2025

Mid West (North Midlands) Regional Drought Resilience Plan

Prepared for the North Midlands RDRP region incorporating the Shires of Carnamah, Coorow, Irwin, Mingenew, Morawa, Perenjori and Three Springs.

GOVERNMENT OF WESTERN AUSTRALIA

MID WEST DEVELOPMENT COMMISSION

Australian Government
Department of Agriculture, Fisheries and Forestry

Future Drought Fund

Department of Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA

The Regional Drought Resilience Planning Program is jointly funded through the Australian Government's Future Drought Fund and the WA Department of Primary Industries and Regional Development.

Acknowledgement of Country

We respectfully acknowledge the Yamatji and Noongar people as the traditional owners of the North Midlands subregion. We recognise their continuing connection to land, waters and community and pay our respects to them and their cultures, and to Elders past, present and emerging.

Cover Image Photographer: Brian McMahon, Camel Soak, Perenjori Rothsay Rd, Perenjori WA, Australia - Published on October 13, 2023.

Document prepared in conjunction with:

BLUESALT Consulting

MID WEST DEVELOPMENT COMMISSION

Version	Date	Prepared by	Organisation	Approved	Notes
0.1	16.09.2024	Rhiannon Bristow-Stagg, Anna Dixon	BlueSalt Consulting	Anna Dixon	Opening
0.2	19.09.2024	Rhiannon Bristow-Stagg	BlueSalt Consulting	Anna Dixon	For initial CSIRO-DPIRD Review.
0.3	12.12.2024	Karen Hazlett	BlueSalt Consulting	Anna Dixon	Draft
0.4	14.02.2025	Karen Hazlett, Heidy Sands, Rhiannon Bristow-Stagg	BlueSalt Consulting	Anna Dixon	Draft
0.5	19.02.2025	Gillian Johnson, Project Officer	Mid West Development Commission (MWDC)	Working version	Draft
0.6	13.03.2025	Gillian Johnson, Project Officer	MWDC	Working version	Draft
0.7	25.03.2025	Gillian Johnson, Project Officer	MWDC	Nils Hay	Approved for community review process.
0.8	11.04.2025	Rhiannon Bristow-Stagg, Anna Dixon	BlueSalt Consulting	Anna Dixon	Draft incorporating community input.
0.9	28.04.2025	Gillian Johnson, Project Officer	MWDC	Working version	Draft
0.10	30.04.2025	Rhiannon Bristow-Stagg	BlueSalt Consulting	Anna Dixon	Draft
0.11	01.05.2025	Gillian Johnson, Project Officer	MWDC	Working version	Draft
0.12	09.05.2025	Gillian Johnson, Project Officer	MWDC	Nils Hay CEO, MWDC	Final

Acknowledgements

The Regional Drought Resilience Planning Program for the Mid West Region (North Midlands) is a locally led project that champions drought resilience and preparedness in the region.

The Regional Drought Resilience Planning Program is jointly funded through the Australian Government's Future Drought Fund and the WA Department of Primary Industries and Regional Development.

This project has been led by the Mid West Development Commission, in partnership with the Department of Primary Industries and Regional Development and supported by the Shires of Carnamah, Coorow, Irwin, Mingenew, Morawa, Perenjori and Three Springs.

The Mid West Development Commission would like to acknowledge the Project Advisory Group for the time and expertise they have contributed to the development of this project, as well as the many stakeholders across the region that have ensured this RDRP is collaborative and reflective of community needs.

Contents

Executive Summary

The Mid West (North Midlands) Regional Drought Resilience Plan (RDRP) has been developed based on the local strategic and policy context, the findings of a Drought Vulnerability Assessment and the outcomes of an engagement process undertaken across the subregion from June to November 2024, with follow on conversations to April 2025. Development of the RDRP was guided by a diverse Project Advisory Group and broader community engagement focussed on a series of 'Community Conversations' held in Carnamah, Coorow, Irwin, Mingenew, Morawa, Perenjori and Three Springs.

The goals for the North Midlands RDRP are to create a plan that enables the subregion to:

- Build economic, environmental and social resilience to future droughts
- Be in a stronger position to adapt to climate change
- Form stronger connections and networks within and between regions
- Apply best practice data and information to make better decisions.

The climate in the subregion has already undergone change, including reducing seasonal rainfall (BoM, 2023a) and increasing temperatures. A continuation of the trend for decreasing and more fragmented winter rainfall zones is projected with high confidence (CSIRO, 2024). In 2006 and 2007, the broader Mid West region experienced two consecutive 1 in 100-year drought events and was officially declared as in drought (Mid West Development Commission (MWDC), 2022). More localised parts of the region have regularly experienced below or very much below average rainfall over the past 25 years (BoM, 2024a).

Because of its past exposure to dry conditions, the North Midlands community and agricultural system has a level of existing experience and resilience that can be used as a foundation to adapt and build future resilience to dry conditions. Broader strengths of the subregion include a high rate of volunteering and civic participation, safe communities, low under-employment, low long-term unemployment and unique ecological biodiversity.

Existing vulnerabilities across the whole subregion include low internet access, a high suicide rate, the rate of unskilled work, air quality (particulate matter) and rate of low family income households. More localised areas of vulnerability also exist, and some local government areas are highly economically dependent on agriculture (Remplan, 2023).

The Mid West (North Midlands) RDRP sets out a vision and outcomes across five themes:

- Resilient Agricultural Systems
- Resilient Community
- Resilient Economy
- Resilient Landscapes, and
- Resilient Water Systems.

These themes provide a pathway upon which to build programs, projects and activities that seek to foster, support and strengthen the building of drought resilience in the subregion.

Definitions

Adaptive Capacity	The features and characteristics that influence the ability to respond now and into the future.
Drought Resilience	The ability to adapt, reorganise or transform in response to changing temperature, increasing variability and scarcity of rainfall and/ or changed seasonality of rainfall, for improved economic, environmental and social resilience.
Drought Impact	The degree of exposure to drought and the inherit sensitivity to drought conditions.
Hot Drought	Total rainfall (mm) during the April to October growing season is in decile 1 and temperatures (°C) during the August to November maturing season are in decile 9.
Green Drought	When there is enough rain to keep a flush of green growth in the landscape, but the underlying soil is too dry to grow enough pasture.

Acronyms

ABCB	Australian Building Codes Board
BoM	Bureau of Meteorology
BSh	Hot semi-arid (Köppen-Geiger classification)
CSa	Hot-summer Mediterranean (Köppen-Geiger classification)
DPIRD	Department of Primary Industries and Regional Development (WA)
DPLH	WA Department of Planning, Lands and Heritage
DVA	Drought Vulnerability Assessment
DWER	Department of Water and Environmental Regulation (WA)
FDF	Future Drought Fund
LGA	Local Government Area (geographic area, not the governing body)
MWDC	Mid West Development Commission
RDRP	Regional Drought Resilience Plan/Planning
SA2	Statistical Area 2 (Australian Bureau of Statistics)
WA	Western Australia

How to Use This Plan

The Mid West (North Midlands) Regional Drought Resilience Plan is an extension of the Mid West Regional Drought Resilience Planning (RDRP) Program, following the Pilot in 2021-2022.

A composite subregion developed for this RDRP, the North Midlands subregion brings together two interdependent areas. The Shire of Irwin (Irwin SA2), with key coastal populations and services in Dongara/Port Denison, has a temperate climate (Peel et al 2007), and a mix of coastal landscapes, dryland cropping, grazing and natural areas. Transitioning to an arid climate, the predominantly inland Shires of Carnamah, Coorow, Mingenew, Morawa, Perenjori and Three Springs (Morawa SA2), have predominantly dryland cropping along with grazing and natural areas, and are characterised by smaller townsites.

This Plan establishes a foundation for the North Midlands subregion to identify and communicate its drought resilience priorities.

It is designed for use by local communities, industries, all levels of government, non-profits and the private sector to:

- Coordinate investment in drought resilience projects
- Facilitate collaboration to achieve shared regional outcomes
- Guide future drought resilience projects
- Inform policy development and funding applications, and
- Monitor and adapt strategies to enhance drought resilience over time.

The Plan synthesises a range of background work and engagement and provides context on the subregion and its drought vulnerability and resilience, an overarching vision and outcomes, a process for ongoing monitoring and evaluation and an investment framework to guide decision-making. The Plan also includes a set of Standing Principles that are designed to help guide in the use, interpretation and implementation of the Plan across all the themes in the Plan.

The vision and outcomes of this Plan are designed to align with priorities at a local, regional and national level and can help deliver on the strategic regional advantages of the Mid West, while deepening visibility of the key themes that help to build drought and dry season resilience in the subregion.

Standing Principles

As a result of the process of community and stakeholder conversations, along with the work of the Project Advisory Group, 10 **standing principles** are shared to help guide the use and implementation of the Plan:

1. **Resourcing:** We encourage consideration of 'resources depletion' during dry seasons and drought in the North Midlands. Often the same pool of people and organisations are called upon repeatedly to provide services, or local governments are asked to contribute outside of budgets. This RDRP and the subsequent implementation plan need to ensure there is adequate funding to activate identified projects. This will also build trust in the role of the RDRP for the subregion.

2. **Traditional Owners:** We encourage the consideration of a 'Right People on Right Country' approach to the activation of outcomes, themes and action ideas that involve Traditional Owners in the region. Leading with this approach will help to foster a sense of ownership, cultural identity and self-determination. This principle is not meant to limit, but to inspire the approach as a first point of conversation in the Plan where feasible.

3. **Place-Based**: The North Midlands RDRP subregion combines coastal and inland LGAs. The unique characteristics of each, along with their interdependencies, require a place-based approach to all stages of the project lifecycle. We encourage consideration of the coastal-inland relationship during the implementation of the Plan.

4. **Level of Influence:** Achieving the Plan outcomes will require a different approach depending on the roles and responsibilities of key stakeholders. The most appropriate approach will range from direct action (where direct control is possible) to capacity-building and education (where there is some level of influence) to advocacy on areas of concern but less control. Different approaches will also be required at different stages of a project to build both short and long term dry season and drought resilience.

5. **Build on Existing Work:** We encourage the use of, and investment in, preliminary investigation activities to reduce duplication, connect with existing groups or projects, strengthen or bolster existing activities, and to foster a continued sense of networking across the region in the use and implementation of the outcomes, themes and action ideas. Several of the Plan's outcomes, themes and action ideas are visible in other regional guiding documents, and the aim is to find the shared space to create positive and lasting resilience in the region in a connected way.

6. **Funding Focus:** We encourage the communities of the North Midlands subregion to seek financial investment from a variety of sources to activate the RDRP outcomes, themes and action ideas. The Future Drought Fund (FDF) is just one source of funding. The Plan may also help to strengthen applications for funding outside the FDF program, by referring to the Plan as an enabling document.

7. **Strategic Focus:** We encourage all local governments to consider how the RDRP and accompanying Drought Vulnerability Assessment (DVA) can support strategic planning for the future that actively embeds dry season and drought resilience.

8. **Local Identity:** We encourage the subregion to continue to share the Good News Stories of living and working in the North Midlands. The experience of dry seasons and drought can cause community members to question their long-term place in the North Midlands. We hope the RDRP, the opportunity of working as a networked region, and the continued aspirations will enable community members in the region to build greater levels of resilience to dry seasons and drought in ways that strengthens their sense of place in the subregion.

9. **Multifaceted:** We note that some action ideas are identified across multiple themes. We have, where appropriate, left these to show that projects developed because of the RDRP may cross multiple theme areas. This has the potential to enhance the diversity of a project offering, impact and outcomes, and ensures that there is opportunity for wider stakeholder involvement, learning and impact. This approach can also help to reduce

duplication of investment and promote less 'siloed' approaches to on-the-ground projects.

10. **Ongoing Update:** We identify that the Plan is a living document, created at a certain point in time, and with the frame of reference of ongoing development. For the RDRP to be a community owned resource, it will require monitoring, evaluating and sharing of learnings within the region. We encourage ongoing community commitment to the North Midlands Resilience Network to support this.

These Standing Principles are designed to provide a foundation upon which the RDRP can be implemented and to continue to develop as a community led resource, for both the short and long term.

Mid West (North Midlands) Background and Context

POLICY AND GOVERNANCE

SOCIAL INDICATORS

ECONOMIC INDICATORS

ENVIRONMENT INDICATORS

DROUGHT ASSESSMENT

Defining Drought

The Mid West (North Midlands) Regional Drought Resilience Plan is an extension of the Mid West Regional Drought Resilience Planning (RDRP) Program, following the Pilot in 2021-2022.

This project adopted the expanded definition of drought as developed in the Pilot Program (shown below). This definition was developed through an assessment of meteorological definitions of drought in the context of the region, as well as the outcomes of consultation in the Mid West. Therefore, it is considered relevant to the Mid West (North Midlands) RDRP subregion.

Drought:

"A prolonged period of abnormally dry conditions that impacts negatively on water availability and agricultural production in a region and, consequently, impacts negatively on the economy and environment of the region and the health and well-being of its residents."

Regional Drought Resilience Plan for the Mid West region

The assessment of meteorological definitions of drought in the Pilot Program also indicated that a definition based on growing season rainfall (between April to October) is considered more appropriate for the South West Land Division than a definition based on total annual rainfall. Consideration of hot drought and green drought is also important in the Mid West region, particularly when referring to coastal areas of the region.

Literature Review

Prior to undertaking a Drought Vulnerability Assessment (DVA) and a stakeholder engagement process in the North Midlands, a Background and Context Report (Report) was developed. The purpose of the Report was to inform the engagement process and to present key trends and strategic directions in drought resilience nationally, regionally, and locally, as well as identifying gaps, challenges and opportunities. In total, 30 key strategic documents were reviewed, as listed in Appendix A, and key drought actors at a national, state and regional level were also mapped.

At the national level, key findings highlighted the historical capacity of Australian agriculture to adapt and respond to risks. The sector is currently engaging in measures that involve increased non-farm income, diversified agricultural activities and written farm plans with business objectives. However, the greatest barriers to changing farming practices are time, followed closely by funds (Coelli, 2021).

The literature also suggested that, with access to more innovative technologies and a sound knowledge base, the agricultural industry is well-positioned to respond to risks in the future. However, the success of this will depend on adoption of viable alternatives, social capital, willingness to change, and a commitment to innovation (Hajkowicz and Eady, 2015).

From a climate perspective, the WA Government is investing in clean energy infrastructure to support its commitment to net zero emissions by 2050. It is also developing climate change legislation to support the reduction of emissions and increase WA's climate resilience, acknowledging that adaptation is essential to address the impacts of climate change (Government of WA, 2023).

In the Mid West region consistent and emerging priorities relevant to future drought management are:

- Agricultural development and food security
- Improved mental health servicing
- Improved infrastructure development
- Improved pastoral sector resilience
- Long term water supply security
- Environmental, social and economic impact mitigation, and
- Tailored solutions at a local scale.

The MWDC Strategic Plan 2023-2026 identifies regional advantage opportunities in terms of water security and supply and the agricultural industry. These include professional and knowledge intensive supply chains supporting mining and agricultural activities, and investment in facilities and services for quality of life.

MWDC's vision reflects a commitment to a prosperous economy and adaptive community.

> "The Mid West is one of the most connected and diverse regions in Western Australia, where high value industries enable boundless development opportunities, creating a strong and prosperous economy that supports sustainable, adaptive and liveable communities."
>
> *Mid West Development Commission Strategic Plan 2023-2026*

North Midlands RDRP Region

Covering 25,835km^2 the North Midlands RDRP area is in the Mid West region of Western Australia (WA). A composite subregion developed for this RDRP, it includes seven local governments, the Shires of Carnamah, Coorow, Irwin, Mingenew, Morawa, Perenjori and Three Springs, as shown in Figure 1.

