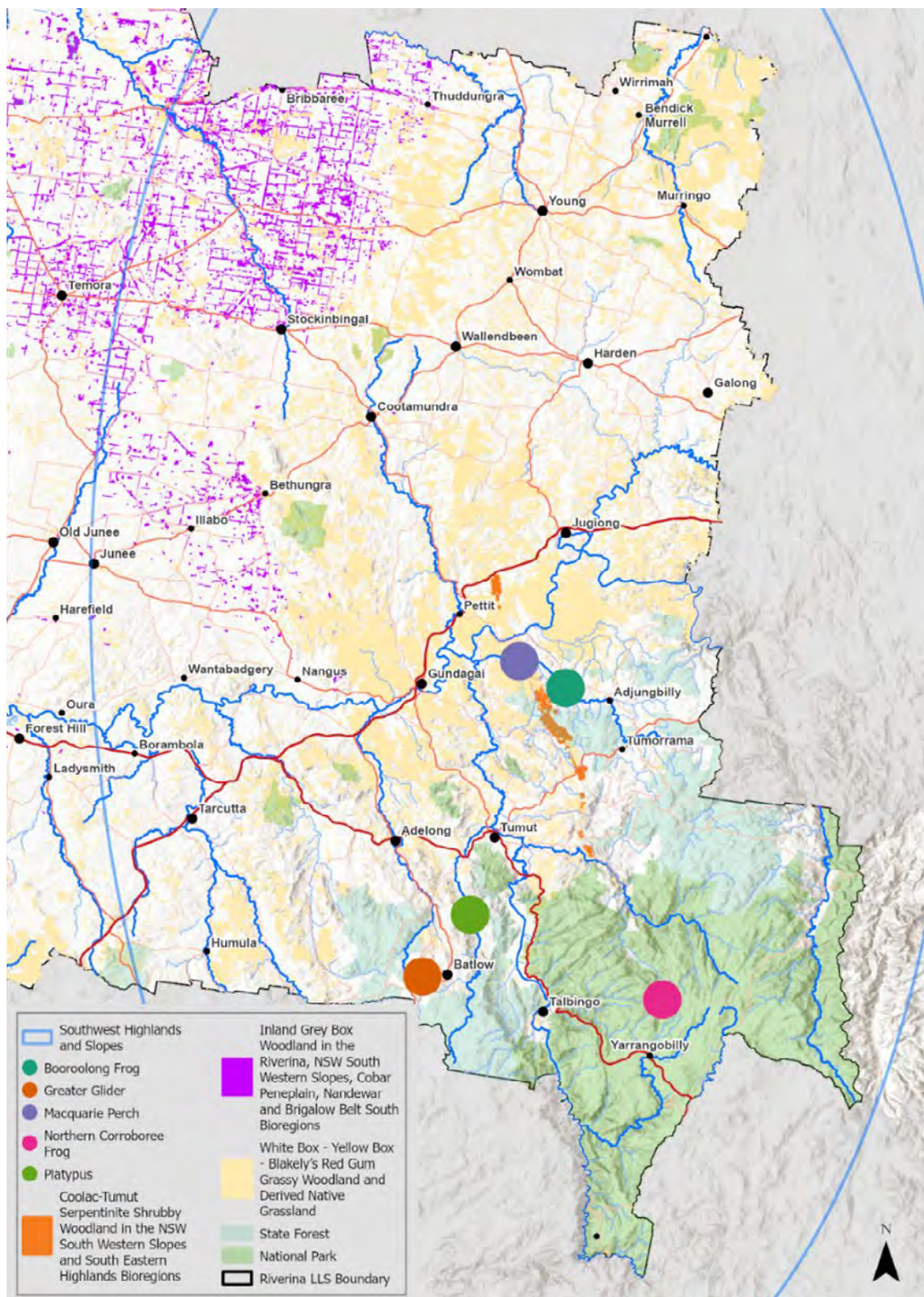


Figure 7.1: Map of key sites/locations in the Southwest Slopes and Highlands Landscape.

The Southwest Slopes and Highlands has a rich history and was a meeting place for different Indigenous Nations for thousands of years. Aboriginal people in the area were primarily affiliated with the Wiradjuri language group. At the time of European settlement, the Tumut area was the meeting point between the Ngunawal (north east), Walgalu (south east) and Wiradjuri (western) languages (Kabaila, 1995).

Important NRM interventions in the Southwest Slopes and Highlands landscape have been stabilising stream banks to reduce the sedimentation of waterways, fencing to exclude stock for improving water quality and stream health, and increasing the perennial vegetation cover of sites known to contribute to salt mobilisation. Farm-scale activities include improving the condition of native pastures, protecting and re-establishing natural habitat, mapping land classes and matching land uses to land capability.

Blowering Dam on the Tumut River is an important water storage facility for the region. Downstream of the dam, rivers are highly regulated and cold-water pollution is a major problem. Riparian management and restoration remain a high priority for the region.

Historically, large amounts of salt have been mobilised in this part of the region, contributing to high salt loads and increase driver salinity in the Murrumbidgee River. Tarcutta Creek, a major tributary of the Murrumbidgee, has its headwaters in the Southwest Highlands.

Important wetlands are Tomneys Plain and Migalong Swamp. Climate impact profiles (DECCW 2010) suggest that by 2050 the climate in this area will be hotter, with total annual rainfall decreasing and dominating in summer rather than winter.

Substantial declines in stream flow are expected, except for flood events, which are likely to be more severe. Natural ecosystems already under threat, such as wetlands, riverine communities and small woodland patches, are expected to be most affected.

Koorawatha Falls – Zoe Parsons – Cootamundra Public School.



Assets of the Southwest Slopes and Highlands

There are several natural, cultural and climatic assets that influence how natural resources and agriculture are managed within this landscape. These assets include:

ASSETS	DESCRIPTION
Significant Species	Tumut Grevillea, Booroolong Frog, Northern Corroboree Frog, Platypus, Greater Glider, Macquarie Perch, Box Gum Grassy Woodland, Coolac to Tumut Serpentine Shrubby Woodland, Grey Box Grassy Woodland.
Aboriginal Cultural Heritage	Mudjarn Nature Reserve, Brungle Cemetery, Bora Rings at Gundagai and Yallowin, Nimbo Creek Common, Hannibal Hamiltons Grave, Koorawatha Falls, Modified trees, rock art, grinding stones, rock implements and stone quarries.
Waterways	The headwaters of these waterways begin in either state forest or national park. Each creek then passes through steep, high energy mid slopes before gradually decreases in gradient until they step down onto the floodplain. The waterways support several significant aquatic species.
Climate	This landscape is dominated by a temperate climate characterised by hot summers, cool, wet and occasionally frosty winters and early springs.
Soils	The highest value soils are in the northern areas of the landscape and west towards Junee. Water, gully erosion, soil acidity and salinity are management priorities for this landscape.
Community	Good coverage of interested landholders across the landscape as well as strong working relationships with several community groups and organisations including the Highlands Landcare Network, the Brungle-Tumut Local Aboriginal Land Council, Snowy Valleys Council, Batlow Progress Association, Ngumbaay Indigenous Corporation.



First release of Mannus Mac Perch into Adjungbilly Creek. Photo credit – Luke Pearce, Department of Primary Industries.

Threats of the Southwest Slopes and Highlands

THREATS	DESCRIPTION
Pest plants	Species of greatest concern are Blackberries (<i>Rubus fruticosus</i>), Willows (<i>Salix</i> sp), St John's Wort (<i>Hypericum perforatum</i>), Pattersons Curse (<i>Echium plantagineum</i>). These species harbour pest animals, out compete desirable plants, can be toxic to livestock and increase fire risks.
Erosion	Streambank and gully especially following flood and bushfire disasters, have had a major impact on water quality and riparian management in recent years.
Pest animals	Species of greatest concern include feral pigs, wild dogs, foxes, rabbits, deer and wild horses. These species predate on native animals, compete with livestock for resources, destroy habitat and can spread diseases.
Climate impacts	This landscape had had significant natural disasters including Black Summer bushfires, flood events in 2010 and 2012 as well as the 2019 drought. Climate impact profiles suggest that in this area the climate will become hotter with increased summer rains and decreased winter rains.
Habitat fragmentation	Areas of remnant vegetation are becoming more fragmented restricting the movement of wildlife and the ongoing loss of native habitat.
Soil constraints	Accelerated soil acidification through agricultural practices and increased risk of hillslope erosion (gully and water erosion) caused by native vegetation removal and reduced groundcover.



Gully erosion after the Dunns Road Bushfire 2019/2020

Priority outcomes for the Southwest Slopes and Highlands

RLP OUTCOMES

The trajectory of species targeted under the Threatened Species Strategy, and other Environment Protection and Biodiversity Conservation Act 1999 priority species, is improved.