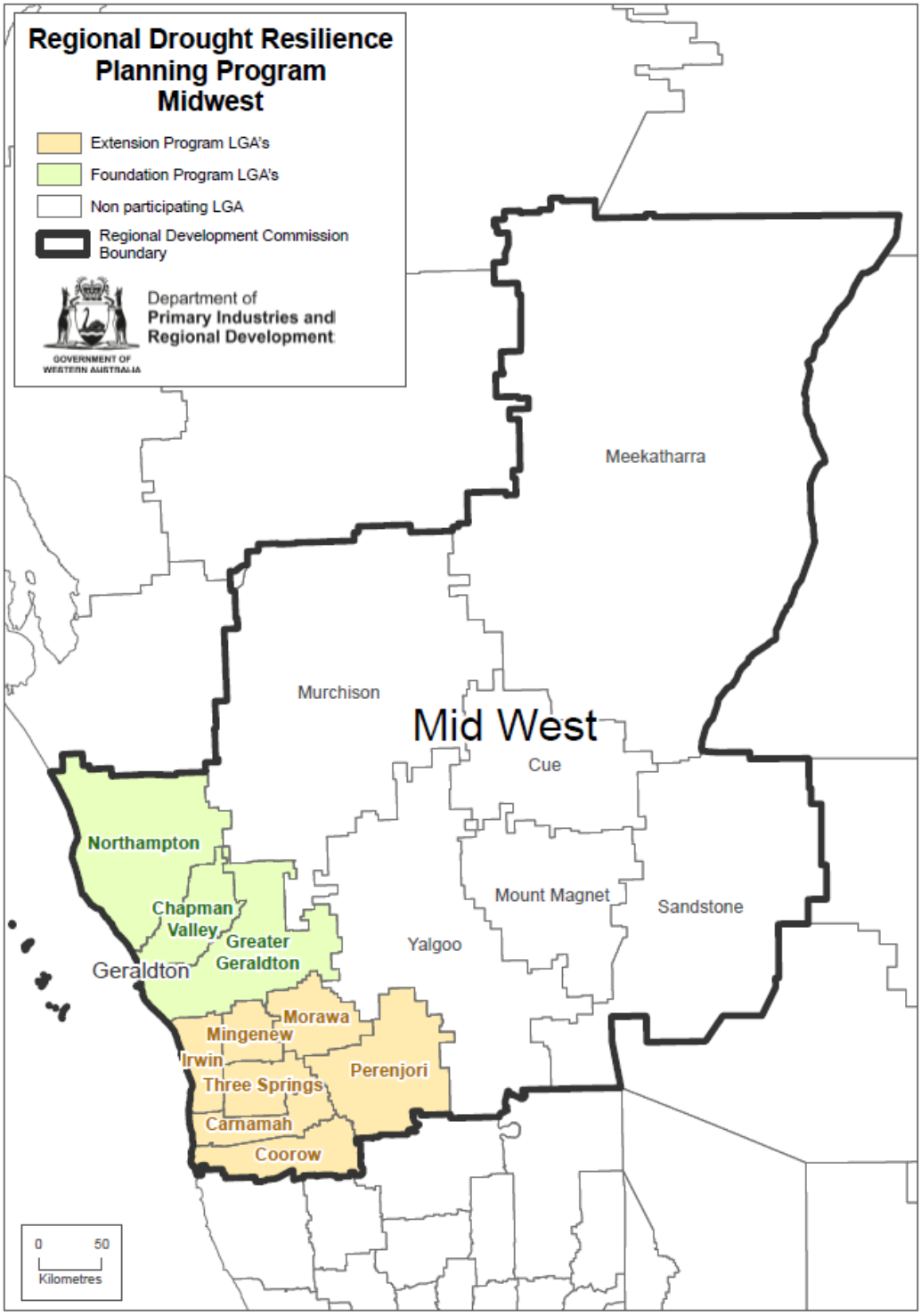


Figure 1: Mid West North Midlands and Mid West Pilot Region

Whole of Subregion

Both the Yamatji and Noongar people are traditional owners within the subregion (WA Government 2020; 2023). To the northern border is the Pilot Program region, including the City of Greater Geraldton (CGG), with Geraldton the major centre for the Mid West region.

Community

The subregion supports approximately 7,558 people (around 10 percent of the broader Mid West), with the Irwin LGA the largest population (3,680) and the remaining LGAs each under 700 people.

Coorow and Irwin LGAs experienced population growth between 2016-2021 and the remaining populations were stable or in decline (ABS, 2022). By LGA Socio-Economic Indexes for Areas (SEIFA) scores, the level of disadvantage varies across the subregion, with Morawa the most disadvantaged and Perenjori the least. All but one LGA (Morawa) had less disadvantage compared to the broader Mid West region (Remplan, 2023).

Land and Environment

By area, the key land use in the subregion is dryland cropping, followed by nature conservation (DAFF, 2023). The subregion's natural environment features a high degree of endemism (May and McKenzie, 2002) with over 250 plants endemic to the Lesueur Sandplain alone (May and McKenzie, 2002a). There are currently eight threatened ecological communities crossing into the Shires of Carnamah, Coorow, Morawa, Perenjori and Three Springs (DBCA, 2023).

Economy

The subregion has a combined economic output of $2.86 billion, 16.28 percent of the Mid West region output ($17.6 billion). Perenjori LGA accounted for just over half the annual economic output for the subregion, with over 91 percent of this from mining (Remplan, 2023). At least $1.43 billion of the subregion's economic output is moderately or highly dependent on nature (BlueSalt Consulting derived from WEF, 2020).

Of the 26,361 jobs in the Mid West region, 11.38 percent (2,454 jobs) are in this subregion. All LGAs are more dependent on the agriculture industry sector for employment compared to the Mid West and WA, with Three Springs the most highly dependent (43% of jobs), followed by Mingenew (26%) and Coorow (25%) (Remplan, 2023). Business entries are higher than business exits (ABS, 2022).

Across the subregion, gross value from agriculture was $212 million, over 254,847 ha in 2020-21 (as per the last Census data). This included:

- 409,507 animals (mostly sheep and lambs, meat cattle)
- 428,685 tonnes of production (mostly wheat, hay, lupins, barley, oats, canola)
- 303,700 trees (mostly almond, some mango and olive) (DAFF, 2023b).

In the 2024/25 harvest, the grain receivals across the subregion included: Carnamah, 432,461t; Coorow, 66,228t; Mingenew, 573,957t, Morawa, 165,809t and Perenjori, 183,893t. The Three Springs receivals site is retired so no tonnage was delivered, and while growers are free to deliver to sites as per their individual situations, Irwin growers would generally deliver to Mingenew (CBH, 2025).

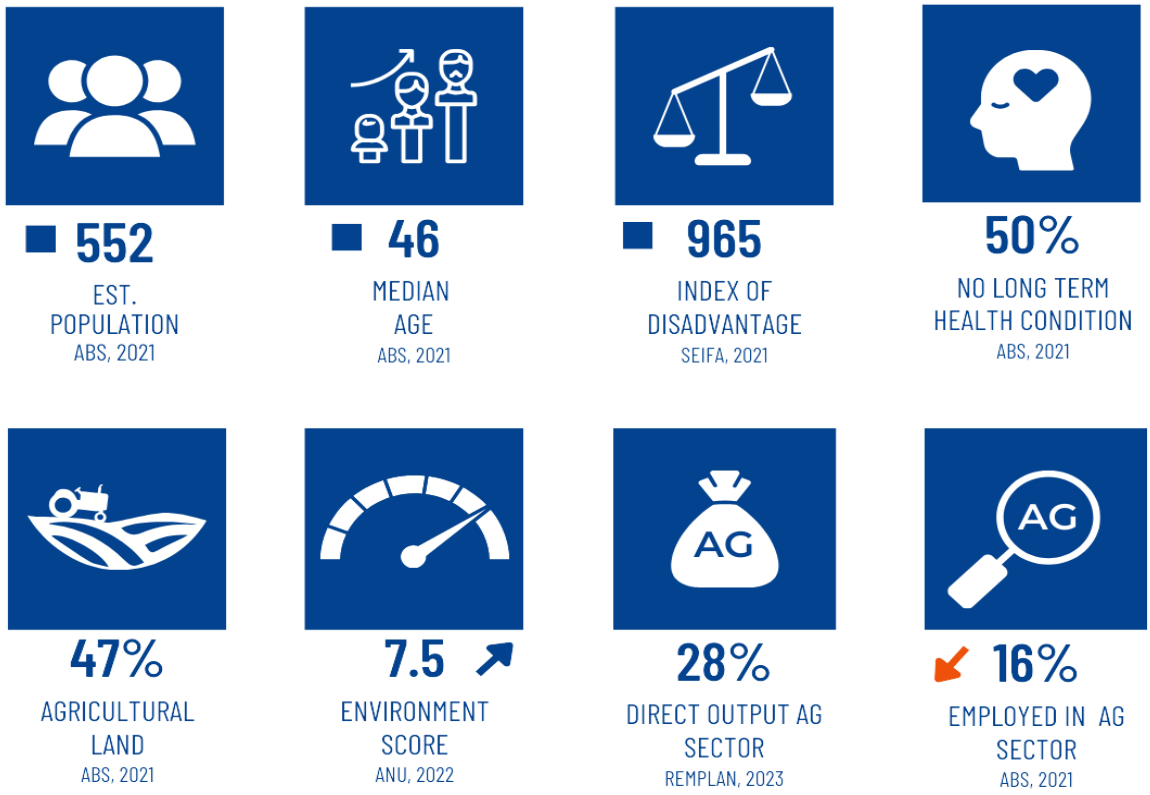
Shire of Carnamah

The Yamatji people are the traditional owners of this area (WA Government, 2020; NACC, 2023). The Shire of Carnamah has a population of 552, with townsites in Carnamah and Eneabba. The median age of 46 is higher than both the Mid West (42) and WA (38). The LGA has a similar level of disadvantage compared to the Mid West average and around 17 percent of households did not have internet access at the time of the last Census (ABS, 2022).

Covering 2,876km^2, approximately 21.8 percent of land in the LGA is protected (national park or nature reserve) and a further 47 percent is agricultural land (ABS, 2022). In 2022 the Shire had an environmental condition score of 7.5 out of 10, an improvement from 4.9 in 2021 and higher than the Mid West and WA (Australian National University (ANU), 2023).

With annual economic output of $159.8 million, the LGA accounts for 0.9 percent of the Mid West output. The economy is reliant on agriculture, with 27.8 percent of output from this sector, while a range of industry sectors recorded no economic output (Remplan, 2023).

The Carnamah community has approximately 287 jobs, (1.1 percent of the Mid West), with 16.2 percent of residents employed directly in the agriculture sector, a reduction from 2016 (ABS, 2022). Key statistics are highlighted below.



Drought Resilience in Action | Good News Stories in Carnamah

Resilient Community: North Midlands Project

Established in 2015 the North Midlands Project (NMP) uses arts, culture, heritage and health initiatives to improve the quality of life and well-being of people living in Carnamah, Coorow, Mingenew, Morawa, Perenjori and Three Springs.

Within a range of exhibitions, workshops, performances and events, the NMP also delivers programs at schools across the subregion, using The Kids Research Institute Australia's SEW-Arts framework. SEW-Arts supports social and emotional well-being through the arts and the workshops are embedded with learnings about fostering resilience, helping others, managing pressure, while encourage creativity for good mental health.

Figure 2: Women of the Hinterlands

NMP also host an active annual program of artist residencies to deliver creative programs and engage with community members. Many of these lead to community-rich exhibitions celebrating local people, while subtly sharing perspectives about mental health and well-being. One example, Women of the Hinterlands, showcases stunning portraits by former UN photographer Martine Perret of women from across the region, accompanied by personal stories. Exhibited in Carnamah, Mingenew, Moora, Mullewa and Perenjori it has engaged and been enjoyed by locals and visitors.

Resilient Economy: Carnamah Big Tractor

The Carnamah Big Tractor is a tourism drawcard every day of the year, even if it is 45 degrees in the shade! Measuring 11.5 metres tall and 16 metres in length, it is a five times replica of the Chamberlain 40K, the first tractor manufactured in WA, and one that made a significant impact to agriculture across multiple regions of WA after World War II.

Figure 3: Big Tractor Launch, October 2024.

Launched in 2024, this iconic attraction has helped diversify Carnamah's tourism offering outside of the wildflower season, resulting in a financial and confidence boost to businesses and local organisations. It has elevated the sales at the local café, One L of a Good Feed, petrol station, supermarket and newsagency and has led to an increase in visitation and donations received at community-run drawcards such as the Carnamah Museum and the historic Macpherson Homestead. The tractor has also led to an increase in local pride and sense of place.

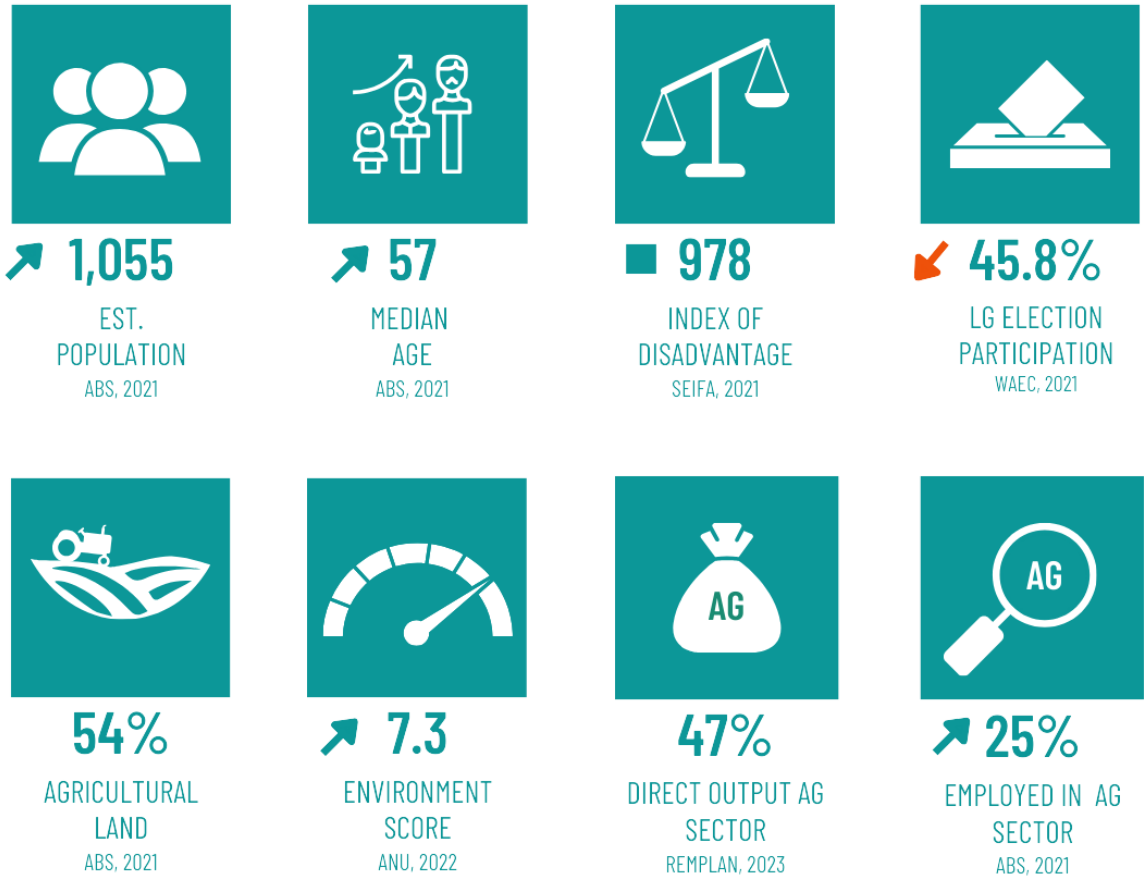
Shire of Coorow

The Noongar people are traditional owners of this area (WA Government, 2023). The Shire of Coorow has the second largest population in the subregion, increasing to 1,055 in 2021 (ABS, 2022). Key townsites are Coorow, Green Head and Leeman. The median age of 57 is higher than both the Mid West (42) and WA (38). The Shire has high civic participation, with almost 46 percent participating in the 2021 local government elections (WAEC, 2023).

Covering 4,189km^2, approximately 17 percent of the Shire land area is protected (national park or nature reserve) and a further 54 percent is agricultural land (ABS, 2022). In 2022 the Shire had an environmental condition score of 7.3 out of 10, an improvement from 5.7 in 2021 and higher than the Mid West and WA (ANU, 2023).

With an economic output of $178.3 million, the LGA accounts for 1 percent of the Mid West output. The economy is highly reliant on agriculture, with 47 percent of output from this sector. Several sectors recorded no economic output (Remplan, 2023).

The Coorow community has approximately 348 jobs, (1.3 percent of the Mid West), with 25.28 percent of residents directly in the agriculture sector, an increase from 2016 (ABS, 2022). Key statistics are highlighted below.



Drought Resilience in Action | Good News Stories in Coorow

Resilient Community & Economy: Koobabbie Precinct and Business Incubator

The Shire of Coorow has developed and enhanced the historic Koobabbie Precinct to showcase the diverse and significant agricultural history within the region.

Figure 4: Koobabbie Precinct

The precinct now offers an additional tourism asset in Coorow for visitors to see more in the region, alongside the traditional wildflower season. Alongside the precinct, local small businesses are supported in a 'business incubator' style approach. This includes refurbishment of older historic buildings that are offered at reduced rates to encourage uptake by small business owners, such as a local café that opens specifically on weekends to service visitors to the region.

Resilient Landscapes: Coastal Recreational Tracks Master Plan

Figure 5 : Sourced from Shire of Dandaragan

The Shire of Coorow, along with the Shires of Dandaragan and Gingin are part of a group effort to create a Coastal Recreational Tracks Masterplan (commenced in 2024).

The aim of the plan is to proactively map how to manage coastal public land within their Shire areas to protect the landscapes and environments for the benefit of 'current and future generations'.

The plan builds on historic documents such as the Shire of Coorow Coastal Management Plan (1986) which sought to: '*contribute towards the long-term management of the Western Australian coastline as well as fulfil the Shire of Coorow's objectives for a more co-ordinated and comprehensive approach to coastal management along its shoreline*.' This project is an example of coordination in the subregion to achieve multiple social and environmental outcomes.

Resilient Water & Landscapes: Non-Potable Water Security

The Shire of Coorow has installed dedicated water tanks (three x 27 000L and one x 250 000L) specifically for fire mitigation and has also developed a water drainage plan to store town water run-off to support the greening of local parks.

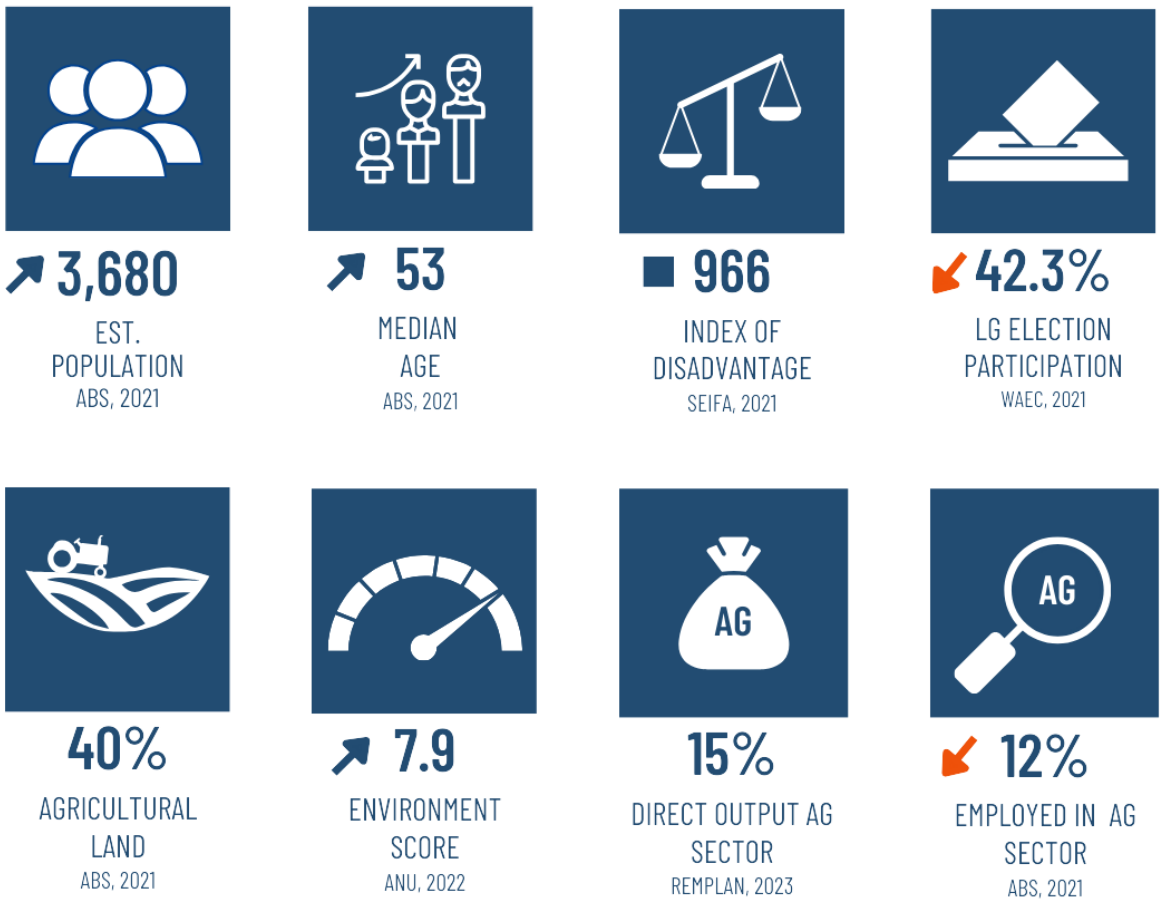
Shire of Irwin

The Yamatji people are the traditional owners of this area (WA Government 2020; NACC, 2023). The Shire of Irwin has the largest population in the subregion at 3,680, with townsites in Dongara/Port Denison. The median age of 53 is higher than both the Mid West (42) and WA (38) (ABS, 2022). The LGA has high civic participation, with 42.3 percent participating in the 2021 local government elections, a decline from 2019 (WAEC, 2023).

Covering 2,369km^2, approximately 12 percent of the Shire land area is protected (national park or nature reserve) and a further 40 percent is agricultural land (ABS, 2022). In 2022 the Shire had an environmental condition score of 7.86 out of 10, an improvement from 6.43 in 2021 and higher than the Mid West and WA (ANU, 2023).

With an economic output of $488 million, the LGA accounts for 2.8 percent of the Mid West output. Output from the agriculture sector was 15 percent, similar to manufacturing, with other industries of mining, construction and rental services contributing 11-12 percent each (Remplan, 2023).

The Irwin community has approximately 998 jobs, (3.8 percent of the Mid West), with 11.8 percent of residents employed directly in the agriculture sector, similar to 2016 (ABS, 2022). Key statistics are highlighted below.



KEY: ↙ reduced/ declined ↗ increased/ improved ■ stable

Drought Resilience in Action | Good News Stories in Irwin

Resilient Water: Foreshore Reticulation

The Shire of Irwin's iconic Port Denison foreshore is a vital part of the Mid West that provides boating and fishing activities alongside family friendly public open space.

As part of their water wise measures, the Shire of Irwin have converted their foreshore reticulation system to a wi-fi controlled irrigation system.

As the foreshore is one of the largest uses of scheme water for the Shire, the wi-fi controlled system provides the ability to adjust for weather (e.g. turning off when raining).

Figure 6: Shire of Irwin Foreshore.

In the future, the Shire is hoping to use the smart/predictive watering features to allow automated watering schedules based on weather conditions to further increase the water wise approach to keeping this vital community space green and welcoming, while reducing any waste of scheme water.

Resilient Community and Economy: Medical Centre

Access to consistent medical facilities and services is a vital part of a thriving rural community.

In 2020, the Shire of Irwin voted to purchase the Dongara Medical Centre to ensure the community had access to a reliable GP service, and to complement the emergency hospital services provided by WA Country Health Services. As part of this purchase, the Shire of Irwin also contracted an experienced rural GP for a period of five years to offer continuity of service and confidence to the Shire of Irwin and surrounding community members.

Figure 7: Shire of Irwin Medical Centre.

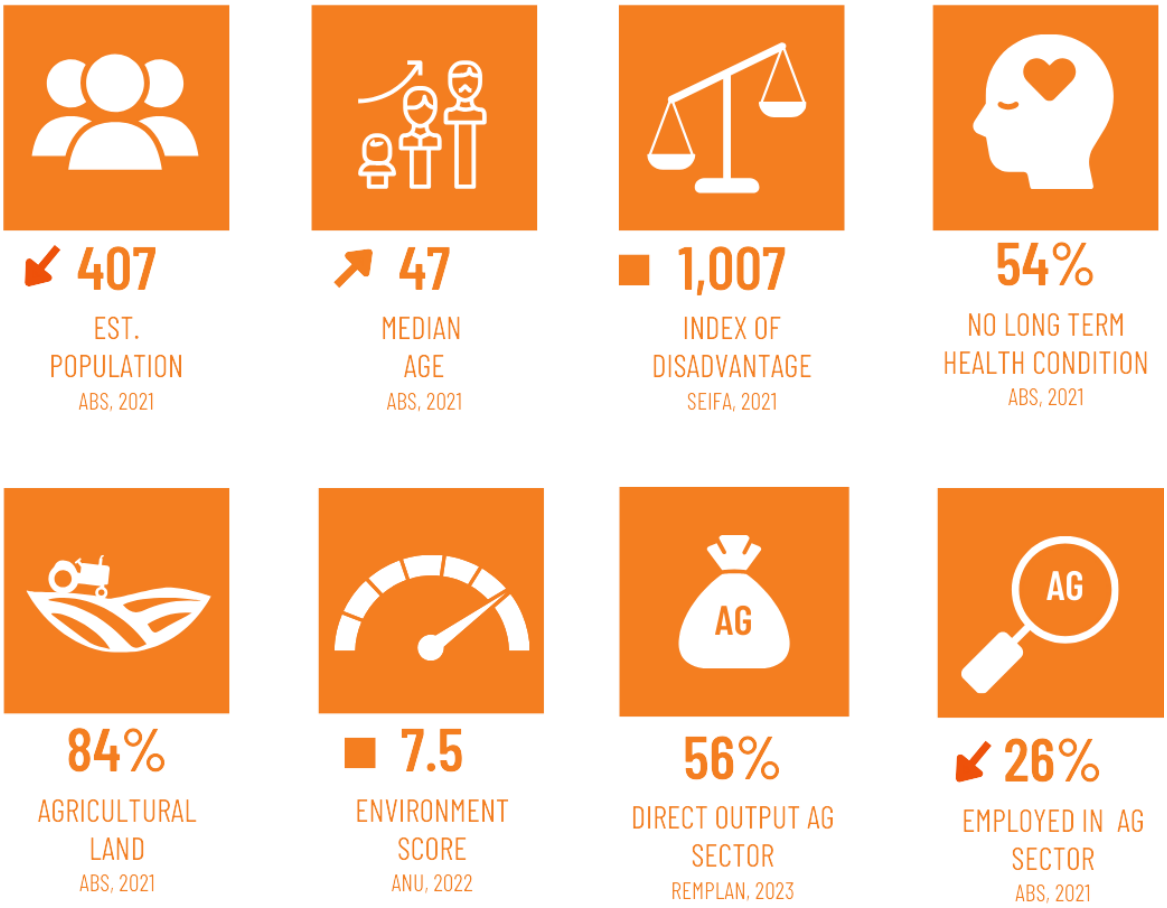
Shire of Mingenew

The Yamatji people are the traditional owners of this area (WA Government 2020; NACC, 2023). The Shire of Mingenew has a population of 407, with the main townsite Mingenew. The median age of 47 is higher than both the Mid West (42) and WA (38). Around 18 percent of households did not have internet access at the time of the last national Census (ABS, 2022). The Shire has the least disadvantage in the subregion and has lower disadvantage than the Mid West (Remplan, 2023).

Covering 1,934km^2, approximately 0.9 percent of the land area is protected (national park or nature reserve) and a further 84 percent is agricultural land (ABS, 2022). In 2022 the Shire had an environmental condition score of 7.47 out of 10, similar to 7.2 in 2021 and higher than the Mid West and WA (ANU, 2023).

With an economic output of $113.7 million, the LGA accounts for 0.6 percent of the Mid West output. The economy is highly reliant on agriculture, with 56.2 percent of output from this sector, while seven sectors recorded no economic output (Remplan, 2023).

The Mingenew community has approximately 221 jobs, (0.8 percent of the Mid West), with 26.44 percent of residents employed directly in the agriculture sector, an increase from 2016 (ABS, 2022). Key statistics are highlighted below.



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Drought Resilience in Action | Good News Stories in Mingenew

Resilient Agriculture & Landscapes: Making Every Drop Count

The Mingenew Irwin Group (MIG) is leading a locally based drought resilience project with a key focus on building drought resilient soils and landscapes.

The project is funded through the FDF and is designed around a three-tiered (scaled) analysis of soil, paddock and landscape. *'Making Every Drop Count'* has a core focus on building agriculture and landscape resilience. It includes ten demonstration sites across the region, and explores groundcover management, management of riparian areas, moisture and nutrient removal in downslope/leached areas, summer cover cropping, enhancing ecosystem biodiversity, and improving farm water storage.

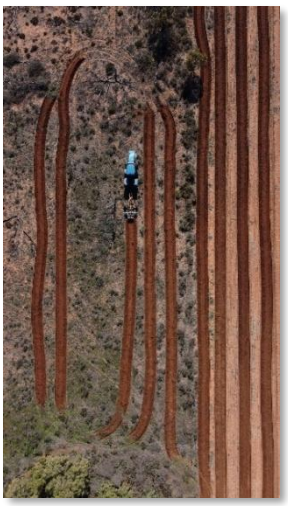


Figure 8: Mingenew Irwin Group

Resilient Community: An Active Community in Mingenew

Figure 9: Mingenew Childcare Centre Upgrade.

Mingenew is home to a range of community activities that strengthen the spirit of the community, provide avenues for showcasing the region, support a sense of pride and bring economic benefit. In 2025, with shared funding from a range of stakeholders, the Mingenew Childcare Centre upgrade project will be activated. This project will support an increase of early childhood and education care services in Mingenew. Additionally, Mingenew will soon be home to a new community garden. The garden will provide an opportunity for community members to come together with a shared gardening focus to learn new skills, increase local networks and friendship, and to foster a sense of community and connection.

Resilient Landscapes: Mingenew Springs Regional Botanic Garden

The Shire of Mingenew is planning to activate the Mingenew Springs Regional Botanic Garden to diversity the growth of tourism in the region via the development of a year-round environmental attraction that will stimulate new business in the area, enhance liveability and help to mitigate the impact of seasonal tourism.

Figure 10: Mingenew Springs concept.

The site also has environmental importance including a rare black Cockatoos nesting site and a micro-bat colony to create education opportunities.

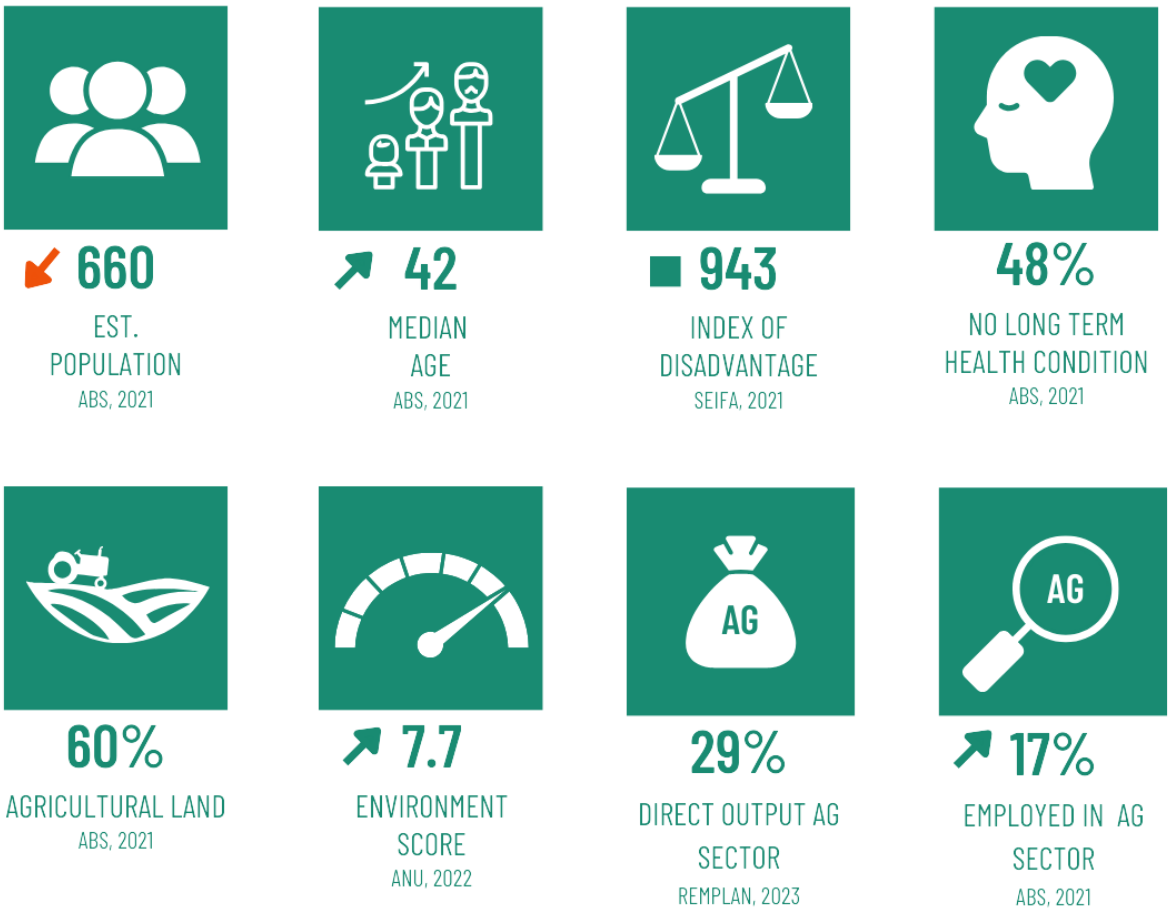
Shire of Morawa

The Yamatji people are the traditional owners of this area (WA Government 2020; NACC, 2023). The Shire of Morawa has a population of 660, with the main townsite in Morawa. The median age of 42 is the same as the Mid West (42) and higher than WA (38). Around 22 percent of households did not have internet access at the time of the last Census (ABS, 2022). The LGA has a higher level of disadvantage compared to the Mid West average (Remplan, 2023).