The conditions of soil, biodiversity and vegetation are improved.

NRM FRAMEWORK

Aboriginal Cultural Heritage and traditional knowledge is conserved

Threats to healthy landscapes and soils are declining

Reduced economic and ecological losses from invasive species

Improved water quality and waterway health

AG FRAMEWORK

Producers increase their productivity and sustainability through improved land management strategies and production processes.

Producers increase their productivity and sustainability through enhancing the condition of their natural assets.

Producers are better prepared to manage risks associated with climate variability and major disruptor events.

Producers are supported when responding to major events including drought, fire and flood.

Landscape Priority Actions

1. Explore opportunities for producer adaptations to seasonal variability and climate change.
2. Create opportunities for First Nations people and community to care for Country.
3. Support land managers and community to protect and enhance soil, water and biodiversity through education, advice, programs and partnerships.
4. Connect primary producers with other stakeholders, partners and incentive programs to grow primary industries and healthy environments.

Landscape Implementation Activities



Provide products and services that support recovery from the 2019/20 Dunns Road Bushfire.



Support graziers to prepare for future seasonal variability and future natural disasters.

Assist Brungle/Tumut and Young Local Aboriginal Land Councils to protect sensitive and significant sites.

Provide opportunities for Brungle/Tumut and Young Local Aboriginal Land Councils to share knowledge and practices.



Support Brungle/Tumut Local Aboriginal Land Councils to undertake traditional owner led bushfire recovery.



Improve the health and resilience of landscapes through protecting, enhancing, and revegetating native vegetation focusing on endangered ecological communities.



Develop and implement techniques for monitoring changing landscape functionality with key research partners such as Australian National University, University of NSW and Charles Sturt University.

Undertake on ground projects to enhance significant species such as Macquarie Perch, Booroolong Frog, Tumut Grevillea, Platypus and Greater Glider.



Build resilience at the farm scale to help manage seasonal variations and climate impacts including the Dunns Rd Bushfire.



Manage soil acidity through liming and the use of perennial pastures species in the landscape to reduce the risk of hillslope erosion.

Provide customer focused opportunities for on farm NRM.



Foster new business opportunities and markets for innovative NRM such as carbon farming.



Work with land managers and local Landcare groups to remove barriers to sustainable practice change.

Develop opportunities for external investment in NRM.

Key Stakeholders of the Southwest Slopes and Highlands

STAKEHOLDER	WHY IS THIS RELATIONSHIP IMPORTANT	STAKEHOLDER ASPIRATIONS
Local Aboriginal Land Councils Brungle/Tumut Young	To promote, showcase and share traditional and contemporary land management knowledge and practices.	Traditional owner led bushfire recovery and opportunities to care for country.
Landcare Young District Landcare, Riverina Highlands Landcare Network, Muttama Landcare Group, Tarcutta Valley Landcare Group, Harden Murrumburrah Landcare Group	To foster partnerships that enable community based sustainable land management improvements.	Community driven NRM.
Local Government Snowy Valleys Shire Council, Cootamundra Gundagai Region Council, Hilltops Council, Wagga Wagga Council	To partner with public land managers to facilitate coordinated action.	Coordinated weed control.
Public Land Managers National Parkes and Wildlife Services Crown Lands Forestry Corporation	To partner with public land managers to facilitate coordinated pest control action.	Coordinated pest animal control.
Landholders Broadacre, Intensive industry and small holdings	To drive widespread practice change across our rural landscape.	Protect and enhance farm assets.
Research organisations Australian National University University of NSW Charles Sturt University	Connecting customers to local and contemporary information that demonstrates the environmental, economic, social and cultural benefits of NRM practices.	Baseline and ongoing monitoring of significant species and communities.

Landscape Investment Opportunity



Greater Glider Local Area Management Plan

Riverina Local Land Services is well positioned to build on existing investment through the Bushfire Recovery Program. The community of Batlow is highly engaged and willing to participate in the next step of creating a Local Area Management Plan for the Greater Glider. The Local Area Management Plan could be expanded to include additional known Greater Glider populations in the Upper Murray region.

Potential Collaborators

Australian Government, Batlow Progress Association, Riverina Highlands and Holbrook Landcare Network, Australian National University, NSW Environmental Trust, Brungle-Tumut Local Aboriginal Land Council.



Platypus Case Study in the Southwest Slopes and Highlands

Riverina Local Land Services has invested funding from both NSW and Australian Government sources into the Southwest Slopes and Highlands to support programs that protect the region's assets and reduce key threats. The following is a case study based on funding received under the Australian Government's Bushfire Recovery Program.

<https://storymaps.arcgis.com/stories/8ad7ae200de846f6bf2a049f9b06143f>





7.2 Mid Murrumbidgee Landscape

The vision for the Mid Murrumbidgee is for productive farmland and a well looked after river with protected remnant natural areas.

The Mid Murrumbidgee landscape includes remnants of the NSW and federally listed box gum woodland Endangered Ecological Community and the state-listed Mallee and Mallee Broombush and Inland Grey Box Woodland Endangered Ecological Communities. These woodlands support an endangered population of squirrel gliders listed under the NSW Threatened Species Conservation Act. The region has been extensively cleared and fragmented, so intact remnants should be retained and connected to support the remaining biodiversity.

Typically, there is a mix of on-farm enterprises dominated by dryland cropping and pastures but including irrigated crops such as lucerne, cereals, maize, millet, and sorghum for fodder or grain. The dryland mixed farming systems include cattle production based on perennial grasses and clover and are concentrated in the eastern part of the zone where rainfall is higher. In western and northern areas with lower rainfall, cereal cropping dominates and is complemented with livestock grazing on annual grasses and native pastures.

Some isolated areas of salinity are visible north of Wagga Wagga and around Narrandera. Gully and creek erosion has required significant rehabilitation work to reduce impacts of sediment and nutrients on water quality. In the Mid Murrumbidgee landscape, the Murrumbidgee River develops from an incised valley into a wide, well-developed floodplain. Other aquatic features include tributaries such as Tarcutta and Kyeamba creeks, Old Man Creek (anabranch), Doodle Cooma Swamp and the Coolamon rain-fed wetlands. Large changes to the natural flow regime from upstream storages and water extraction are ecologically threatening processes. Appropriate environmental water regimes are required to restore and maintain the health of the river, floodplain and wetlands in this landscape.

The word *Murrumbidgee* or *Marrmabidya* means “big water” in the Wiradjuri language and aboriginal peoples, including the Mutthi-Mutthi, Wiradjuri and Nari-Nari, have had a long connection with the river and its associated landscape.

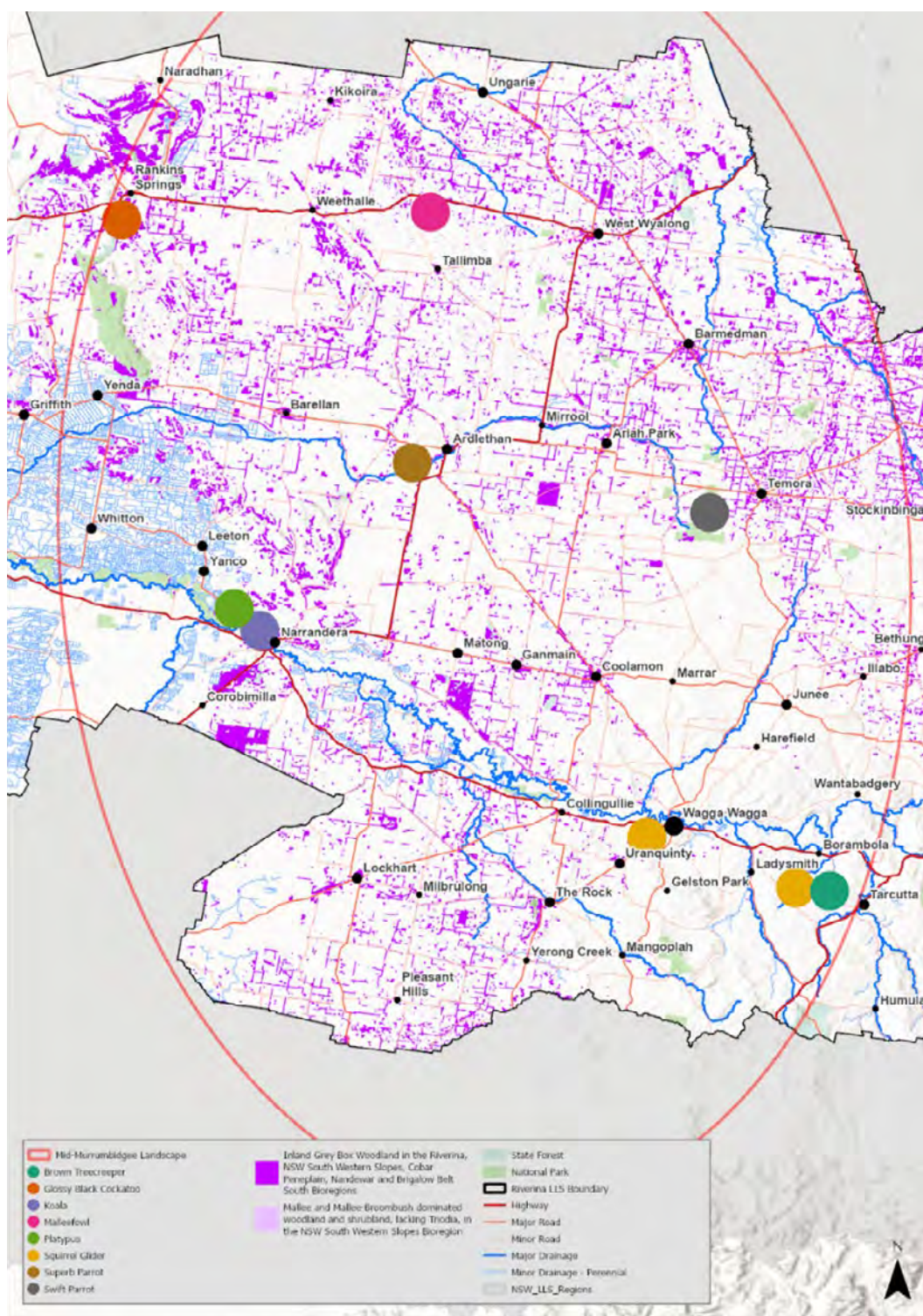


Figure 7.2: Map of key sites/locations in the Mid Murrumbidgee landscape.

Assets of the Mid Murrumbidgee

There are several natural, cultural and climatic assets that influence how natural resources and agriculture are managed within this landscape. These assets include:

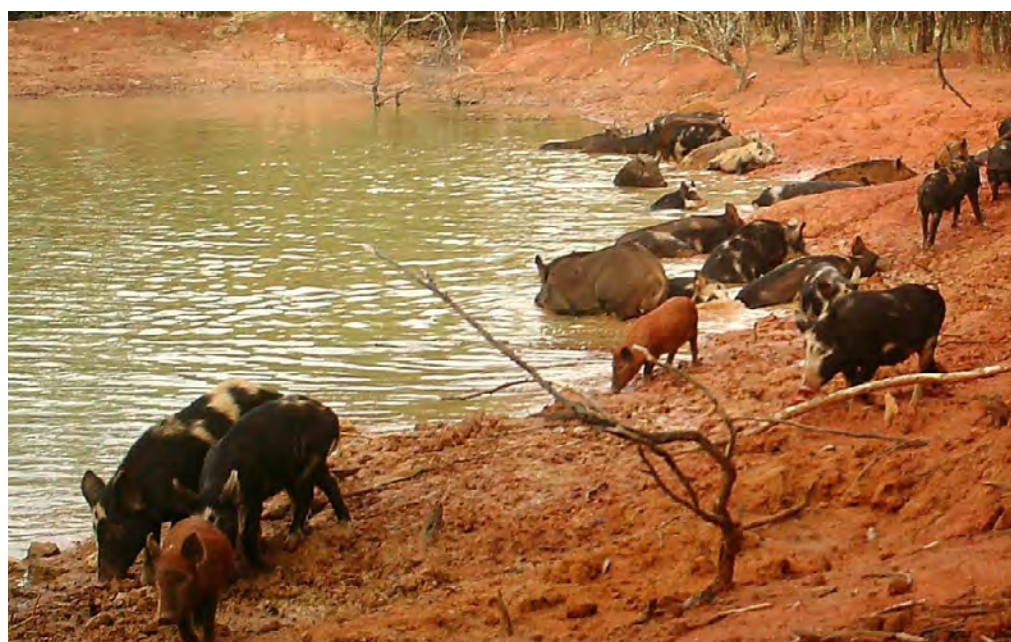
ASSETS	DESCRIPTION
Significant Species	Malleefowl, Swift Parrot, Superb Parrot, Squirrel Glider, Koalas, Platypus, Trout Cod, Murray Crayfish, Bush-stone Curlew, Brown Tree-creeper, Glossy Black Cockatoo, Inland Grey Box Woodlands, Mallee and Mallee-Broombrush Woodland.
Aboriginal Cultural Heritage	Kengal NP (The Rock), Modified trees, Burial sites, Bomen Axe Quarry, Narraburra Hills, Sproule's Lagoon, Manna Mountain and Lake Cowal.
Climate	Climate in the Mid Murrumbidgee landscape is dominated by hot dry summers and cool winters with occasional frosts.
Soils	The highest value soils are located within the central area of the landscape. Water, gully erosion and soil acidity are management priorities for this landscape.
Waterways	The major water is the Murrumbidgee River, with other significant seasonal waterways including Tarcutta Creek, Kyeamba Creek, Mirrool Creek, Houlaghan's Creek, Burke's Creek and Bland Creek which terminates in the Lachlan River via Lake Cowal.
Community	The Mid Murrumbidgee landscape is typically represented by good landholder engagement and strong collaboration with farming groups such as Farmlink and stakeholders including Local Governments at Wagga Wagga, Coolamon, Junee, West Wyalong, Temora, Narrandera, Leeton and Lockhart and long-term relationships with Local Aboriginal Land Councils at West Wyalong, Narrandera and Leeton.



Malleefowl breeding pair near West Wyalong.

Threats to the Mid Murrumbidgee

THREATS	DESCRIPTION
Pests	The main pests for consideration in this landscape are foxes and rabbits. Foxes are known to impact on sheep enterprises as well as having a negative impact on native species through predations. Rabbits also compete with grazing enterprises for fodder and negatively impact on native species via competition. Feral pigs and goats are an emerging risk to biodiversity in areas including Rankin Springs and Weethalle whilst feral deer are becoming an emerging risk to biosecurity and the natural environment in the sub-catchments to the southeast of Wagga Wagga.
Weeds	The major weeds for concert in the Mid Murrumbidgee include African boxthorn, Silver-leaf nightshade, Chilean needlegrass and Horehound.
Climate	Climate has the potential to severely impact the Mid Murrumbidgee. This landscape is particularly sensitive to drought conditions as a result of the predominant farming industries. Flooding is also a consideration and has the capacity to severely impact flood prone areas along the Murrumbidgee River and to a less frequent occurrence along the Mirrool and Humbug Creek systems.
Habitat Fragmentation	Habitat fragmentation as a result of land use is a threat to the native species of the Mid Murrumbidgee. This is particularly evident in the case of the Malleefowl being restricted to pockets of viable habitat where the Mallee Broombrush Woodlands still persist in the northern section of the landscape.
Soil Constraints	Increased risk of hillslope erosion (gully and water erosion) caused by native vegetation removal and reduced groundcover.



Feral pigs at Rankins Springs.

Priority outcomes for the Mid Murrumbidgee

RLP OUTCOMES

The trajectory of species targeted under the Threatened Species Strategy, and other Environment Protection and Biodiversity Conservation Act 1999 priority species, is improved.

The conditions of soil, biodiversity and vegetation are improved.

Agriculture systems have adapted to significant changes in climate and market demands.

NRM FRAMEWORK

Aboriginal Cultural Heritage and traditional knowledge is conserved.

Threats to healthy landscapes and soils are declining.

Conservation of important native vegetation.

AG FRAMEWORK

Producers increase their productivity and sustainability through improved land management strategies and production processes.

Producers increase their productivity and sustainability through enhancing the condition of their natural assets.

Producers are better prepared to manage risks associated with climate variability and major disruptor events.

Producers are supported when responding to major events including drought, fire and flood.



Gully erosion near Temora.

Landscape Priority Actions

1. Explore opportunities for producer adaptations to seasonal variability and climate change.
2. Provide incentive programs, products and advisory services to support producers to implement industry best practice.
3. Support land managers and community to protect and enhance soil, water, and biodiversity through education, advice, programs and partnerships.
4. Create opportunities for First Nations people and community to care for Country.

Landscape Implementation Activities



Provide products and services that support and enable customers and land managers to prevent, prepare, respond and recover from reduced ground cover due to seasonal variability, climate change and natural disasters.



Provide products and advisory services that support and enable customers and land managers to implement improved practices for farming systems sustainability.



Delivery of incentives and awareness raising events to encourage improved soil acidity and ground cover management.