Covering 3,510km^2, approximately 14 percent of land in the LGA is protected (national park or nature reserve) and a further 60 percent is agricultural land (ABS, 2022). In 2022 the Shire had an environmental condition score of 7.7 out of 10, up from 7.1 in 2021 and higher than the Mid West and WA (ANU, 2023).

With an economic output of $196.8 million, the LGA accounts for 1.1 percent of Mid West output. The economy is reliant on agriculture, with 29.2 percent of output from this sector. Several industry sectors recorded no economic output (Remplan, 2023).

The Morawa community has approximately 334 jobs, (1.3 percent of the Mid West), with 17.39 percent of residents employed directly in the agriculture sector, an increase from 2016 (ABS, 2022). Key statistics are highlighted below.



Drought Resilience in Action | Good News Stories in Morawa

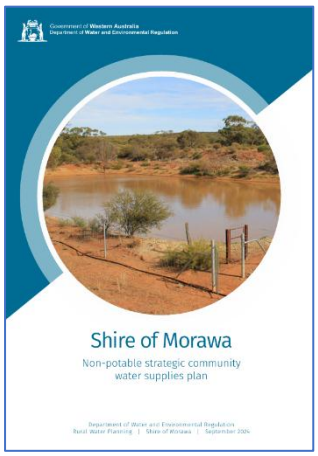
Resilient Agriculture: Morawa Farm Improvement Group

The Morawa Farm Improvement Group (MFIG) was established in 1946 with a mission to *'advance the development and learning needs of the Morawa Farming Community in order for them to remain both viable and sustainable into the future'*.

They are an active local agricultural group who have undertaken a broad range of events, projects and activities on topics such as sustainable grazing on saline land, millet and sorghum in a low rainfall zone, and engineering salt-water drainage and evaporation ponds.

Figure 11: Image credit - morawafarmers.wixsite.com

Resilient Water: Non-Potable Community Water Supplies Plan



The Shire of Morawa in conjunction with the Department of Water and Environmental Regulation (DWER) and other key stakeholders has developed the Non-Potable Community Water Supplies Plan which provides information on how to 'access non-potable water for emergency stock watering and firefighting purposes, including what facilities are available at each site'.

This plan provides a measure of safety, assurance and knowledge for community members in times of need and enables longer term planning activities to be undertaken for both supply and facilities. The Shire of Perenjori also has the same plan in place.

Resilient Community: Morawa Child and Family Centre & New Tennis Courts

Support for families is a critical part of building drought resilient communities and preventing population decline. The Shire of Morawa has been successful in applying for and receiving funding for the development of the Morawa Child and Family Centre through the Growing Regions Program (Round 2).

The Morawa Child and Family Centre will provide community members with access to high quality early education and care, that will help support children to be school ready and to broaden the opportunities for families and their work commitments.

Additionally, the Shire of Morawa has been successful in obtaining funding through the Community Sporting and Recreation Facilities Fund (CSRFF) to support the development of new local tennis courts, providing an opportunity to boost participation in physical activity, increase liveability and enhance community spirit.

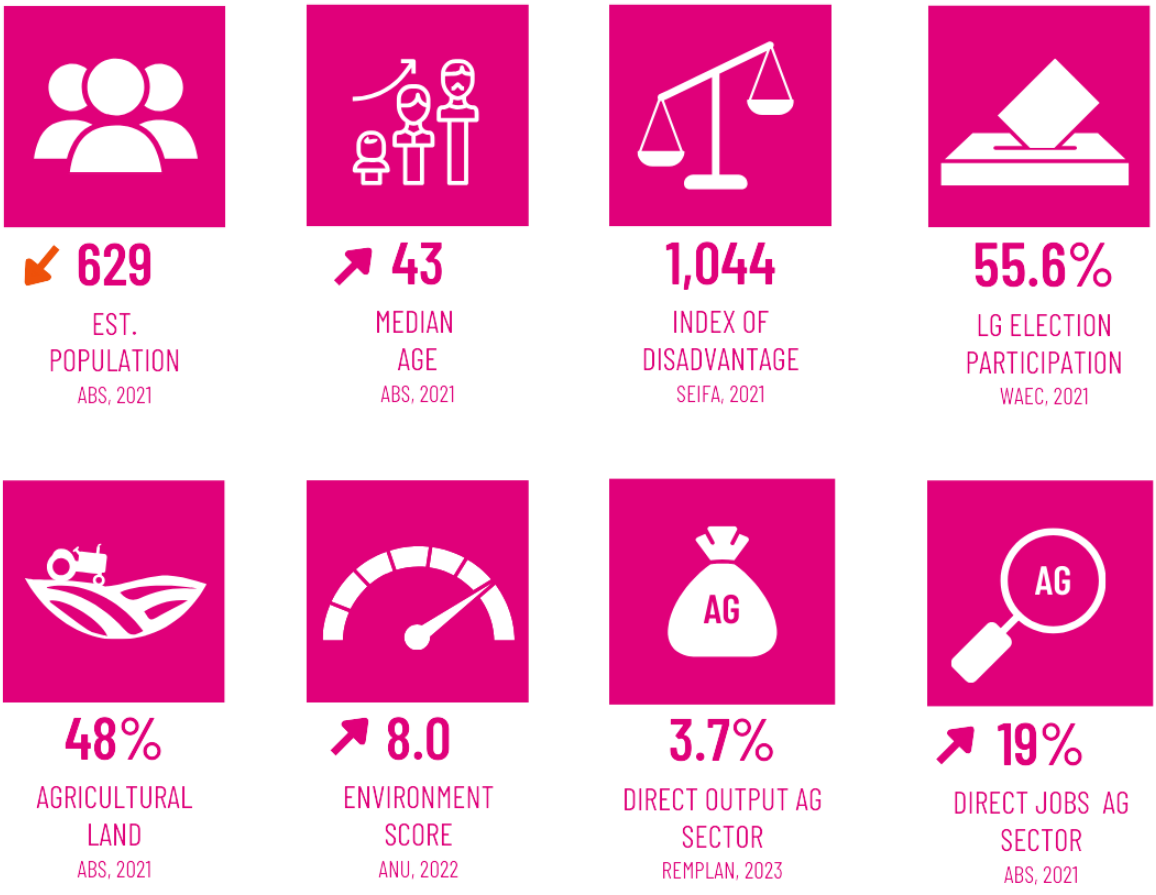
Shire of Perenjori

The Yamatji people are the traditional owners of this area (WA Government 2020; NACC, 2023). The Shire of Perenjori has a population of 629, with the main townsite Perenjori. The median age of 43 is similar to the Mid West (42) and higher than WA (38). Around 19.9 percent of households did not have internet access at the time of the last Cenus (ABS, 2022). The LGA has lower levels of disadvantage compared to the Mid West average and the lowest in the subregion (Remplan, 2023).

Covering 8,301km^2, approximately 36 percent of the Shire land area is protected (national park or nature reserve) and a further 48 percent is agricultural land. In 2022 the Shire had an environmental condition score of 8.05 out of 10, an improvement from 7.34 in 2021 and higher than the Mid West and WA (ANU, 2023).

With an economic output of $1.573 billion, the LGA has the largest output of the subregion and accounts for 9 percent of the Mid West output. The economy is not reliant on agriculture, with 3.7 percent of output from this sector and 91 percent from mining. Several industry sectors recorded no economic output (Remplan, 2023).

The Perenjori community has approximately 886 jobs, (3.4 percent of the Mid West), with 18.9 percent of residents employed directly in the agriculture sector, a reduction from 2016 (ABS, 2022). Key statistics are highlighted below.



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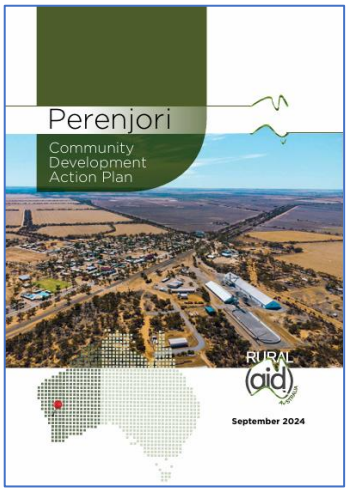
Drought Resilience in Action | Good News Stories in Perenjori

Resilient Community: Community Action Plan



Community members from the Shire of Perenjori participated in workshops and meetings, facilitated by Rural Aid, to develop a Community Development Action Plan (CDAP).

The vision of the plan is to '*empower our community to thrive through innovation, collaboration and inclusive growth. Where our progressive spirit fosters economic growth in a family friendly environment, celebrating and supporting each other in a safe and welcoming community*.' The highlighted key areas for development including lifestyle and population, tourism, opportunities for young people, housing and accommodation.

Resilient Agriculture & Water: Weelhamby Farm Project

A series of drought resilient projects are being undertaken at Weelhamby Farm in the Shire of Perenjori. To date, the Weelhamby Farm Project has incorporated changes in management practices to demonstrate the capacity of carbon farming in a low rainfall area which maintains profitability, achieves real results and avoids locking up productive farmland.

A more recent addition to the suite of projects at Weelhamby has been the Transformative Aboriginal Agricultural Methods (TAAM) project. This project is co-led by the Centre for People, Place, and Planet at Edith Cowan University (ECU) and Maaman Marra Boodjar and explores Aboriginal agricultural practices and literacies, with local agricultural practices. 'By merging traditional knowledge with Western scientific methodologies, the project aims to create innovative metrics for assessing natural system health and resilience.'

This project is also being undertaken at Gimlet Ridge Farm, another farm in the Shire that is focussed on holistic management principles. This project is supported by the South-West WA Drought Resilience Adoption and Innovation Hub, through funding from the Australian Government's Future Drought Fund, and the WA Agricultural Research Collaboration.

Resilient Community: Perenjori Community Garden

The Perenjori Community Garden is a vibrant community space that is well known in the North Midlands.

Supported by local groups such as the Yarra Yarra Catchment Council, it provides a nourishing community space for members to connect, garden, share and learn. It has also hosted gardening education workshops, such as using wicking beds for more drought resilient local kitchen gardens.

Figure 12: Perenjori Community Garden (Image credit: Tessomewhere)

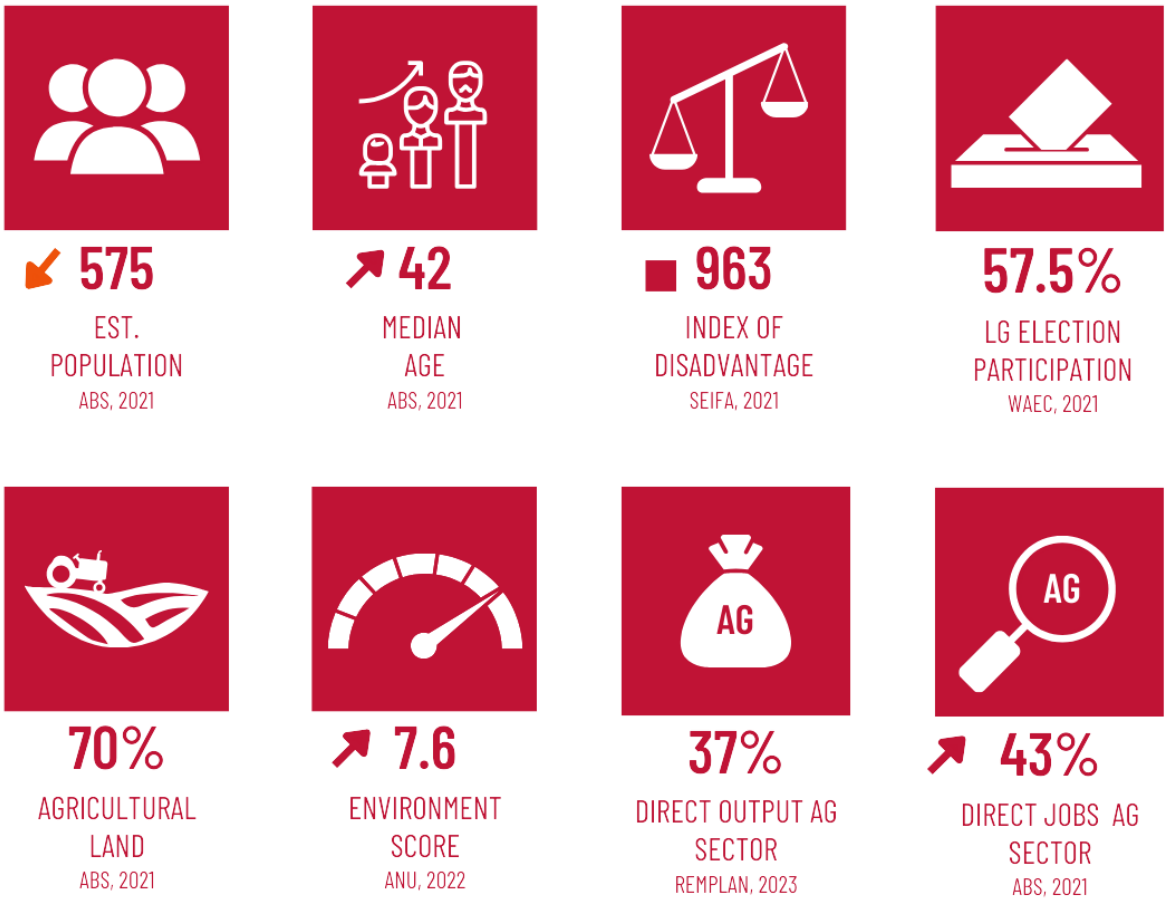
Shire of Three Springs

The Yamatji people are the traditional custodians of the area (WA Government 2020; NACC, 2023). The Shire of Three Springs has a population of 575, with the main townsite Three Springs. The median age of 42 is the same as the Mid West (42) and higher than WA (38). Around 19.7 percent of households did not have internet access at the time of the last Census (ABS, 2022). It has a similar level of disadvantage compared to the Mid West average (Remplan, 2023).

Covering 2,656km^2, approximately 2 percent of the Shire land area is protected (national park or nature reserve) and a further 70 percent is agricultural land. In 2022 the Shire had an environmental condition score of 7.6 out of 10, an improvement from 6.9 in 2021 and higher than the Mid West and WA (ANU, 2023).

With an economic output of $150.3 million, the LGA accounts for 1 percent of the Mid West output. The economy is reliant on agriculture, with 36.9 percent of output from this sector, while several sectors recorded no economic output (Remplan, 2023).

The Three Springs community has approximately 261 jobs, (1 percent of the Mid West), with 43.4 percent of residents employed directly in the agriculture sector, an increase from 2016 (ABS, 2022). Key statistics are highlighted below.



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Drought Resilience in Action | Good News Stories in Three Springs

Resilient Community: Community Action Plan

Community members from the Three Springs participated in a series of workshops and meetings, facilitated by Rural Aid, to develop a Community Development Action Plan (CDAP). The vision of the plan is *'to produce generations of proactive community members who cultivate, embrace and execute ideas which support our future'*.

The CDAP has highlighted key areas including community connection through shared spaces, housing and short-term accommodation, enhancing the appearance of the town, creating an annual signature event, supporting older community members to age in place.

Resilient Community and Economy: Silos Projection Project

The Silos Projection Project is a unique initiative of the Shire of Three Springs. It uses state of the art projection technology to transform the silos into an outdoor cinema. This activation currently supports three annual events including the Stargazing Movie Night in March, the Off-Road Racing Movie Projection in September, and the Community Christmas Tree Projection in December.

The grand opening event of the project was also shortlisted as a finalist for the Best Small Regional Event category at the 2023 Australian Events Awards. This unique project brings both community and economic benefits, as the unique series of events attracts many visitors to the region, helping to grow and support diversity in attractions and increase liveability for community members.

Resilient Agriculture: Three Springs Farm Innovation Network (3FIN)

The Three Springs Farm Innovation Network (3FIN) is a locally established farmer-led group with a vision to *'create a farming community that is engaged, motivated and forward thinking and will become active in the area of extension, R&D trials, peer to peer learning and motivating farmers in the district'*.

With an inaugural strategic plan established in 2021, the group are already actively supporting local workshops and business updates in partnership with major industry groups such as GRDC and GIWA.

Drought Vulnerability Assessment

Framework

The Drought Vulnerability Assessment (DVA) undertaken for this subregion applied the overarching DVA conceptual framework from the Pilot phase of the RDRP (**Error! Reference source not found.**), which understands overall vulnerability as the outcome of sensitivity and exposure (interacting to produce impact), and adaptive capacity parameters.