Undertake on ground projects to enhance priority threatened species including Malleefowl, Swift Parrot, Koala and Squirrel Glider and ecosystems to provide multiple benefits over the longer term.

Build resilience at the farm scale to help manage seasonal variations and climate impacts through delivery of capacity building events and supporting landholders to follow best practice.



Manage groundcover and erosion risks to reduce water and hillslope erosion.

Support First Nations and land managers to protect sensitive and significant sites.

Identify opportunities for First Nations people to share knowledge and practices, including cultural fire practices, language and placenames.

Key Stakeholders of the Mid Murrumbidgee

STAKEHOLDER	WHY IS THIS RELATIONSHIP IMPORTANT	STAKEHOLDER PRIORITIES
Local Aboriginal Land Councils Narrandera, West Wyalong, Wagga Wagga and Leeton	To promote, showcase and share traditional and contemporary land management knowledge and practices.	Practicing Traditional Land Management techniques on Country including exploring the use of Cultural water on significant wetlands and creating meaningful and long-term employment opportunities for the Aboriginal community.
Landcare Murrumbidgee Landcare includes Bidgee North, Bidgee South and Bidgee Irrigation Landcare. This is represented by Junee Landcare, Narrandera Landcare, Coolamon Landcare, Mirrool Landcare, Yanco Creek and Tributaries Advisory Council, Murrumbidgee Field Naturalists, Mirrool Creek Growers, Wagga Wagga Urban Landcare	To foster partnerships that enable community based sustainable land management improvements.	Community driven sustainable resource management.
Local Governments Narrandera Shire Council, Wagga Wagga City Council, Temora Shire Council, Lockhart Shire Council, Bland Shire Council, Carrathool Shire Council, Coolamon Shire Council and Junee Shire Council	To partner with public land managers to facilitate coordinated action and undertake programs to improve NRM outcomes.	Coordinated weed and pest control and urban-based NRM activities.
Public Land Managers NPWS, Forestry Corporation and Crown Lands	To partner with public land managers to facilitate coordinated action and undertake programs to improve NRM outcomes.	Coordinated weed and pest control and community-driven cultural land management.
Farming Groups Farmlink, NSW Farmers, Central West Farming Systems	To support networks, groups and social processes to bring about change.	Community driven NRM.
Landholders Broadacre cropping and graziers	To drive widespread practice change across our rural landscape.	Protect and enhance farm assets.
Research organisations National Malleefowl Recovery Group, ANU (Sustainable Farms), CSU, NSW Malleefowl Recovery Team, Lake Cowal Foundation	Connecting customers to local and contemporary information that demonstrates the environmental, economic, social and cultural benefits of NRM practices.	Landscape and species-specific conservation and research.



Landscape Investment Opportunity

Malleefowl Population Supplementation

Riverina Local Land Services in partnership with the National Malleefowl Recovery Team has successfully obtained NSW Ethics approval and a Scientific Licence to harvest eggs from active Malleefowl mounds. The eggs are then incubated and when the chicks hatch, they are fitted with monitoring backpacks and released into the Malleefowl sanctuary on the nearby property “Acres” which was established in Year 1 of the “Reviving Riverina’s Malleefowl” project. The long-term aim is to establish a viable, fit population of juveniles in the sanctuary which can then be translocated into Malleefowl reserves on public and private land within the project area. There is also scope to involve the large Malleefowl populations found in Western Local Land Services country near Mt Hope to avoid genetic issues.

Potential Collaborators

Australian Government, National Malleefowl Recovery Group, NSW Malleefowl Recovery Team, Landholders engaged through the “Reviving Riverina’s Malleefowl” project, Griffith Local Aboriginal Land Council, NSW National Parks and Wildlife Service.



Malleefowl safe haven now a reality

<https://youtu.be/CvkRwD5jqrl>

7.3 Irrigation and Floodplain Landscape

The vision for the Irrigation and Floodplain Landscape is for a patchwork of vibrant communities, productive areas and listed wetlands, all supported by reliable water supplies.

The Irrigation and Floodplain Landscape was developed on low-relief alluvial clay and loams with intermittent sandhills and shallow drainage lines. This landscape was dominated by Black Box depressions, Boree woodlands, heaths on sandy rises and chenopod rangelands. Watercourses, ephemeral lakes and rain-fed depressions supported River Red Gum forests and wetland species. The area has been highly modified with extensive land clearing and the building of irrigation infrastructure taking place.

Broadacre Irrigated farms with their highly modified landscapes provide opportunities for growing crops such as rice, cereals, canola, pastures, cotton and soybeans. Horticultural crops such as grapes, citrus and vegetables are grown around the towns of Leeton and Griffith. Lighter soils throughout the area are increasingly being developed for nut production such as almonds. The Irrigation areas are operated by two private irrigation companies: Coleambally Irrigation Co-operative Limited and Murrumbidgee Irrigation Limited. Additional licenses are held to extract water from the Murrumbidgee river and ground water.

Remnant vegetation, wetlands and irrigation infrastructure support refuge populations of threatened species such as the White Browed Treecreeper, Australasian Bittern, Southern Bell Frog and Australian Painted Snipe.

The Murrumbidgee River and associated tributaries, flood-runners and wetlands are the predominant areas of high significance to the Wiradjuri community due to their abundant food and water resources and their importance as pathways and songlines. Sand dunes within the Irrigation area such as those found at Koonadan to the north of Leeton were also utilised as burial grounds.

Phragmites Reedbed in the Lowbidgee.



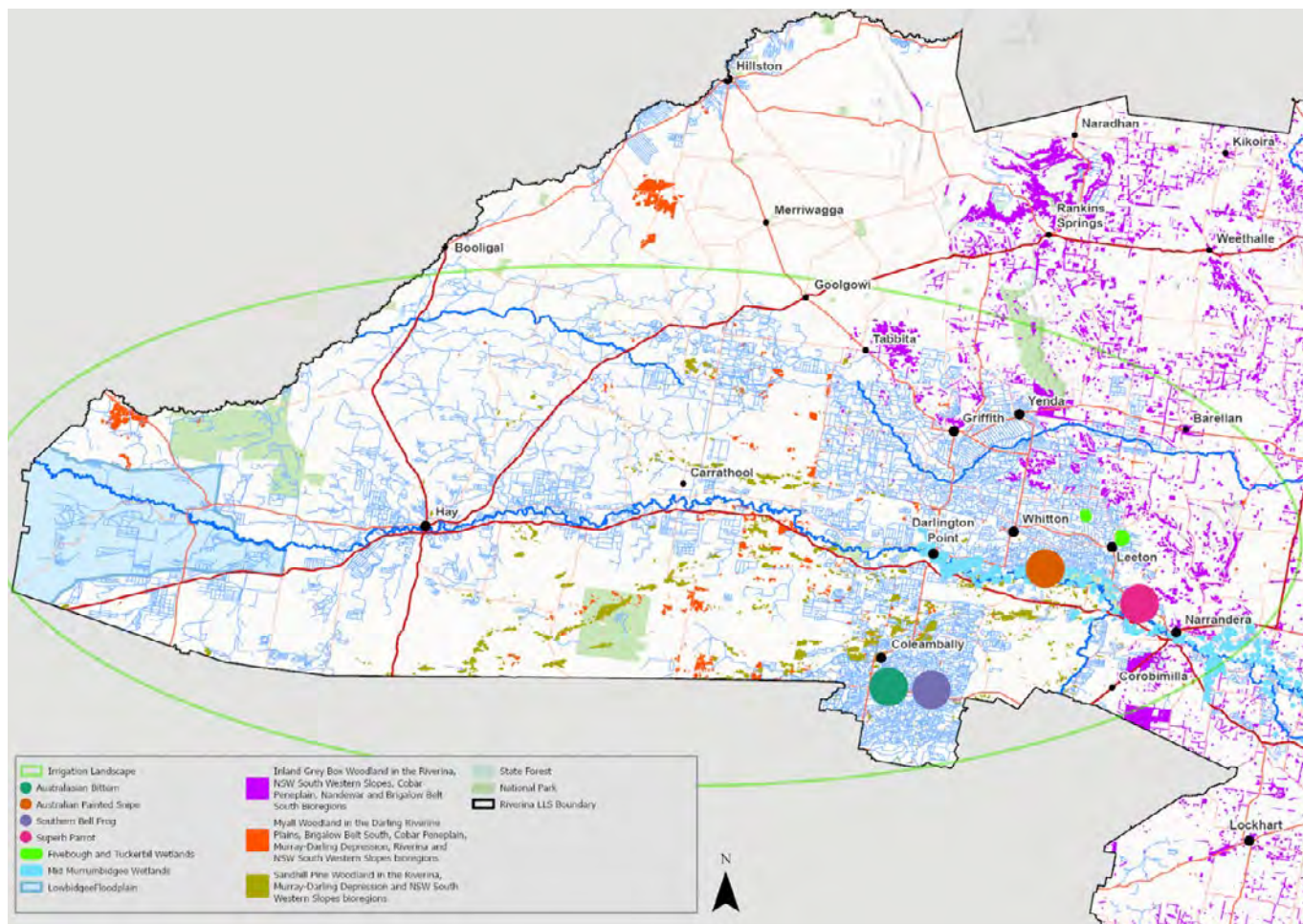


Figure 7.3: Map of key sites/locations in the irrigation and floodplain landscape.

Assets of the Irrigation and Floodplain Landscape

There are several natural, cultural and climatic assets that influence how natural resources and agriculture are managed within this Landscape. These assets include:

ASSETS	DESCRIPTION
Significant Species	Black falcon, Bush stone curlew, Australasian bittern, Southern bell frog, Superb parrot, White browed tree creeper, Glossy black cockatoo, Australian Painted Snipe, Trout Cod, Murray Crayfish, Sandhill Pine Woodlands, Grey Box Woodlands, Acacia melvillei and Weeping Myall Woodlands.
Wetlands	Fivebough Wetlands (Ramsar), Tuckerbil Wetlands (Ramsar), Nericon and Campbells Swamp, Barren Box wetland
Aboriginal Cultural Heritage	Murrumbidgee River environs and associated floodplains, Barren Box, Fivebough and Tuckerbill wetlands, Nericon and Campell's swamps, Koonadan Burial Ground, Cocoparra and Coonapaira Ranges.
Waterways	The water ways of the area are dominated by the Murrumbidgee River and associated ephemeral creeks and flood runners. In the Murrumbidgee and Coleambally Irrigation Areas many waterways have undergone extensive modification and are now an integrated part of the irrigation supply and drainage systems.
Climate	Persistently dry semi-arid climate characterised by hot summers and cool winters. The highest rainfall occurs between May and September. Summer rainfall tends to occur mainly from localised thunderstorms; more reliable rainfall occurs during winter. The average annual rainfall is 406 mm in Griffith and 432 mm in Leeton.
Soils	The highest value soils are located between Griffith and Coleambally. Salinity is a management priority for this landscape.
Community	The area is represented by strong and vibrant multi-cultural communities and several key stakeholder groups including, SunRice, Ricegrowers' Association of Australia, Murrumbidgee Irrigation and Coleambally Irrigation Cooperative Limited and the Murrumbidgee Field Naturalists.

Threats to the Irrigation and Floodplain Landscape

THREATS	DESCRIPTION
Pests	The urban areas of Griffith and Leeton support a large feral cat population. Feral goats and pigs are present in the Ranges. Foxes are widespread in the urban fringe and agricultural areas. Rabbits are an issue on the sandy soils associated with the dunes and riparian zones. Various horticultural pests including Queensland Fruit Fly and several industry specific viruses and pests exist in the area.
Weeds	Weeds are a significant issue in the Irrigation Areas with the localised presence of the aquatic weeds, Alligator Weed and Sagittaria, Crop weeds and other weeds such as Box Thorn, Silver leaf night shade and Spiny Burr Grass are of concern with many weeds spread along and by the irrigation channel network.
Climate	Climate impact profiles (DECCW 2010) suggest that by 2050 this area will be hotter, with decreasing annual rainfall. Irrigation systems will be dependent on increasingly variable water supplies.
Salinity	The management of shallow water tables and saline drainage is fundamental to the long-term viability of irrigation. The Irrigation companies have developed a range of policies such as Water Use Policies that build on the Land and Water Management Plans and take into consideration current best practice and changing crop types that assist in water table management.
Erosion	Preventing wind erosion through managing stubbles in irrigated crops and the level of groundcover within intensive horticultural plantations is the most effective way to minimize wind erosion in the landscape.
Community	The Irrigation Area communities see their agricultural production as a key component of the country's food security. Ongoing major water reforms initiated through the Murray–Darling Basin Plan may have significant impacts on community resilience, business and enterprise confidence and future development opportunities.



Australasian Bitterns in a rice crop near Leeton.

Priority outcomes for the Irrigation and Floodplain Landscape

RLP OUTCOMES

The ecological character of Ramsar sites is maintained or improved.

The trajectory of species targeted under the Threatened Species Strategy, and other EPBC Act priority species, is improved.

The condition of EPBC Act listed Threatened Ecological Communities is improved.

The conditions of soil, biodiversity and vegetation are improved.

Agriculture systems have adapted to significant changes in climate and market demands.

NRM FRAMEWORK

Aboriginal Cultural Heritage and traditional knowledge is conserved.

Threats to healthy landscapes and soils are declining.

Reduced economic and ecological losses from invasive species.

Improved water quality and waterway health.

Community takes responsibility for maintenance and improvement of natural and cultural resources.

Conservation of important native vegetation.

AG FRAMEWORK

Producers increase their productivity and sustainability through improved land management strategies and production processes.

Producers increase their productivity and sustainability through enhancing the condition of their natural assets.

Producers are better prepared to manage risks associated with climate variability and major disruptor events.

Producers are supported when responding to major events including drought, fire and flood.

Landscape Priority Actions

1. Explore opportunities for producer adaptations to seasonal variability and climate change.
2. Support land managers and community to protect and enhance soil, water, and biodiversity through education, advice, programs and partnerships.
3. Create opportunities for First Nations people and community to care for Country.
4. Connect primary producers with other stakeholders, partners and incentive programs to grow primary industries and healthy environments.

Landscape Implementation Activities



Provide products and services that support and enable customers and land managers to prevent, prepare, respond and recover from reduced irrigation water allocations due to seasonal variability, climate change and natural disasters such as drought.



Undertake on ground projects to enhance targeted species and ecosystems to provide multiple benefits over the longer term for species such as:

- Australasian bittern
- Southern bell frog
- Superb parrot
- Australian painted snipe.



Improve the health and resilience of landscapes through protecting, enhancing, and revegetating native vegetation focusing on endangered ecological communities such as Weeping Myall Woodlands.



Provide opportunities to improve habitat values and hydrology on wetlands including Fivebough and Tuckerbil Wetlands, mid-Bidgee wetlands and other significant wetlands.



Build resilience at the farm scale to help manage seasonal variations and climate impacts through delivery of capacity building events and supporting landholders to follow best practice.



Provide opportunities for the use of the cultural Access License at wetlands such as Campbells and Nericon Swamps and other culturally significant sites.

Support the undertaking of Cultural burns on sensitive lands and wetlands.



Provide customer focused opportunities for on farm NRM.

Work with land managers and community organizations such as Bidgee Irrigation and IREC to remove barriers to sustainable practice change and deliver capacity building events.

Develop opportunities for external investment in NRM for example the rice industry and Australasian Bitterns.

Key Stakeholders of the Irrigation and Floodplain Landscape

Below is a list of Local Land Services key stakeholders in the Irrigation and Floodplain Landscape that will be engaged with to develop and deliver projects.

STAKEHOLDER	WHY IS THIS RELATIONSHIP IMPORTANT	STAKEHOLDER PRIORITIES
Local Aboriginal Land Councils Griffith, Leeton and District, and Narrandera.	To promote, showcase and share traditional and contemporary land management knowledge and practices.	Practicing Traditional Land Management techniques on Country including exploring the use of Cultural water on significant wetlands and creating meaningful and long-term employment opportunities for the Aboriginal community.
Landcare Bidgee Irrigation	To foster partnerships that enable community based sustainable land management improvements.	Community driven NRM.
Local Government Murrumbidgee Shire Council Griffith City Council Leeton Shire Council Narrandera Shire Council	To partner with public land managers to facilitate coordinated action and undertake programs to improve NRM outcomes.	Coordinated weed and pest animal management programs. Barren Box, Fivebough and Tuckerbil Wetlands, Campbells and Nericon Swamps.
Public Land Managers National Parks WS Crown Lands Coleambally Irrigation Cooperative Limited Murrumbidgee Irrigation	To partner with public land managers to facilitate coordinated action and undertake programs to improve NRM outcomes.	Coordinated weed and pest animal management programs. Murrumbidgee Valley National Park. Fivebough and Tuckerbil Wetlands. Coleambally Biodiversity Reserve.
Farming Groups NSW Farmers-Southwest Irrigation Research and Extension Committee, SunRice, Ricegrowers' Association of Australian, Riverina Wine Grapes Marketing Board Griffith and District Citrus Growers Inc	To support networks, groups and social processes to bring about change.	Community driven NRM.
Landholders Irrigators, Corporate Enterprises and Broadacre cropping	To drive widespread practice change across our rural landscape.	Protect and enhance farm assets.
Research organisations Charles Sturt University Department of Primary industry	Connecting customers to local and contemporary information that demonstrates the environmental, economic, social and cultural benefits of NRM practices: Basin Plan Monitoring.	Baseline and ongoing monitoring of significant species and communities.