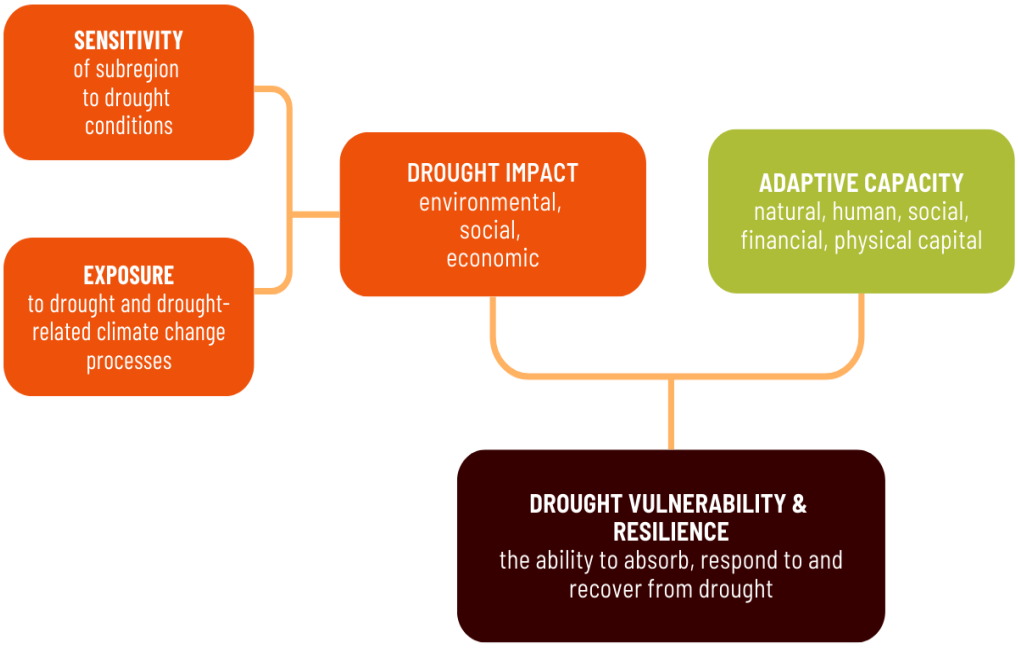

Figure 13: Conceptual Framework of Drought.

Impact is made up of the degree of **exposure** to drought and the inherit **sensitivity** to drought conditions. **Adaptive capacity** details the features and characteristics that influence the ability to respond now and into the future.

Drought **resilience** as it relates to the Drought Resilience Funding Plan is defined as "the ability to adapt, reorganise or transform in response to changing temperature, increasing variability and scarcity of rainfall and/or changed seasonality of rainfall, for improved economic, environmental and social resilience".

This also recognises that more frequent and severe droughts are one of the many impacts of climate change and the Plan supports broader climate resilience outcomes, where they are consistent with the funding principles outlined in the Drought Resilience Funding Plan (Australian Government, 2024).

Indicators within each category have been used as proxies for exposure, sensitivity and adaptive capacity, with development of this framework drawing on past studies in Australia and internationally (MWDC, 2022). Indicators are detailed in Appendix A and B, with commentary provided on further potential indicators.

Subregion Climate

Historical Climate

The subregion is typified by hot, dry summers with mild winters along the coast and cold winters inland (ABCB, 2019; BoM, 2023). Under the updated Köppen-Geiger classification system (based on precipitation and temperature) the subregion is classified under two classification levels including: CSa - temperate, dry hot summer along the coast and BSh - arid, steppe, hot inland (Peel et al 2007).

Climate Change

The climate in the subregion has already undergone change, including reducing seasonal rainfall (BoM, 2023a) and increasing temperatures. Australia's climate has warmed by an average of 1.47 ± 0.24 °C since national records began in 1910, with the rate of warming higher since 1960 (BoM, 2022). The average number of days above 34°C in the subregion (August to November) during the wheat maturing season has increased since 1991, with a trend to increasing temperatures in an inland direction (west to east). The observed trend since 2000 has been decreasing and more fragmented winter rainfall zones.

Drought Impacts

Over the past 25 years 2002, 2006, 2010 and 2019 are recognised as drought years in Western Australia, based on dry conditions. Reflecting the localised nature of drought, some parts of this subregion have also experienced below or very much below average rainfall in the years 2000-2004, 2006-2007, 2009-2010, 2012-2015 and 2017-2020 (BoM, 2024a).

In 2006 and 2007, the Mid West experienced two consecutive one in 100-year drought events and was officially declared as in drought (MWDC, 2022). The Millennium drought is considered possibly the first major Australian drought that interacted significantly with the slower influence of climate change (BoM, 2024).

During consultation for the Mid West Pilot region, stakeholders stated that drought had negatively affected soil health, water resources (natural and scheme) and biodiversity. Several noted that significant soil erosion occurred during the 2006/07 drought, that the landscape looked bare and brown and fire risk was increased (MWDC, 2022). Drought impacts reported in the Mid West (including this subregion) include:

- Wind erosion
- Loss of valuable topsoil and native vegetation
- Dust storms
- Farmers having to sell below value or euthanise animals
- Financial, environmental and social distress for many farmers, service providers and the agricultural sector as a whole
- High reliance on off-farm income
- Significant increase in land sales immediately following drought (DPIRD, 2022)
- Strained community services and support networks (MWDC, 2022).

Environment condition scores from 2000-2023 (ANU, 2023) combined for all LGAs and averaged for the subregion showed a correlation between drought years and poor environmental conditions.

Drought Risk Priority Areas

By the 2050s, the subregion is projected to experience between 12-15 more hot days (above 35°C) annually compared to the 1994-2023 average (DAFF, 2023c). In addition to an increased drought frequency, a trend towards the composite hazard of hot droughts has been identified since 2006 (MWDC, 2022). In this subregion, more heatwaves are projected under all emissions scenarios (IPCC, 2021), particularly inland.

Drought can have interconnected impacts and the subregion's DVA has taken a sustainable development approach, contributing to the urgent need for alignment of sustainable development objectives and the lack of global progress towards the Sustainable Development Goals (UN, 2023). A range of additional place-based vulnerabilities and strengths were identified to help guide project prioritisation through the RDRP process. Areas of common high or low disadvantage in Irwin Statistical Area 2 (SA2) and Morawa SA2, are shown in Figure 14 (ABS 2022; Tanton et al 2021). SA2 boundaries can change at Census, but generally the Irwin SA2 includes the Shire of Irwin; and the Morawa SA2, the remainder of the subregion.

Figure 14: Areas of high disadvantage by SA2

Carnamah, Coorow, Morawa, Perenjori and Three Springs have at least one threatened ecological community (DBCA, 2023). DPIRD datasets show groundwater salinity is moderate to high in the east and low to moderate in the west. They also show variable land capability, with a generalised trend of moderate to high capability, however areas of low to very low capability in Perenjori, eastern parts of Three Springs and central Carnamah. Three Springs is highly dependent on

agricultural employment (43 percent of jobs), followed by Mingenew (26 percent) and Coorow (25 percent) (Remplan, 2023).

Areas of low disadvantage (or potential resilience) were also analysed by Irwin SA2 and Morawa SA2 area and are shown in Figure 15 (ABS 2022; Tanton et al 2021). By LGA Socio-Economic Indexes for Areas (SEIFA) scores, Perenjori was the least disadvantaged local government in the region and all LGAs apart from Morawa had less disadvantage compared to the Mid West (Remplan, 2023).

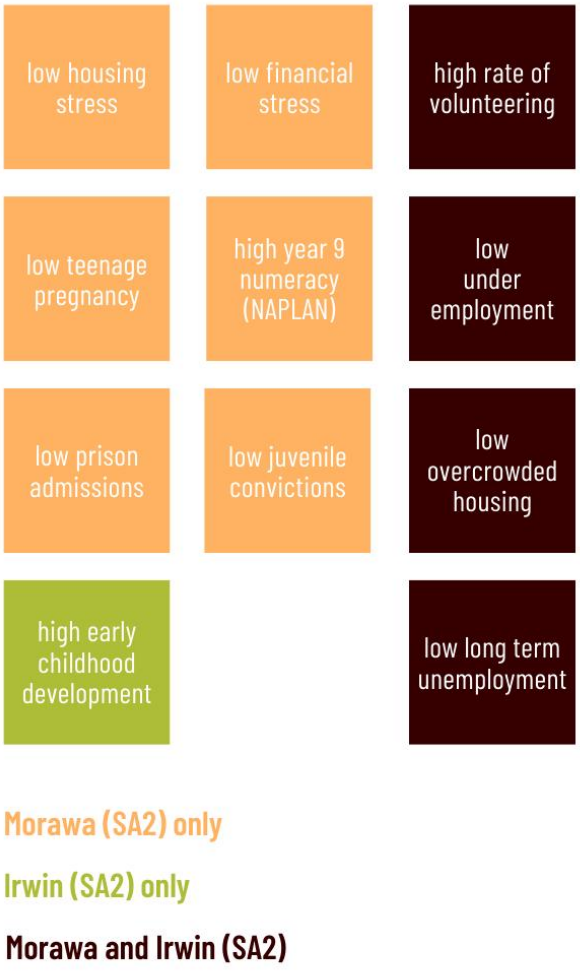

Figure 15: Areas of low disadvantage by SA2

The subregion also has unemployment rates below 5 percent and residents in the subregion have a greater diversity of income sources and less reliance on employee income, compared to WA (ABS, 2022). Crime rates per 1,000 in 2022-2023 were below or well below the Mid West-Gascoyne WA Police District rate (186.54 per 1,000) (WA Police, 2023).

Vulnerability Index and Resilience Assessment

Taking a sustainable development view, a snapshot of indicators across human, social and physical capital were analysed, scored and averaged. To enable comparison this followed the approach taken in the Mid West Pilot Program area with scoring from 1 to 5, with 1 being the lowest vulnerability. The indicators used are detailed in Appendix B.

This culminated in a drought vulnerability score for the North Midlands of moderate, or 3.5 out of 5, see Figure 16. The averaged score across the subregion should be interpreted with caution due to variability between LGAs. This compares to a score of 3.3 in the Mid West Pilot area.

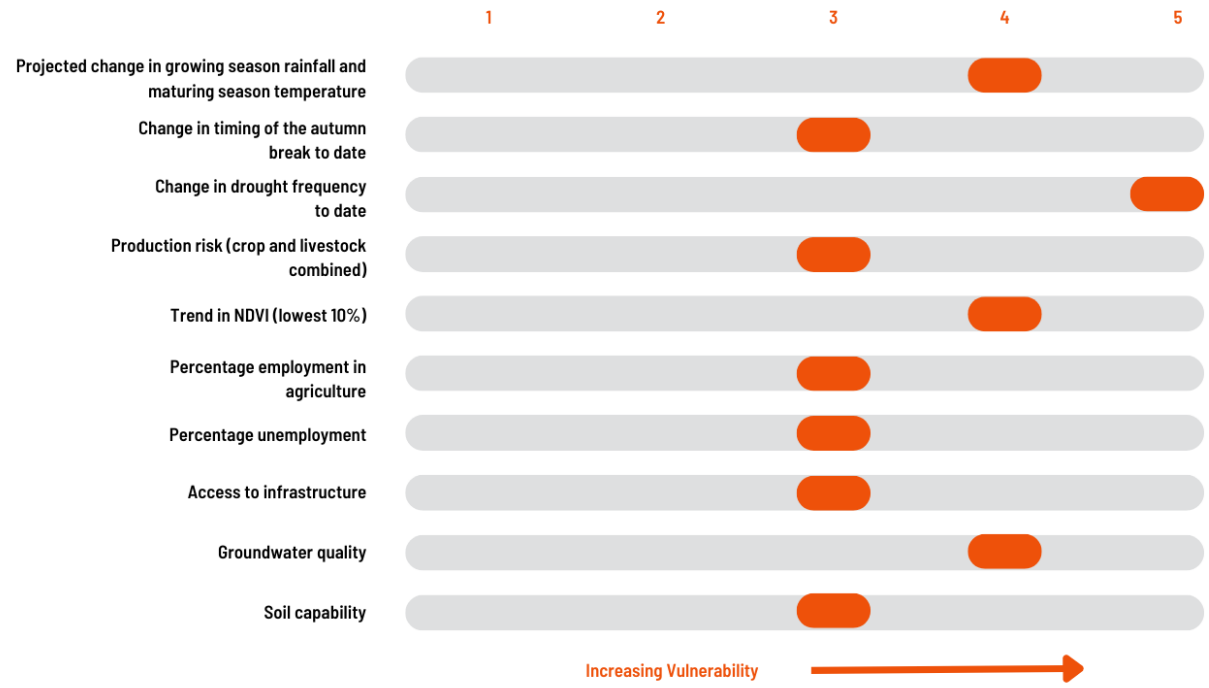

Figure 16: Drought Vulnerability Scores (Pilot Program Index)

The Index results indicate that the highest vulnerabilities are in areas related to natural capital, being the change in drought frequency, change in growing season rainfall, trend in Landsat Normalized Difference Vegetation Index (NDVI) and groundwater quality. Many landscapes in the subregion have been significantly fragmented, cleared and modified, which may impact on its ability to recover from changes and extreme weather.

The decline in rainfall over the southwest of Western Australia has been the most sustained large-scale change in observed rainfall in Australia since the late 1880s (BoM, 2022). A continuation of the trend of decreasing winter rainfall is projected with high confidence (CSIRO, 2024).

By 2030 only the southwestern tip of the North Midlands will remain in the 401-500mm winter (April to October) rainfall zone, with rainfall decreasing inland. By 2050, no part of the subregion is projected to receive over 400mm of winter rainfall on average.

The Mid West is entirely dependent on groundwater resources for community and industry use (Water Corporation 2023; MWDC 2002a; Department of Water 2015) and parts of this subregion are in medium to high groundwater table decline (1990-2014) (Aqueduct, 2023). Groundwater resources in the Mid West have come under increasing pressure from abstraction for the mining and agricultural industries (WA Government, 2022) and a stated challenge for the broader Mid West in its Planning and Infrastructure Framework is to deliver sustainable quantities and qualities of water to competing industries (Government of WA, 2015).

Both composite and cumulative effects of climate change on the subregion's adaptive capacity must also be considered. For example, triggering climate 'tipping points' would lead to changes in addition to those commonly included in climate projections.

Cascading impacts could also push people and systems outside their adaptive capacity, for example the cumulative impact of multiple natural disasters. Since 2000, the subregion has been affected by three declared natural disasters (Australian Government, 2024a). Further research is required on tipping points to integrate them into climate projections, hazard and impact analyses, and adaptation plans.

The subregion's adaptive capacity, combined with impact (exposure and sensitivity), was used to develop a Vulnerability and Resilience Map. This composite map is developed from layers based on a range of indicators, including those used in the Vulnerability Index. Using the same methodology as used in the Pilot Program Mid West Regional Drought Resilience Plan (MWDC, 2022) impact combines exposure and sensitivity.

The mapping uses publicly available datasets to allow for future replication and comparison. Future use of NDVI as a measure could investigate splitting cropping production and non-cleared estate NDVI, with the non-cleared estate contributing to sensitivity in the 'other' category (NACC, 2024). Additionally, further social and economic indicators (as presented in the additional discussion) could be considered.

The completed mapping concludes that drought vulnerability in the North Midlands ranges from moderate to very high, with most of the region classified as having high or very high vulnerability, see Figure 17. Large parts of Carnamah, Coorow, Morawa, Perenjori and Three Springs have very high vulnerability.

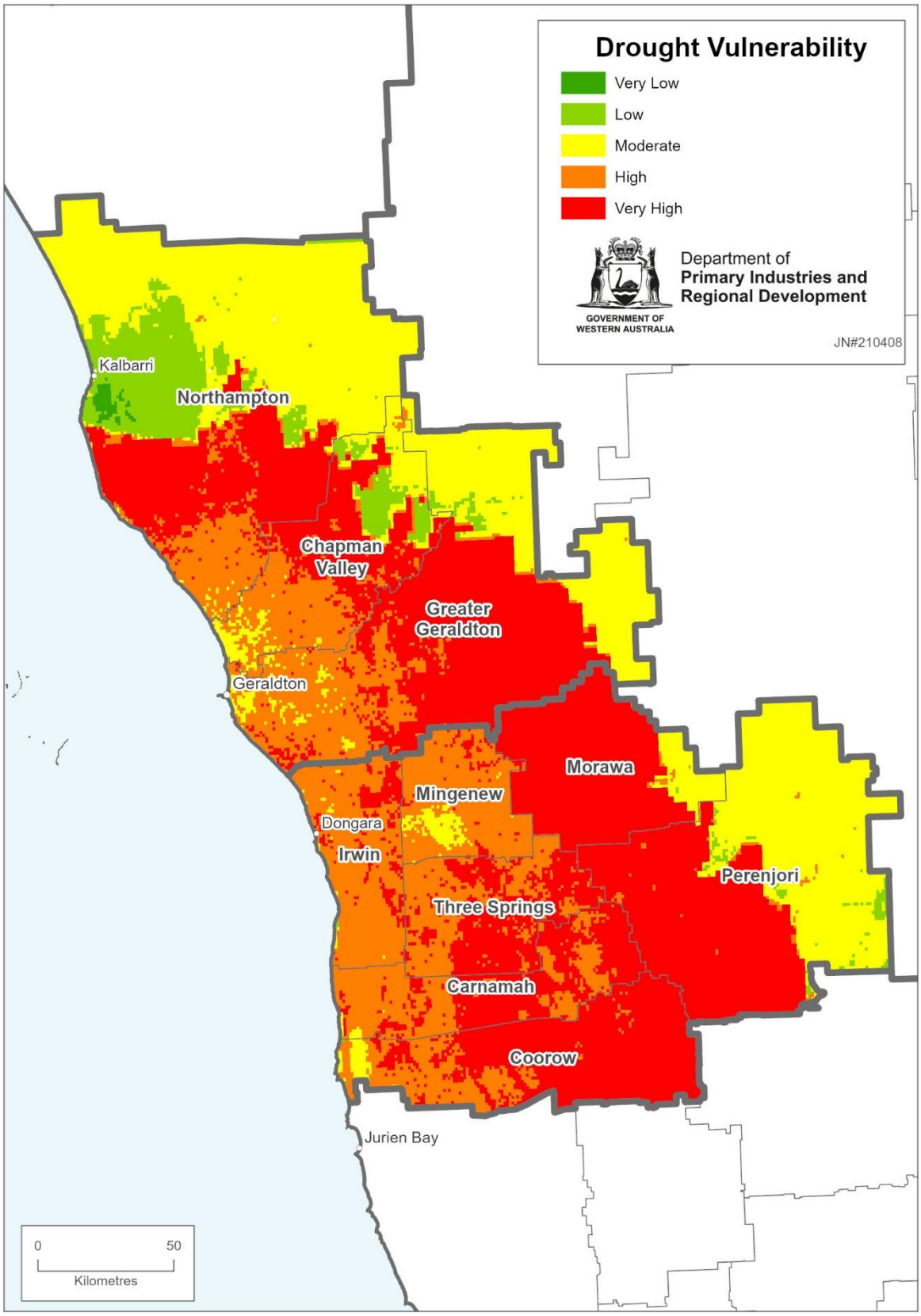

Figure 17: Drought Vulnerability Composite Map

Mid West (North Midlands) Regional Drought Resilience Plan

RESILIENT AGRICULTURE

RESILIENT COMMUNITY

RESILIENT ECONOMY

RESILIENT LANDSCAPE

RESILIENT WATER

The Plan

Underpinning this RDRP is the Australian Government FDF, supported by the Drought Resilience Funding Plan (DAFF, 2023a). The FDF is an investment to build drought resilience in Australia's agriculture sector, landscapes, and communities. Providing $100 million per year in secure, continuous funding for drought resilience initiatives, the FDF helps farms and communities prepare for the impacts of drought.

The North Midlands RDRP has been developed based on the findings of the Policy Context and Drought Vulnerability Assessment and the outcomes of the engagement process undertaken across the subregion from May 2024 to April 2025.

Goals

The goals for the North Midlands RDRP are to create a plan that enables the subregion to:

- Build economic, environmental and social resilience to future droughts and dry seasons
- Be in a stronger position to adapt to climate change
- Form stronger connections and networks within and between regions, and
- Apply best practice data and information to make better decisions.

Overview of Stakeholder Engagement

Community engagement is a critical component of the Regional Drought Resilience Planning process, to ensure that the RDRP is community owned and led. The engagement approach involved working closely with both participating local governments and key stakeholders.

Recognising that a range of action types will be needed to ensure the resilience of the North Midlands RDRP subregion, the concept of incremental, transitional and transformational change (see Figure 18) from the Drought Resilience Funding Plan 2024-2028 was used as a foundation to identify and organise potential actions.

Several consistent topics were heard through the engagement process. These included:

- The subregion's agricultural system has a level of existing experience and resilience to dry conditions that can be used as a basis for adapting and preparing for future dry conditions.
- Access to a secure potable water supply is a vital part of resilience and stability.
- Diversification of industry is an important part of the subregion's resilience.
- Maintaining the subregion's population is as important as growing it.
- Showcasing the positive aspects of living and working in the region is important.

These topics helped to guide the vision and outcomes which the RDRP seeks to address.

TYPE OF CHANGE	DEFINITION	EXAMPLES OF ACTIVITIES
Incremental	The ability to preserve or restore a system (including its structures and functions) by preventing, preparing for or mitigating the impacts of an event or risk	• Diversifying income with off-farm employment • Using farm management deposits to make tax deductible deposits during good periods and withdraw them during bad periods • Changes to crop variety
Transitional	The ability to maintain the essential functions and structures of a system by modifying or changing some of its characteristics in response to future adverse events or risks	• Changing aspects of a production system (such as seed varieties or agronomic practices) to continue the production of certain commodities in a region
Transformational	Could be change at a large spatial scale, achieved at smaller scale or result from an accrual of incremental adaptation	• Shifting up stream and down stream supply chain infrastructure to reflect changed production systems • Adopting new production systems such as grazing or carbon farming • Revegetating pasture with native vegetation • Establishing conservation corridors across farmland

Figure 18: Incremental, Transitional and Transformational Change Types (Drought Resilience Funding Plan 2024 to 2028)

Local Governments

In the North Midlands subregion, local governments are very connected to the needs of their local communities and provide a range of services. Initial meetings were held with the CEOs of each Shire to provide an overview of the RDRP Program and to seek guidance and initial thoughts on the RDRP process. An information package was then provided to each CEO to take to their Council to seek formal representation from each Shire for the Project Advisory Group (PAG). Several follow up meetings have been held with local government CEOs to ensure they remain updated on the progress and process and to provide an opportunity to provide further insights.

Project Advisory Group (PAG)

The PAG was formed from a diverse mix of local organisations, including nominated representatives of each Shire, key local groups covering both agriculture and community, and relevant government agencies.

The PAG was Chaired by a MWDC Project Officer and is comprised of representatives from the following organisations:

- Department of Industry and Regional Development (DPIRD)
- Department of Water and Environmental Regulation (DWER)

- Farm Business Consultant
- Mid West Development Commission (MWDC)
- Mingenew Irwin Group (MIG)
- North Midlands Project
- Northern Agricultural Catchments Council (NACC NRM)
- Shire of Carnamah
- Shire of Coorow
- Shire of Irwin
- Shire of Mingenew
- Shire of Morawa
- Shire of Perenjori
- Shire of Three Springs.

PAG members are shown in Figure 19.

The PAG met consistently throughout the project phase including both online and face to face.

These meetings were focussed on:

- Updates on the general progress of the project and community conversations
- Input, insight and feedback into the ideas and information being captured
- Guidance on prioritisation of information captured
- Identifying links to individuals, projects and organisations working in the region and subregion on drought related activities that could help to inform the RDRP
- Reflection on the practical applications of the RDRP 'on the ground'
- Discussion on how the community ideas captured could be developed into fundable project ideas in the implementation phase of the project.

The PAG created a set of 'working together' values to guide work throughout the process, they were:

- Collaborative thinking for a greater regional outcome
- Open to new ideas and ways of thinking to help create meaningful outcomes
- Respect for the diversity and unique aspects of the communities involved
- Place-based/location-relevant priorities, and
- Outcomes driven to make a real difference in the North Midlands.

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Department of Primary Industries & Regional Development

Karen McKeough
Department of Water and Environmental Regulation

Geoff Fosbery
Farm Business Consultant

Kyle Williams
Mid West Development Commission

Susannah Ward
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Gilly Johnson
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Dee McKeown
Mingenew Irwin Group

Andrew Bowman Bright
North Midlands Project

Taj Mamid
Northern Agricultural Catchments Council

Emma Ogilvie
Shire of Carnamah

Gary Dring
Shire of Coorow

Mark Leonard
Shire of Irwin

Jonathon Holmes
Shire of Mingenew

Aimee North
Shire of Morawa

Daniel Bradford
Shire of Perenjori

Raman S Virdi
Shire of Three Springs

Figure 19: Project Advisory Group (PAG) members for the North Midlands RDRP subregion

Community Conversations

Broader community engagement was focussed on a series of 'Community Conversations' held at each of the participating Shires including meetings in Mingenew, Morawa, Three Springs, Perenjori, Carnamah and Coorow.

These events were promoted through a variety of channels including email, networks, and social media to ensure they were visible. Where possible, local hospitality services and venues were also used to ensure project expenditure benefitted the local economy.

Figure 20: Snapshot of some Community Conservations across the region

Each Community Conversation was supported by a structured agenda which included:

- Education and explanation about the FDF and the RDRP priority.
- Overview of the rollout of this priority in the Mid West region (Pilot and extension).
- Facilitated conversation to share feedback, reflections, ideas and opportunities across the five key areas of the plan and capturing of these ideas into the online ideas tool.
- Creation of a one-page summary post Community Conversation for public promotion.

Ideas captured across the Community Conversations were entered into an online ideas database to enable a consistency of data capture and to build a set of ideas across each of the broad themes in the Plan.

Broader Engagement

In addition to the Community Conversations, meetings and conversations were held with several groups that support the North Midlands subregion, to ground truth the ideas captured and to seek further feedback and guidance.

In April 2025, the draft RDRP was provided for community feedback.

This was made available on the Mid West Development Commission website and promoted via email, local government social media channels, direct to relevant key stakeholders and personal conversations to promote the opportunity to be involved in reviewing the draft plan.

Overall, the engagement input showed high satisfaction that:

- The RDRP presents stakeholder views and actions based on evidence
- It captures existing positive actions undertaken in the subregion, and
- It identifies priorities for investment and is suitable for use by a variety of people and organisations.

A range of thoughtful feedback was provided by both community and organisation stakeholders, and improvements were made to Plan based on this constructive and practical feedback.

Comments from the community review included:

- *"Huge amount of work evident, and obviously great links to all communities in sub-regions. Lots of voices in here- which shows a great deal of investment in developing plan."*

- *"The plan does a very good job of outlining current activities and framing the drought resilience actions and future requirements in a positive/constructive way."*

- *"Love the distinction between the different themes of resilience and the 'good news stories' assigned for each shire under the different themes. The storytelling and inclusion of tangible examples makes this a very engaging document."*

The monitoring, evaluation and learning (MEL) framework of the Plan will offer more opportunities for the subregion community and key stakeholders to contribute to the ongoing adaptive learning and progress of the Plan.

Vision, Outcomes and Themes

The vision, goals and outcomes for the Mid West (North Midlands) RDRP were developed in alignment with the local context, priorities determined through the drought resilience assessment and the needs and aspirations of local stakeholders. This was then refined by the PAG.

The Mid West (North Midlands) RDRP is organised across five themes (agriculture, community, economy, landscape and water), with areas of focus and action ideas identified for each theme.

Vision

A North Midlands region that is able to prepare for, manage through, and bounce back from dry seasons and drought, such that the individuals, industries, communities, landscapes and ecosystems within the region continue to adapt, innovate and thrive.

Outcomes

The outcomes sought for the RDRP for the North Midlands subregion across five theme areas (agriculture, community, economy, landscape and water) are shown below (Figure 21: Vision and outcomes of the North Midlands (Mid West) RDRP).

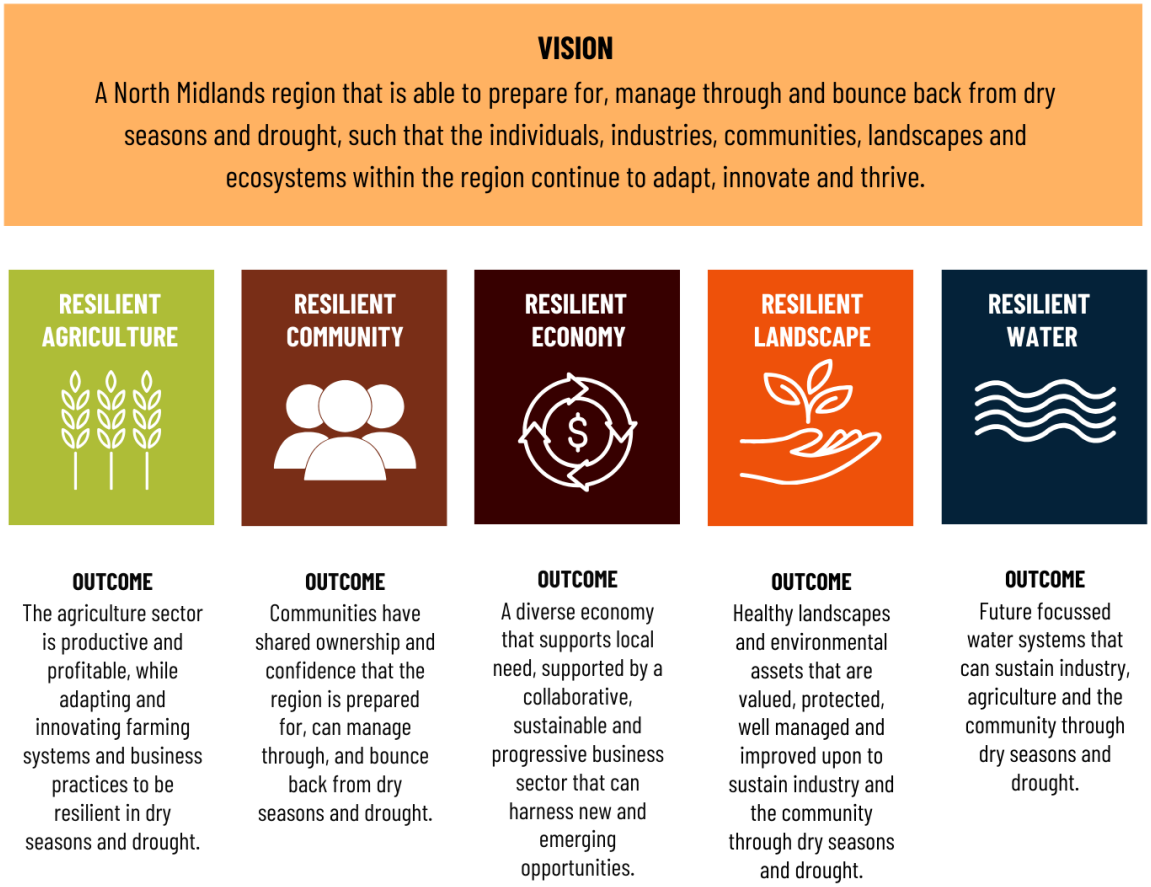

Figure 21: Vision and outcomes of the North Midlands (Mid West) RDRP

Steps to Implementation: Idea to Project

According to the FDF guidelines, the regional drought resilience planning process seeks to build plans that:

- are community-owned and led involving local governments, regional organisations, the agricultural sector and local Drought Resilience Adoption and Innovation Hubs
- identify actions to prepare for future droughts based on evidence
- build on existing planning, and
- draw out regional needs and priorities to inform future investment.

The RDRP for the North Midlands subregion has included a comprehensive list of action ideas brought forward during the community and stakeholder engagement process.

These ideas have been reviewed by the PAG and project team to identify ideas that were outside the scope of the Plan and/or duplicated other ideas.

The included action ideas have been grouped under the:

- **Five key themes of the Plan** (agriculture, community, economy, landscape and water)
- **Areas of focus** under each individual theme, and
- **Type of change approach** (e.g. Incremental, transitional or transformational).

The steps to implementation of these action ideas will include:

1. Review of availability of funding and funding sources, including timelines.
2. Prioritisation of actions against feasibility and impact.
3. Identification of selected action ideas to group together to create a fundable project, and initial identification of possible projects lead and stakeholders.
4. Review of existing projects in the North Midlands to either avoid duplication or look at options to extend or strengthen existing projects.
5. Creation of the Implementation Plan and scoping of projects in accordance with the Investment Framework and Implementation Funding Guidelines.
6. Approval and execution of the Implementation Plan.

Not all the identified action ideas will be funded at any one time, and the monitoring evaluation and learning (MEL) framework will be used to continue the consideration, prioritisation, updating and funding of action ideas.

Resilient Agricultural Systems

Outcome:
The agriculture sector is productive and profitable, while adapting and innovating farming systems and business practices to be resilient in dry seasons and drought.

Community Conversations across the North Midlands identified that farmers and farming systems in the region have continually adapted and innovated to continue to produce good yields and profitability, despite the changes in seasonal rainfall and temperature patterns.

Major changes such as the move to no-till seeding practices, systems enabling early sowing opportunities, adoption of higher yielding varieties, and harvest stubble for paddock coverage and biomass, were all examples of how the region's agricultural community had developed strategies to build dry season and drought resilience.

Dry seasons and drought have an impact on agriculture that goes from the paddock to the community. Community Conversations identified the impact of dry seasons and drought on the mental health of the agriculture community and the flow on effect to the broader community. Building resilience from the paddock to the person was identified as an important aspect of the conversation.

The geographic reach of the subregion from inland to coastal agriculture locations, combined with a mix of both grains production and mixed enterprise (for example grain and livestock) systems identified the need for drought resilience strategies to be broad to maximise impact across the region. Conversations identified an opportunity for the region to build diversity for the agriculture sector.

> "We have always adapted faster in our region – just because we had to with the low amount of rainfall that we have. As a result, we have remained a profitable region."
>
> *Community Conversation participant*

Future Drought Fund Objective: Grow the productivity and self-reliance of the agricultural sector and improve the function of agricultural landscapes through effective management of the natural resource base.