Landscape Investment Opportunity

“Big Water” Revival

Murrumbidgee means Big Water in Wiradjuri and there is an excellent opportunity to effect generational change whilst building on significant investment in the Wetlands and Billabongs through funding of the “Boosting the Bunyip Bird Yield” project by the Regional Land Partnerships program and the Murray Darling Basin Authority’s investment in the “Parrots, Koalas and Cudgel Creek” project through the Healthy Rivers program. A landscape-based approach to revive wetlands and Billabongs on public and private land utilising the combined effects of Cultural and Environmental water flows, would have incredible benefits to the terrestrial and aquatic environs of the Mid Bidgee region. Key species including the Australasian Bittern, Australian Painted Snipe, Koala, Superb Parrot and Southern Bell Frog would all benefit from this investment. Existing partnerships and collaborations would be strengthened and the future of RAMSAR sites would be secured for future generations.

Potential Collaborators

Australian Government, Commonwealth Environmental Water Office, Griffith and Leeton Local Aboriginal Land Councils, Murrumbidgee Irrigation, SunRice, Griffith City Council, Landholders, Murrumbidgee Field Naturalists.





Australasian Bittern case study in the Irrigation wetlands landscape



Riverina Local Land Services has invested funding from both NSW and Australian Government sources into the Irrigation and Floodplain Landscape to support programs that protect the regions assets and reduce key threats. The following project case study received funding through the Australian Governments Regional Partnerships Program and highlights our strong collaboration with local landholders and SunRice as a Corporate partner.

<https://youtu.be/sV9AXxFFWoA>

7.4 Rangelands Landscape

The vision for the Rangelands landscape is for a well-managed natural environment that supports productive enterprises and viable communities.

The Rangelands landscape is in the west of the Local Land Services Riverina region and features a semi-arid climatic zone. The landscape comprises a great variety of habitats, which support a rich diversity of species and communities. The flora and fauna communities are adapted to the Rangelands climate and soil types and tend to have a 'boom and bust' ecology. The landscape consists of chenopod shrublands, grasslands, open woodlands of Boree, sandhill communities of cypress pine, Belah and rosewood, river red gum forests, black box depressions and ephemeral wetlands. The landscape incorporates highly significant Indigenous cultural heritage areas, values and elements.

The Rangelands is regarded as one of the best wool growing regions in Australia and is also home to a strong sheep meat industry and an increasing beef cattle industry. There is considerable irrigation development in this part of the region associated with licenses to pump water from the Murrumbidgee river or from bores. The mix of enterprises includes dryland cropping, pastures, nuts and irrigated crops such as lucerne, rice, cotton, cereals, maize, millet and sorghum, often marketed as organic.

The Nari Nari people are the traditional custodians of the land defined as the Rangelands. It is believed that the Nari Nari group is an amalgamation of tribes from the surrounding areas including Wiradjuri from the east and the Mathi Mathi found in the west (Hay LALC and Nari Nari Tribal Council, 2002). In 2013 a purchase of 19 properties and their water rights was undertaken to form the 87,816 ha Nimmie Ciara now known as Gayini (meaning water) In 2019, Nari Nari Tribal Council was legally transferred the ownership of Gayini. The Nari Nari Tribal Council works within a consortium including the Murray Darling Wetlands Working Group, the Nature Conservancy and the Centre for Ecosystem Services, UNSW.

Ideal Plains wanderer habitat to the south of Hay.



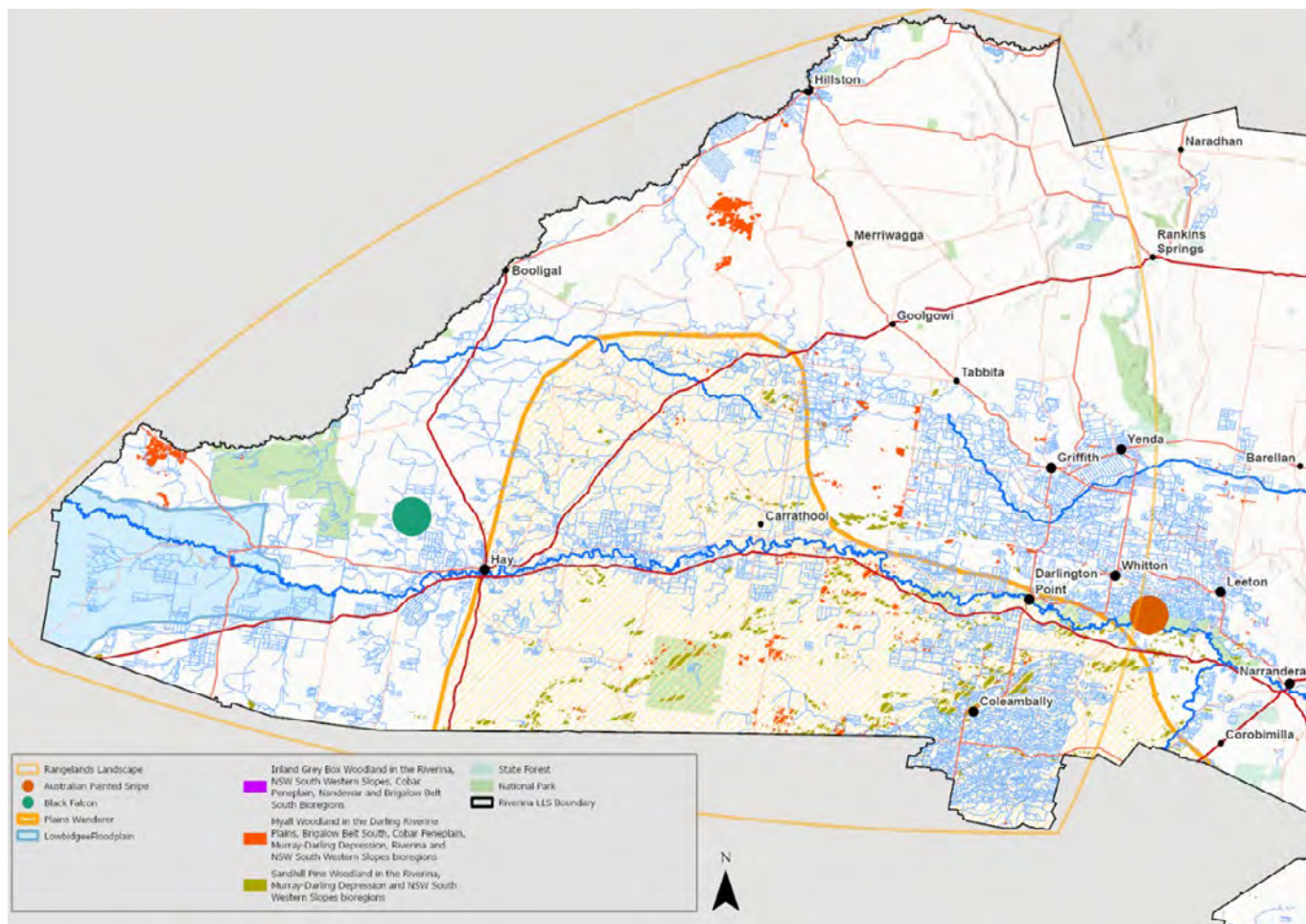


Figure 74: Map of key sites/locations in the Ranglands landscape.

Assets of the Rangelands Landscape

There are several natural, cultural and climatic assets that influence how natural resources and agriculture are managed within this landscape. These assets include:

ASSETS	DESCRIPTION
Significant Species	Plains Wanderer, Black Falcon, Australian Painted Snipe, Malleefowl, Sandhill Pine Woodlands, Riverine Plain Grasslands, Grey Box Woodlands and Weeping Myall Woodlands.
Aboriginal Cultural Heritage	Nimmie Caira (Gayini), Lorenzo, Toogimbie, Glenhope and Lake Ita.
Waterways	Murrumbidgee and Lachlan River floodplains and floodplains of Nimmie Caira.
Soils	The highest value soils are located along the riparian areas of the Murrumbidgee River. Wind erosion and salinity are the management priorities for this landscape.
Climate	Persistently dry semi-arid climate characterised by hot summers, cool winters and highly variable rainfall, with the highest rainfall occurring in May and September. Summer rainfall tends to occur mainly from localised thunderstorms, while more consistent rainfall occurs in the winter. Rainfall averages 300 mm to 350 mm.
Community	The Rangelands community is highly resilient and adaptive. Strong relationships exist with groups including Hay Plains Landcare, Nari Nari Tribal Council, Hay Working Party as well as local landholder groups with interest in sustainable grazing and Threatened Species conservation.