Areas of Focus

Key areas of focus include:

- People, Finance and Business
- Soils, Paddocks, Crops, Pastures and Livestock

- Water, Weather, Environment and Landscapes
- Knowledge, Networking and Capacity Building, and
- Diversity and Innovation.

What's Working | Considerations for Investment: Agriculture

The region is well known for an active amount of farm and agricultural trials and activations. The RDRP for the North Midlands encourages the following during decision making regarding future investment:

- Continue to support farmer and organisationally led trials that focus on building drought resilience 'in the paddock' where there is a focus on improved yield, economic outcomes and sustainable farming practices that support building drought and dry season resilience.

- Support the community/grower groups of the region to better enable them to undertake research, development and extension activities that support a resilient and sustainable agriculture industry in the North Midlands.

- Support and extend existing grower group and related projects that link to the Plan themes to increase extension and adoption of practices that build drought and dry season resilience.

- Encourage sharing of projects, trials, outcomes and practice change across the North Midlands to build a stronger profile of what it is to be a resilient farmer both in the short and long term, and to continue to increase the visibility of projects, programs and practice change that leads to an increase in sustainable farming practices, and drought and dry season resilience.

Agriculture Action Ideas List

ONE: RESILIENT AGRICULTURAL SYSTEMS
ACTION IDEAS
People, Finance and Business
Incremental
1.1 Create a Dry Seasons Toolkit (hub) that captures the ways the region already manages seasonal and longer-term dry seasons. Link to resources that are relevant to North Midlands growing conditions.
1.2 Increase agricultural financial and human resource management skills during dry seasons and drought. This could include managing farm debt-to-equity ratio in relation to drought resilience risk profiles with the objective of helping growers become more financially resilient to dry seasons and drought. Highlight the role of farm historical records to help manage the risk to the next generation of growers, farmers and community members.

1.3 Identify the role of creating farm business incubators in the region that support the growth of future generation farmers who are knowledgeable about building drought resilient enterprises. Identify existing hubs and networks that may be able to offer or extend to this service.

1.4 Run natural capital accounting workshops in the subregion to increase knowledge and capability, and to keep growers abreast of the development of natural capital accounting and its impact on farm finance, profitability and planning.

1.5 Create a place-based profile of the North Midlands Resilient Farmer through programs, plans and/or education packages. Help current and next generation farmers to understand the relationships between business, paddock and health, and explore how to lead yourself and your farm through dry seasons and drought. Build skills in decision making in a dry year – expect that it will happen if you are farming in the North Midlands (e.g. farm for one good year in every three). Identify how to get the work/life/farm/red tape balance right to ensure wellbeing and personal resilience to the peaks and troughs, while building a dry season and drought resilient farming business (incorporating off farm and value add on farm income). Understand how to protect your assets – soils, ecosystems and livestock for the long term.

1.6 Investigate and promote fodder storage systems to successfully store 2 – 2.5 years of fodder for mixed enterprise systems as a way to plan to protect fodder, stock, landscapes and profitability.

1.7 Identify and showcase farm diversification case studies and run education on building a diverse farming enterprise – considering agritourism and post farm gate value add opportunities. Not all diversity needs to be off farm – how can the farm 'work smarter'.

Transitional

1.8 Build regional capacity across the agricultural community to develop pre-emptive farm specific drought resilient plans (encompassing climate variability). These plans can be seen as part of the overall risk management of a farm – linking dry season, drought resilience and environmental sustainability, and preparing for the role of ESG in the farm supply chain and business finance strategies.

1.9 Improve grain grower business resilience before, during and post drought. Identify Agricultural Risk Management Tools to assist with on farm decision making.

1.10 Build knowledge about the role of ESG in the farm supply chain and the potential impact in the future of accessing finance that is tied to farm/enterprise sustainability credentials (e.g. Green finance lending). Find opportunities to link into existing programs and networks that are building capacity in this domain.

Transformational

1.11 Create whole of farm systems that are adaptable to and innovating for changing climatic conditions across both cropping and mixed enterprise systems in a proactive way to build long term agricultural sustainability, resilience and profitability into the region.

Soils, Paddocks, Crops, Pastures and Livestock

Incremental

1.12 Build increased understanding about paddock design for increased water holding capacity – explore the move away from contour banks etc and what rehydration systems are suitable for the future.

1.13 Identify and promote the role of respite feed lots in a dry seasons and droughts to reduce wind/water soil erosion risks and increase positive stock outcomes.

1.14 Support further research into natural fertilisers (e.g. worm juice and manures) to offset use of synthetic and chemicals and increase soil microbial activity and water holding capacity.

1.15 Identify and understand the opportunities for cover crops and perennial pastures and light stock grazing using mobile e-fencing technology as an alternative to chemical fallow and to diversify farm income.

Transitional

1.16 Understand grazing strategies suitable in the subregion to manage the 'green drought' (early rains, early pasture growth/germination and no follow-on rain) for quality feed.

1.17 Investigate, understand and research the different farming systems required between the Eastern and Western areas of the region to better understand soil management practices of fragile coastal soils and the role of livestock and pasture in this management to improve water holding/moisture capacity of the soils.

1.18 Review current soil amelioration systems in the region and research/identify new tools and systems for increased crop resilience in dry seasons and drought - look at the link to water efficiency, water holding capacity and drought resilience.

1.19 Identify and support further development of regenerative farming practices on a broad acre scale and understand the potential for increased dry season and drought resilience outcomes.

1.20 Identify regenerative farming practices case studies across the North Midlands at both trial and at scale. Identify how regenerative practices can be applied to non-livestock enterprises.

Water, Weather, Environment and Landscapes

Incremental

1.21 Identify the potential and role of the Water Smart Farms and Water Smart Dams project to the North Midlands, including the use of bores for water supply, and extend the value of the project to the region. Connect and leverage other industry groups already undertaking Water Smart Farms and Water Smart Dams project activities.

1.22 Increase capacity to harvest/capture rainwater on-farm (e.g. tanks/gutters on farm shed) to be used for spraying to enhance water quality. Improve water use efficiency through innovations such as reducing evaporation or water re-use.

1.23 Increase decision making skills in relation to weather patterns and seasonal outcomes to build capacity to remain profitable in a season. Identify the tools, resources and skills required to support decision making. Build into this scenario planning to accommodate adverse weather events (e.g. Heavy summer rains, extreme heat etc).

Transitional

1.24 Undertake review/research into the use of the Weed Seed Destructor and other similar equipment to understand the impact on soil moisture preservation.

1.25 Support the expansion of available ground water mapping information to identify new ground water sources (e.g. bores) to increase quality and quantity of available water for on farm activities.

1.26 Identify funding solutions for increased bore capacity (currently an expensive activity).

1.27 Support investigation into the potential of summer rainfall opportunities – matching off-season opportunities and crops to markets or environmental regeneration outcomes.

1.28 Develop better plans for non-productive cropping land. Investigate potential partners and opportunities to manage/support/grow non-productive land for alternative markets – link to ecosystems, environment, bush foods and landscape restoration and management.

1.29 Investigate the role and use of driveways and laneways as natural water capture pathways to support increased capturing of water on farm.

1.30 Understand the impact of rising water tables in the subregion and the impact on soils, paddocks and landscapes. Identify concurrent projects in this space and share knowledge across the region.

1.31 Undertake a feasibility study to investigate tools for pivot and drip irrigation in the northern agriculture region. Develop a template-based input program for farmers and investors to accurately cost the enterprise using local costing variables. Identify startup grant funding for a design plan by a certified irrigation designer.

Transformational

1.32 Understand the impact of vegetation on rainfall patterns and identify potential positive impacts from proactive landscape/environmental revegetation in the region.

Knowledge, Networking and Capacity Building

Incremental

1.33 Identify drought related programs across the North Midlands to capture shared lessons learned; look at extending programs across the region and make it easily accessible for farmers and stakeholders in the region.

1.34 Investigate the establishment of a Farmer-to-Farmer communication platform to enable the sharing of North Midlands farmer led on-farm trials and support for writing these up by agronomist or project support officer. Identify ways to share this information to foster increased networking and mateship, local visits and mental health support.

1.35 Develop farming business incubators or mentoring programs to support next generation farmers who may not yet have physically seen major droughts or dry season on farm to build and share intergenerational knowledge, networks and resilience across the region.

1.36 Identify funding to support project/executive officer assets to be shared across smaller farming improvement groups in a coordinated way by linking existing smaller groups.

1.37 Create a 'Look Back to Look Forward' resource linking Aboriginal knowledge of drought resilience with on farm drought strategies – including traditional fire systems to manage weeds, rehydration and reading landscapes. Identify Right People on Right Country and links to existing and emerging Aboriginal Ranger Programs and partners, along with potential for upskilling and new learning.

Transitional

1.38 Create a funding program to continue the development drought and dry season work in the North Midlands. This could be via a centralised community crop (different to sporting/community groups) or the establishment of a region wide deductible gift recipient (Deductable Gift Recipient (DGR)) status Community Benefit Fund/Foundation that could receive donations of grain (and money) and provide tax deductible receipts as an alternative method that reduces the management of a community crop.

Transformational

1.39 Create The 2050 North Midlands Farm – identifying the best fit North Midlands farm for the future (look at UWA Best Practice Farming Systems Project as a model).

Diversity and Innovation

Incremental

1.40 Identify, investigate and support the role of the Healing Country program across the North Midlands to link both agricultural innovation, Aboriginal economic opportunities, and landscape restoration.

1.41 Undertake a feasibility study exploring the options and opportunities of growing seasonal local produce for the North Midlands area and beyond at a community/commercial scale.

1.42 Review the impact across the North Midlands of the change to the export of sheep/livestock and the availability of meat processing facilities to identify the impact on mixed enterprise businesses and to consider longer term opportunities.

1.43 Review the work of the multiple ecosystems services experiment at the UWA Ridgefield (Pingelly) site and identify the lessons learned for the North Midlands.

1.44 Develop a deeper understanding of the role of building soil carbon as a drought resilience practice and farm business income methodology. Link to existing programs, information, education and projects in the North Midlands.

1.45 Investigate new commercial crops and markets suitable for the region that are drought resilient, profitable and environmentally friendly.

Transitional

1.46 Develop more understanding of the impacts of livestock on regrowth and revegetation activities, including recovery from natural disasters e.g. Cyclone Seroja.

1.47 Investigate the use of less productive land for business diversification for use by other industries (e.g. resources and energy).

Transformational

1.48 Based on feasibility, diversify the North Midlands into a new food bowl and food value add region using both traditional and novel approaches to production.

1.49 Investigate the opportunities of a Traditional Farming Partnerships program – matching Aboriginal Economic Opportunities with non-productive land on farms – partnering for ecological management and new bushfood/business opportunities.

Resilient Agricultural Systems Partners

The North Midlands includes the following existing partners who may be well placed to support and activate Resilient Agriculture projects:

- Department of Primary Industries and Regional Development
- Department of Water and Environmental Regulation
- Mingenew Irwin Group
- Morawa Farm Improvement Group
- Three Springs Farm Innovation Network
- Perenjori Farming Forward Group
- West Midlands Group
- North Midlands Agricultural Society
- Co-operative Bulk Handling
- Grains Research Development Corporation
- Yarra Yarra Catchment Management Group
- Northern Agricultural Catchment Council
- Mid West Food Industries Alliance
- Grower Group Alliance - South West Drought Hub
- Morawa Agricultural College

- Aboriginal Groups (Right People *on* Right Country)
- Elders and Nutrien (and other livestock/agricultural groups)
- Local and regional farm consultancy groups
- Local and regional farm business groups
- Local and regional farm business/equipment/water supplies companies.

This list is formative and will continue to be developed as the Plan matures and projects are implemented.

Resilient Community

Outcome:
Communities have shared ownership and confidence that the region is prepared for, can manage through, and bounce back from dry seasons and drought.

Community Conversations identified the importance of communities being able to prepare for dry seasons and drought, and at the same time being able to bounce back from these occurrences. One key term that came up during the Conversations was the importance of sharing 'good news stories', so that current and future community members understand the resilience that has been built up over the years and how this has helped the community.

Like other community organisations such as the North Midlands Project, the Town Teams movement and the Community Development Action Plans (Rural Aid – Bank of IDEAS), Community Resource Centres and visitor centres, engagement identified the importance of activities that help to attract, grow and retain people, businesses and groups in the community. It is essentially the 'working connections' that offer the opportunity to withstand dry seasons and drought.

> "Ripple effects of dry years are significant. Some are nearly irreversible such as a steady stream of population decline."
>
> *Community Conversation participant*

Mental wellbeing during dry seasons, drought and natural hazards was discussed at many points, along with the importance of having health providers who were in tune with the unique aspects of supporting the community during these times.

Housing, childcare, employment, infrastructure and business all contribute to a drought resilient community. Communities can be sustained only with people collectively working towards building towns and a region that retains populations and attracts new residents.

Future Drought Fund Objective: Strengthen the social capital, wellbeing, and connectedness of rural, regional and remote agricultural communities.

Areas of Focus

Key areas of focus include:

- Attracting and Retaining People, Business and Groups
- Growing and Supporting People and Groups
- Creating a Healthy and Resilient Community
- Creating a Liveable Region (Growing Events, Sports, Nature and the Arts), and
- Growing Places and Spaces.

What's Working - Considerations for Investment: Community

The region is well known for an active community program, with many communities working towards diversification in their community offering. The RDRP for the North Midlands encourages the following during decision making regarding future investment:

- Continue to support, bolster and strengthen community and not for profit groups that have an activation footprint in the North Midlands and who are already working across the themes of the Plan.

- Link in with existing Community Action Plans (CAPs) developed through the Community Builders program with Rural Aid. Support and encourage all LGAs in the North Midlands to participate, where possible, in programs that develop action plans to foster ongoing community development.

- Encourage sharing of plans, activities, projects and outcomes within the community groups space to build a stronger profile of what it is to be a resilient community both in the short and long term in the North Midlands.

- Understand and consider the unique nature of the communities of the subregion– from coastal to inland – and their placed based needs and connections.

- Invest in reviews that identify work already done in this theme to avoid duplication of work and expenditure of grants and funds.

Community Action Ideas List

TWO: RESILIENT COMMUNITY
ACTION IDEAS
Attracting and Retaining People, Business and Groups
Incremental
2.1 Continue to share the Good News Stories of living and thriving in the North Midlands to support community wellbeing and attract new community members.
2.2 Identify the benefit, function and fit for a central North Midlands online hub that can act as a one stop shop for the community and industry to create a stronger shared brand and create more opportunity for cross-regional communication. Consider how such a resource will be legacy funded and managed.
2.3 Investigate the provision of new community member welcome kits to promote friendship making and sharing of regional community services.
2.4 Identify the unique living points of the region and create a targeted resource that can be used to promote living and working in the North Midlands region.

Transitional

2.5 Identify activities and projects that can help to support and advocate for the ongoing forums, projects and conversations regarding childcare offerings across the Shires to understand the issues, current plans and opportunities across the region through a drought and dry seasons lens.

2.6 Identify activities and projects that can help to support and advocate for the ongoing forums, projects, reports and conversations to understand the housing issues and opportunities across the North Midlands and identify share actions and potential funding through a drought and dry seasons lens.

2.7 Identify the barriers to new building and housing developments (e.g. power and water connection costs) and advocate with key stakeholders to subsidise costs in line with city counterparts.

2.8 Identify opportunities to create offerings of new land (e.g. like Bindoon/Chittering) to attract new families to the region. Identify how to create a small landholder opportunity in the region.

Transformational

2.9 Work with regional partners and key stakeholders to create the North Midlands Five Families Project to attract five new families to each of the participating shires by 2035.

Growing and Supporting People and Groups

Incremental

2.10 Undertake a review of all community groups in the region to identify barriers to their continued operations (e.g. Insurance costs, volunteer burnout, lack of paid staffing etc) with the aim of identifying shared workable solutions to strengthen their long-term sustainability and benefit to the region.

2.11 Map and identify 'staying in place programs and pathways' for older members of the community.

2.12 Map and identify opportunity pathways for young people in the community including education, sporting, community involvement, training and employment. Link this to new and existing industries in the region.

Creating a Healthy and Resilient Community

Incremental

2.13 Undertake a map and gap audit of the current mental health services and programs that operate across the North Midlands to identify needs and opportunities.

2.14 Create and distribute a North Midlands toolkit/information package for health professionals operating or visiting the region to better understand the unique communities in the region and how to provide health services that demonstrate an understanding of the members of the community and tipping points, especially during

dry seasons and drought. Review the work of rural and remote health organisations to identify existing work to support this.

2.15 Undertake a review of all health/medical services that are available in the region to map the regional services profile and then identify opportunities to attract new health services to the region or support existing services. Work with LGAs and key stakeholders to identify how this information can help to support advocacy activities for increased funding to ensure adequate medical services.