Landscape fox baiting on the Hay plains.

Threats to the Rangelands Landscape

THREATS	DESCRIPTION
Pest Animals	Species of greatest concern include feral cats, foxes and pigs which all have a significant impact on threatened species through habitat destruction and predation.
Erosion	Preventing wind erosion through managing the level of groundcover is the most effective way to minimize wind erosion in the Rangelands.
Climate Impacts	The impacts of projected declines in rainfall and increases in temperature on rangeland production systems are expected to be important in terms of required managerial and enterprise adaptations.
Community	The Rangelands encompasses the area established for the South-west Renewable Energy Zone. Balancing agricultural production, Threatened Species Conservation and significant investment in renewables will require intense consultation.



Plains wanderer with new chicks.

RLP OUTCOMES

The trajectory of species targeted under the Threatened Species Strategy, and other Environment Protection and Biodiversity Conservation Act 1999 priority species, is improved.

The condition of Environment Protection and Biodiversity Conservation Act 1999 listed. Threatened Ecological Communities is improved.

The conditions of soil, biodiversity and vegetation are improved.

Agriculture systems have adapted to significant changes in climate and market demands.

NRM FRAMEWORK

Aboriginal Cultural Heritage and traditional knowledge is conserved.

Threats to healthy landscapes and soils are declining.

Reduced economic and ecological losses from invasive species.

Improved water quality and waterway health.

Community takes responsibility for maintenance and improvement of natural and cultural resources.

Conservation of important native vegetation.

AG FRAMEWORK

Producers increase their productivity and sustainability through improved land management strategies and production processes.

Producers increase their productivity and sustainability through enhancing the condition of their natural assets.

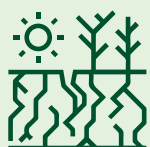
Producers are better prepared to manage risks associated with climate variability and major disruptor events.

Producers are supported when responding to major events including drought, fire and flood.

Landscape Priority Actions

1. Explore opportunities for producer adaptations to seasonal variability and climate change.
2. Provide incentive programs, products and advisory services to support producers to implement industry best practice.
3. Support land managers and community to protect and enhance soil, water, and biodiversity through education, advice, programs and partnerships
4. Create opportunities for First Nations people and community to care for Country.

Landscape Implementation Activities



Provide products and services that support and enable customers and land managers to prepare for extended periods of drought and respond and recover from reduced ground cover due to seasonal variability and climate change.



Provide products and advisory services that support and enable customers and land managers to implement improved practices for farming systems sustainability.



Undertake on ground projects to enhance targeted species and ecosystems to provide multiple benefits over the longer term.



Build resilience at the farm scale to help manage seasonal variations and climate impacts through delivery of capacity building events and supporting landholders to follow best practice.



Support First Nations and land managers to protect sensitive and significant sites.



Continue to provide opportunities for First Nations people to share knowledge and practices through annual presentation to The University of Sydney and Charles Sturt University students.

Key Stakeholders of the Rangelands Landscape

STAKEHOLDER	WHY IS THIS RELATIONSHIP IMPORTANT	STAKEHOLDER PRIORITIES
Local Aboriginal Land Councils Nari Nari Tribal Council Hay Hay Inter-Agency Group	To promote, showcase and share traditional and contemporary land management knowledge and practices.	Nimmi Caira and traditional lands.
Landcare Murrumbidgee Landcare including Bidgee West Landcare. This is represented by Hay Plains Landcare Group	To foster partnerships that enable community based sustainable land management improvements.	Community driven sustainable resource management.
Local Government Hay Shire Council Carrathool Shire Council Murrumbidgee Shire Council	To partner with public land managers to facilitate coordinated action.	Coordinated weed control.
Public Land Managers National Parks and Wildlife Services and Crown Lands	To partner with public land managers to facilitate coordinated pest control action.	Coordinated pest animal control.
Farming Groups NSW Farmers, Hay Inc	Developing and supporting networks, groups and social processes to bring about change.	Community driven sustainable resource management.
Research organisations Department of Primary Industries, University of Sydney, Charles Sturt University	Connecting customers to local and contemporary information that demonstrates the environmental, economic, social and cultural benefits of NRM practices.	Baseline and ongoing monitoring of regenerating rangelands.

Landscape Investment Opportunity

Clean air across the Plains

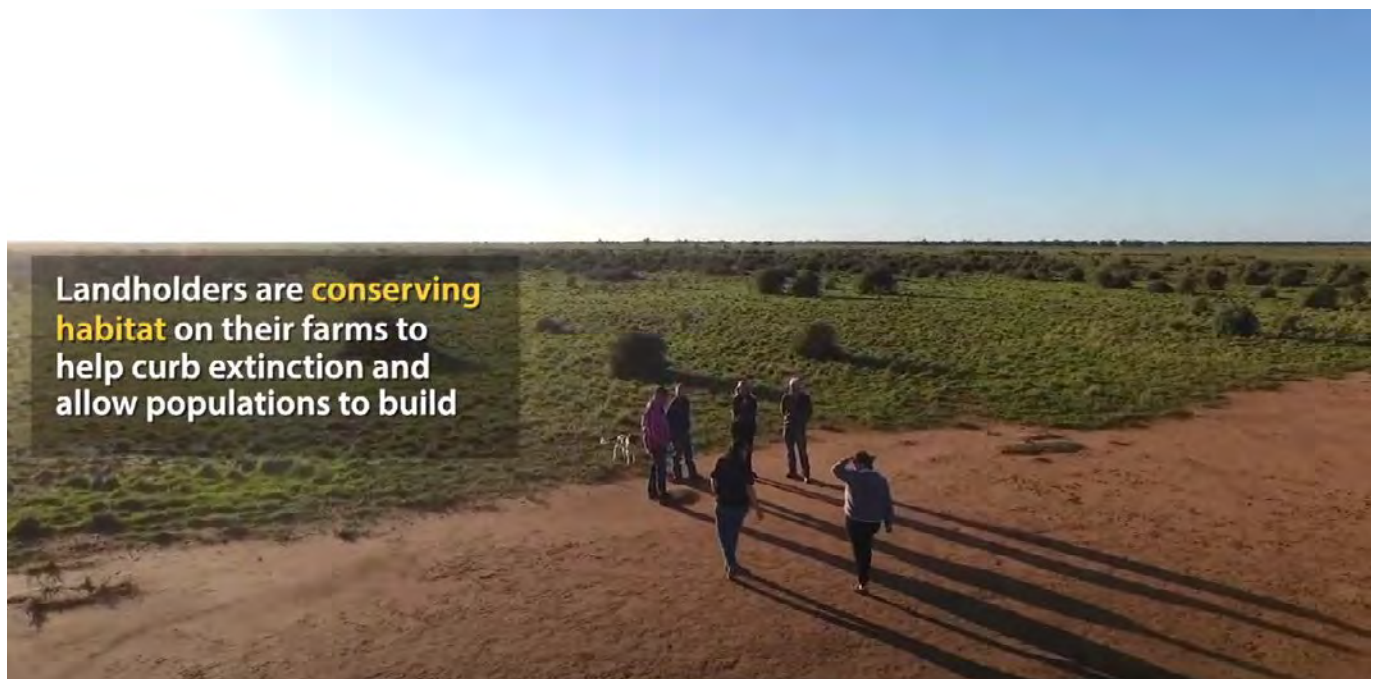
Nationally and internationally, there is a need to produce and use cleaner and renewable energy sources. Development of the South-West Renewable Energy Zone within the rangelands area will allow for opportunities to enhance on significant investment already undertaken in this region with the “Bringing the Plains-wanderers Back from the Brink” project funded by the National Regional Land Partnerships and New South Wales Saving Our Species programs.

Collaboration between key investors of the South-West Renewable Energy Zone, National Parks, private landholders and government will enable a sanctuary to be established within the Plains-wanderer project area. This will improve the survival rate of captive bred birds released into the area from our partner zoo breeding facilities and is viewed as a critical next step for the captive breeding program and future releases to safeguard the population of the Critically Endangered Species.

Other key species and Threatened Ecological communities that would benefit from a large-scale sanctuary and wide scale feral animal control include the Black Falcon, Grey Falcon, Bush Stone Curlew, Sandhill Pine woodlands and Weeping Myall Woodlands.

Potential Collaborators

Australian Government, Southwest Renewable Energy Zone investors, NSW National Parks and Wildlife Service, Nari Nari Tribal Council, Hay Aboriginal Working Party, Office of Environment & Heritage, Landholders, Werribee Zoo.



Plains wanderer case study in the Rangelands

Riverina Local Land Services has invested funding from both NSW and Australian Government sources into the Rangelands to support programs that protect the region's assets and reduce key threats. The following project case study received funding through the Australian Governments Regional Partnerships Program.

<https://www.youtube.com/watch?v=zSYuAb4Utg4>



8.0

Implementation

Riverina Local Land Services' Natural Resource Action Plan is setting a regional strategic direction for NRM and relies on whole-of-government and whole-of-community contributions. The following principles of the resilience approach are being applied for implementation:

- Community resilience requires direct action to support diversity, flexibility and capacity building to adapt and change.
- Landscapes are dynamic systems with interacting social, cultural and ecological components.
- Collaborative regional planning processes will harness and align coordinated action towards common goals for resilient landscapes and communities.
- Incorporation of adaptive management and risk assessment approaches will assist in managing risks, identifying opportunities and preparing for uncertainty.

These principles will be applied to opportunities for joint planning and delivery of the goals and outcomes through:

- building community and Aboriginal capacity in NRM
- promoting land use practices for improved groundcover and soil condition
- improving water resource condition across the catchment for rivers, streams, wetlands and groundwater
- improving habitat connectivity, including remnant vegetation, riparian vegetation and stream habitat
- facilitating integrated weed and pest control
- supporting catchment-wide Landcare networks and partnerships
- integrating monitoring and reporting frameworks to provide a collaborative view of catchment condition.

Key components for implementation are partnerships and collaborations, governance arrangements and adaptive management through the monitoring, evaluation and reporting framework.

8.1 Project Development & Governance

At the Program level, Riverina Local Land Services will facilitate collaborative planning to consider more detailed development of regional outcomes and landscape plans into programs and projects through identification of investment opportunities for delivery of management actions. A range of considerations will include land tenure issues, local government requirements and land-use planning. Each program concept considers the responsibilities of relevant partners for components such as planning, delivering and monitoring.

Program and project development teams will consider details such as cost, technical feasibility, community interest and stakeholder support to determine an overall investment priority for the program. For programs to be considered for investment they will include alignment of priorities with investor priorities, target outcome and reporting processes and have specified locations, partners, outputs and milestones identified.

While Riverina Local Land Services is expecting to continue developing annual investment plans based on government funding and other investment, many other activities contributing to natural resource management will be recognised for delivering the plan. Local governments, environmental groups, Landcare networks and groups and industry groups all undertake natural resource management activities which contribute to the outcomes of this document.

At the project level, future Riverina Local Land Services projects will, where possible, be based on spatial prioritisation modelling of the Riverina region for the identification and selection of strategic investment areas. This approach is currently being used for developing strategic corridors for climate change adaptation. Depending on identified priority approaches and/or priority areas at the time of investment planning, specific aims can be incorporated into the modelling process. For example, where projects aim to reinstate, conserve and connect native vegetation, including wetlands, connectivity will be achieved by applying two strategies:

1. The establishment and linkage of vegetation corridors with new native vegetation and,
2. The protection and enhancement of existing native vegetation through environmental stewardship.

The conceptual framework that will be used to show where native vegetation can contribute to habitat for species settlement (remnant native vegetation patches greater than 10 hectares) as well as for dispersal between habitats for settlement (new native vegetation corridors) is based on a key CSIRO review of the role of habitat in providing structural connectivity for native fauna.



8.2 Working with Community

A healthy and productive Riverina region and its communities working together – *Yindyamarra*.

Riverina Local Land Services Natural Resource Action Plan has been developed as the primary mechanism for facilitated collaboration, consultation and involvement in NRM planning and delivery in the Riverina region. It establishes ongoing coordinated NRM services within and across catchment and landscape boundaries. It aligns with and will effectively deliver the relevant plans, policies and strategies of government agencies for the Riverina region. Implementation will require management of the region's natural resources with, and through, key partners and collaborators.

The Riverina community continues to face a range of challenges and opportunities in natural resources, regional economics, sustainability and wellbeing, including:

- a wide diversity of communities, demographics, land tenure, lifestyles and livelihoods
- predominantly primary industry-based economies
- financial and capacity constraints on adaptation to changing circumstances and climate change
- degradation of natural resource assets (land, water and biodiversity) through poor land management
- changing focus on and funding for NRM and the Landcare ethic
- lack of knowledge and respect for Aboriginal practices, history and cultural linkages
- invasive plants and animals
- water reforms, such as the Murray–Darling Basin Plan, water buybacks and water sharing plans
- technology advances in spatial analyses, site monitoring and communication.

Riverina Local Land Services Natural Resource Action Plan aims to drive improvements to the wellbeing of landscapes, land managers and communities by:

- supporting sustainable land management practices for healthy and sustainable production and food security
- maintaining and enhancing the diversity and functionality of our natural environments
- building communities that are vibrant, viable and resilient to change
- managing sensitive aquatic environments for consumptive and environmental water needs
- ensuring that landscapes as well as individuals, land managers and businesses are adaptable to change
- connecting people and landscapes so that environmental, economic and cultural significances are recognised.

8.3 Reviewing our Priorities

It is inevitable that new priorities will emerge within the four Riverina landscapes during the 5-year lifespan of this Action Plan. As a regional NRM organisation, Riverina Local Land Services is agile and capable of adapting to new threats, changing seasonal conditions or changes in government priorities, regional, local or community concerns. We will monitor emerging priorities from a local, state, and national perspective.

As an example, there is an emerging issue within the Rangelands Landscape resulting from the NSW Government's priority to support a greater mix of low-emission and low-cost renewable energy sources. The NSW Government has identified several Renewable Energy Zones (REZs) across the State, including South-West NSW. The Plains Renewable Energy Park, located within the South-West REZ, is strategically positioned to generate cleaner and cheaper energy for NSW households and businesses. The planning of the renewable energy park is in its initial stages. The project will generate significant investment in the broader Hay area and will operate alongside agricultural and farming activities. Riverina Local Land Services will be strategically involved with this development to ensure that the integrity of past, current and future investments in key NRM activities involving the Black Falcon and Plains wanderer projects are maintained.

The Local Land Services Natural Resource Management Framework 2021-2026 (Local Land Services NRM Framework) provides an opportunity for Local Land Services to review existing regional priority setting approaches and establish a contemporary prioritisation framework and set of investment principles that can be adopted at State and regional scales to assist NRM services decision making.

Objective 3 of the Local Land Services NRM Framework is: **To take action on the top threats to the health and resilience of NSW landscapes and catchments.** To support this objective, the NRM Framework listed the *identification of targets and priority areas across the State for the highest return-on-investment in native vegetation management, riparian management, groundcover management and environmental biosecurity as a high priority, year one priority action.*

In unison with the four other NRM Framework objectives, successful implementation of Objective 3 will support achievement of the:

- NRM Framework's five-year goal, *by 2026, 80% of our customers receiving NRM services have adopted improved NRM practices on their properties;*
- Objective 3 Key Results:
 - Key result 3.1: Our customers are improving and restoring native vegetation (enhancing habitat quality, connectivity and biodiversity)
 - Key result 3.2: Our customers are rehabilitating waterways and their riparian zones in high priority catchment areas
 - Key result 3.3: Our customers are maximising ground/vegetative cover (as a surrogate for improving soil and waterway health and reducing erosion, flood and drought risk)
 - Key result 3.4: Our customers are engaged in best practice weed, pest and disease management, reducing the impact of invasive species and diseases on environmental values; and
- Local Land Services State Outcome, *Productive and Sustainable Land Use* which is measured by the increased engagement of land managers in agricultural and NRM programs and increased area of land under improved land management (i.e., changed practice).

By defining a contemporary NRM Prioritisation Framework and developing a set of Principles, Riverina Local Land Services will be better equipped to target its finite NRM resources for greater Objective 3 impact and maximise achievement of the Natural Resource Action Plan.

8.4 Reviewing our effectiveness

Transparent evaluation and reporting underpin the implementation of this plan and is integral to how Local Land Services work for and with its stakeholders. The performance of Riverina Local Land Services is independently audited on a regular basis by the Natural Resources Commission through the Performance Standard for Local Land Services. Reports from this process are made publicly available.

Local Land Services uses the MERI framework for assessing the state and trend of asset conditions and allows a comparison of results against planned immediate, intermediate and long-term outcomes. This enables a systematic and objective assessment of the appropriateness, effectiveness and efficiency of policies, projects and programs.

Specifically, Local Land Services collects data on:

- service delivery priorities of our customers
- actions implemented and services delivered
- outcomes achieved as a result of, and performance feedback from participants on, events and advisory/extension services, and customer satisfaction.

As part of the statewide output reports, progress will be monitored against the NRM 6 monthly and reviewed annually.

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