2.16 Investigate pathways and advocacy stakeholders to seek payment for ambulance volunteers to offset costs and to manage volunteer burnout and unavailability during dry seasons and drought.

2.17 Investigate the provision of Mental Health First Aid training across the region to help reduce the stigma attached to accessing support during times of need and to build community capacity and knowledge in the provision of on the ground mental health first aid.

2.18 Support programs that provide Aboriginal health and mental health support in communities on Country in the region.

2.19 Conduct research into identifying vulnerable cohorts in the subregion who are most at risk during dry seasons and drought and identify and support activities that enable community support to these cohorts.

2.20 Convene a dry seasons and drought risk forum for education leaders in the subregion to better understand the impact of dry seasons and drought from a community education lens, and incorporate this information into Plan projects and outcomes.

Transitional

2.21 Create a pre-season North Midlands Mental Fitness program that can be incorporated into the North Midlands sporting clubs (and others) – match physical and mental health pre-season strategies to reduce stigma and increase uptake of matching your physical fitness to your mental fitness to build overall resilience – embed this into the North Midlands Sporting Associations.

2.22 Grow a more life skills resilient community – identify the opportunity to offer community life skills sharing events to support young community members to grow their own personal resilience (intergenerational opportunities).

2.23 Create and implement a dry seasons and drought resilience education program across the North Midlands region.

Transformational

2.24 Create a healthy community that can manage the mental health challenges through dry seasons and drought conditions with increased mental fitness.

Creating a Liveable Region

Incremental

2.25 Map, communicate and showcase how the communities in the North Midlands subregion can work together to create a whole of region, liveable location and identify how the subregion's connections help build dry season and drought resilience (e.g. linking both coastal and inland LGAs).

2.26 Review the Community Actions Plans in place by Rural Aid (Community Builders) and identify shared links of action to bolster, support and fund across the North Midlands.

2.27 Support the growth of Aboriginal and cultural events (e.g. Mid West NAIDOC event in Morawa) as signature events that attract people to the region. Incorporate on country activities and intergenerational activities. Work to empower the North Midlands Aboriginal community to identify their preferred ways to share culture and intergenerational activities.

2.28 Identify financial support pathways to create better access to recreational activities in the region to support community wellbeing.

2.29 Strengthen the availability of healthy recreational activities for young members of the community to reduce negative outcomes on health, wellbeing and resilience.

2.30 Undertake an audit of the large community events across the subregion to identify their drought risk and identify how to make these dry season and drought resilient to avoid cancellation.

2.31 Develop a drought resilience risk toolkit/ management plan for community events to reduce cancellation and increase likelihood of success in a dry season or drought.

2.32 Create a detailed community events plan for the subregion to optimise shared elements, develop a unified events profile, and improve community involvement.

2.33 Create a regional 'pop up community wellbeing' plan that is activated during dry seasons and drought to proactively address community needs during vulnerable community times (supporting the tipping point times).

Transitional

2.34 Audit the sporting and recreational assets of the region to better understand how to market these to visitors to the region, and to create a fee for service offering to sporting and recreational groups from outside the region.

2.35 Create opportunities to bring more events and activities to the North Midlands region. As part of this, undertake a review of all major events currently undertaken in the North Midlands subregion to identify their drought and dry season risk management plan and their links to one another, as a way of helping to create a more regional events profile and plan.

2.36 Identify the opportunity of a community crop location that benefits a drought resilience fund in the region, as well as acting as a basis for trials and meeting place

for the community to better engage both farming and non-farming community members.

2.37 Identify other regions in the world that have similar dry season and drought resilience environmental factors and understand how they build healthy and resilient communities, with the aim of identifying lessons that can be applied to the region.

Greening Places and Spaces

Incremental

2.38 Undertake an audit of local government greening programs across the region to identify shared opportunities for funding, capacity building, knowledge sharing and waterwise strategies; link these together as a greening spaces trail across the North Midlands.

2.39 Support the development of and strengthening of local community gardens as a way to foster social connection and good mental health, encourage local fresh produce, increased skills and education in growing food in a drought resilient way, encourage healthy eating, seed sharing and reducing food miles. As part of this, create a network of community gardens across the regions to foster opportunities for visits between the gardens and promotion of a community garden trail.

2.40 Identify local Aboriginal Economic Business opportunities across the region.

Resilient Community Partners

The North Midlands includes the following existing partners who may be well placed to support and activate Resilient Community projects:

- Local Government Authorities
- North Midlands Project
- Rural Aid
- North Midlands Agricultural Society
- Town Team Movement
- Australian Men's Shed Association
- Country Women's Association
- North Midlands Education Networks
- Central Regional TAFE
- North Midlands Sporting and Recreation Groups
- Community Resource Centres in the region
- Shire Community Development Officer Network
- Community Gardens in the North Midlands
- WA Country Health Services
- WA Primary Health Network (WAPHA)
- Desert Blue Connect (and other social enterprise organisations)
- Foundation for Rural & Regional Renewal.

This list is formative and will continue to be developed as the Plan matures and projects are implemented.

Resilient Economy

Outcome:
A diverse economy that supports local need, supported by a collaborative, sustainable and progressive business sector that can harness new and emerging opportunities.

Community Conversations related to building economic resilience all identified the importance of growing existing businesses that can support both the agricultural and community needs of the region, while identifying potential new industries that could be developed or attracted to the region.

It was noted that many businesses are impacted by seasonal trends and the resulting decisions that are made by farming businesses, and that it is difficult to attract new employees when there is also a housing and childcare shortage.

Conversations noted the importance of building diversity into the business sector, and many felt that the tourism, resources, food, carbon and renewable energy sectors offered a pathway to increased economic and business diversity, to reduce the reliance on the agricultural sector and build economic resilience in the region.

Additionally, value adding opportunities post 'farm gate' and building the visibility of the remote workforce in the region, were noted as opportunities to be explored and developed, along with building a strong profile of training and business development across the North Midlands.

Future Drought Fund Objective: Grow the productivity and self-reliance of the agricultural sector; and strengthen the wellbeing and social capital of rural, regional and remote communities.

Areas of Focus

Key areas of focus include:

- Identify and Capitalise on Business Growth Opportunities
- Support Economic Diversification and Business Development
- Identify and Develop New Industries
- Identify and Reduce Business Development Constraints, and
- Build Business Training, Networking, Support and Leadership Capacity.

What's Working - Considerations for Investment: Economy

While the region has a large economic footprint derived via agriculture and resources, it is also a region growing in diversity of economic opportunities via both the natural and built assets in the North Midlands. The RDRP for the North Midlands encourages the following during decision making regarding future investment:

- Clearly understand the current and future access to reliable telecommunication services (e.g. AARNet High Speed Fibre spurs to Mingenew, Three Springs, Coorow and

Carnamah) and its potential to provide new industry opportunities and strengthen the diversity of existing businesses in the North Midlands.

- Identify potential and pathways for the North Midlands to harness the growing renewables and energy sector in the region to link to building business diversity across the North Midlands.

- Leverage both the natural and built assets in the region as part of building economic diversity in the region.

- Support and champion projects that showcase diversity of business opportunity in the region.

Economy Action Ideas List

THREE: RESILIENT ECONOMY **ACTION IDEAS**
Identify and Capitalise on Business Growth Opportunities
Incremental 3.1 Undertake an audit of all business and community trades/support services across the region to identify gaps and opportunities. Create a traffic light score card of critical trades and services across the region to monitor and prioritise growth opportunities (identify whether this is a point in time or ongoing scorecard that may be developed in the region). As part of this, identify how this scorecard will be future resourced, used and managed. 3.2 Identify and share quick wins and case studies of businesses in the region adapting to dry seasons and/or adopting diversification to grow. 3.3 Identify the 'hidden remote workforce' in the region to map the skills of the region and to create networks and links to business growth opportunities in the region. 3.4 Work with key stakeholders to create a shared North Midlands tourism platform and brand that showcases all aspects of the offerings in the region across the year and includes wildflowers, history and heritage, Aboriginal culture, the natural environment, agriculture, industries, night sky etc to build a year-round tourism offering for the region. 3.5 Undertake an audit of all the tourism offerings to provide increased opportunities for collaboration, diversification and economic development in the region. 3.6 Identify novel and new tourism activities (e.g. geocaching) that showcase the natural and built assets of the subregion to increase opportunities to bring people to the North Midlands and diversify tourism and economic opportunities. 3.7 Strengthen networks and opportunities and to work with Tourism WA, Coral Coast and Golden Outback to build capacity to achieve event and other funding activities.

3.8 Create a North Midlands Pool Hop & Seaside Splash summer trail that brings visitors to the region off season to increase summer season economic benefits to the region (business benefit is across pools, accommodation, fuel, food etc).

3.9 Build a stronger profile of the North Midlands as an Astro tourism region to build upon the work already done with Mingenew, Three Springs, Perenjori, Coorow and Morawa already being listed as Astro tourism Towns.

3.10 Support and promote local produce and business opportunities into the new supermarket at Perenjori and other North Midland food retailers.

Transitional

3.11 Create a North Midlands business hub that can showcase the business opportunities of the region. This could include jobs, training, accommodation availability etc. Encourage the community and industries to 'look local first'.

3.12 Investigate and advocate for a 'living in place' program that encourages new industries (renewables, gas, mining, etc) to house their workforces in existing rural communities.

Support Economic Diversification and Business Development

Incremental

3.13 Investigate and showcase opportunities for value add or agribusiness diversification opportunities to existing agricultural products in the region to create new business outcomes (e.g. micro-brewery using malting barley grown in the region, free range eggs for pasture regeneration). Look at how successful diversification has taken place in other regions (value add, farm stay/camping, events, dark sky etc).

3.14 Identify the existing agrifood assets in the region (e.g. Morawa Ag and MEEDAC hot houses) that could support the development of an agrifood hub in the North Midlands subregion. Identify the capacity, constraints and opportunities of the existing assets to link to future development and economic outcomes.

3.15 Investigate how major industries (mining, gas, renewables and others) in the North Midlands currently provide local supplier/procurement pathways to assist local businesses and service provides to benefit from major procurement tender and contract opportunities in the North Midlands.

3.16 Create a regional capacity map to identify the business, equipment and assets of the region that can be identified as local content businesses for resources and others (e.g. LGA) engagement.

3.17 Work with major industries (mining, gas, renewables and others) to establish local supplier/procurement pathways to assist local businesses and service providers to quote and tender for supply and service contracts for major projects in the North Midlands.

3.18 Identify all existing vacant buildings and investigate shared space business opportunities for existing and new businesses. Ensure that each LGA in the region has

a micro-business hub that can accommodate multiple small businesses to mitigate risk and increase business profitability.

Transitional

3.19 Review the current ways in which businesses are supported across the region and identify gaps and opportunities that enable businesses to become more drought and dry season resilient.

Transformational

3.20 Develop and adopt community benefit frameworks for major projects in the North Midlands, so that proponents align with and support community aspirations and resilience goals.

Identify and Develop New Industries

Incremental

3.21 Investigate existing infrastructure across the region (what is already in place) that offers locally new business or growth opportunities (e.g. multiple commercial kitchens and meeting rooms).

3.22 Identify waste that is created across the region (e.g. food, feedlots etc) and investigate opportunities for value add or creation of new products and business (e.g. compost, beverages etc). As part of this, identify current projects in action with DPIRD and other agencies that could be incorporated or expanded in the North Midlands.

3.23 Identify the support needs of the region that are currently outsourced to non-local businesses to identify opportunities for local support businesses to be created (e.g. IT support, agtech support etc).

3.24 Create a local annual fund to encourage and support entrepreneurship and micro-enterprises in the region.

3.25 Map the renewables and energy projects across the region, with the aim of understanding how to position the North Midlands as a significant region to support growth in these industries and capture positive economic impact and outcomes.

Transitional

3.26 Create stronger networks with major non-agriculture industries in the region to deepen understanding of the current and proposed activity in the region and to identify opportunities for local content and local workforce engagement.

3.27 Identify and capture the opportunities to create new businesses or expanding existing businesses that can service new and emerging industries in the region (e.g. carbon farming, renewables, agtech, geotech etc).

3.28 Identify the technology and business opportunities in the region that stem from the availability of reliable high speed internet services such as the AARNet system to

develop potential new business incubator hubs and opportunities to position the North Midlands as a hub of agtech potential.

3.29 Support ways for the North Midlands region to participate in the supply of power for Geraldton/Perth and surrounding regions to build business diversification into the region and create economic resilience in dry seasons and drought.

3.30 Identify, map and build upon the existing space industry assets across the North Midlands and identify the opportunity for further growth in the space, astronomy and dark sky tourism industries.

3.31 Advocate for more State and Federal investment in improving road infrastructure (State and Shire owned) to support and make fit for purpose for exploration and development activity of new industries in the region.

Transformational

3.32 Enable businesses in the North Midlands to become more resilient to the economic and social impacts of dry seasons and droughts through business innovation, diversity and growth opportunities.

3.33 Position the North Midlands as a future business headquarters hub to encourage long term industry growth and development.

Identify and Reduce Business Development Constraints

Incremental

3.34 Undertake a survey of all small businesses in the region – understand the impacts of a dry season and what support they need to become more resilient to dry seasons and drought.

3.35 Develop a drought resilience toolkit and plan for small businesses in the region to provide accessible information and tools to help small business plan and prepare to be more resilient during dry seasons and drought.

3.36 Identify the opportunity to match small business capital improvements and community streetscape development (e.g. shared capital improvement) to support business and community asset development.

3.37 Create an asset register of storage incubators across the region to identify gaps or further needs to support current and new small trade businesses in the region.

3.38 Work with key stakeholders in the region to formulate short and long-term employment housing options. Look at options of multi-use accommodation options to manage seasonal needs with regional stakeholders.

3.39 Identify incentives for investment in housing infrastructure in region and how to overcome current constraints.

3.40 Partner with LGAs to audit the regional childcare asset base (business, skills, capacity, demand etc) to identify new business opportunities and link to funding programs to build childcare capacity and skills in the region.

3.41 Work with key stakeholders to assess the short and long-term connectivity security issues of the region from both a community, business and safety point of view.

Transitional

3.42 Identify a North Midlands roadmap to ensure reliable telecommunications connectivity for growth, liveability and safety in the region.

Build Business Training, Networking, Support and Leadership Capacity

Incremental

3.43 Create a North Midlands Leadership, Business and Entrepreneurs network to facilitate individual and business networking, training and development, and growth opportunities.

3.44 Create a Resources Ready training program for better engagement with the resources industry and create an online business hub where local content assets can be easily accessed by the major project industries, organisations and proponents in the region.

3.45 Leverage the capacity of the Community Resource Centres (CRC) to strengthen their role in providing business incubation support, business networks and partnerships, and shared learning across the region.

3.46 Review and promote the apprenticeship and traineeship offerings of the region and support young people to remain in the region with confidence in further training and employment opportunities.

Resilient Regional Economy Partners

The North Midlands includes the following existing partners who may be well placed to support and activate Resilient Economy projects:

- Local Government Agencies
- Community Resource Centre Network
- WA Local Government Association
- Department of Jobs, Tourism, Science and Innovation
- Department of Biodiversity, Conservation and Attractions
- Mid West Development Commission
- Mid West Chamber of Commerce & Industry
- Mid West Food Industries Alliance
- North Midlands Project
- Western Power
- Regional Development Australia Mid West & Gascoyne
- Australia's Academic And Research Network
- Telecommunications Agencies

- Agriculture and Resources Industry Bodies
- Central Regional TAFE
- Tourism Western Australia
- Astrotourism Western Australia
- Australia's Coral Coast
- Australia's Golden Outback
- Western Australian Indigenous Tourism Operators Council
- Tourism Geraldton Mid West.

This list is formative and will continue to be developed as the Plan matures and projects are implemented.

Resilient Landscape

Outcome:
Healthy landscapes and environmental assets that are valued, protected, well managed and improved upon to sustain industry and the community through dry seasons and drought.

Community Conversations identified both the importance of and a desire to value, protect, manage and improve the environment and landscapes of the region. This is also reflected in each of the strategic plans of the participating Local Government Shires.

The region is home to a few carbon-based projects which have different impacts on the surrounding community and, while there is a strong recognition of the importance of revegetation, there is also acknowledgment of the need for better natural capital accounting practices and guidelines to provide market drivers for revegetation that are integrated within a productive agricultural landscape.

The natural assets of the region come to life during the wildflower season, and this is a key tourism and economic driver. Recognising that this environmental drawcard has the potential to be diminished by drought, the opportunity to strengthen and diversify tourism and small business opportunities to offset the impact of a drought is a priority for the region.

The Conversations also identified the potential for greater collaboration with the traditional ecological knowledge of First Nations people and contemporary farming practices, extending to remnant, riparian, and reserve management. Linkages between traditional and western management practice to improve the condition and extent of natural capital and ecosystem services can enhance environment and agricultural resilience in the region.

Future Drought Fund Objective: Improve the function of agricultural landscapes through effective management of the natural resource base.

Areas of Focus

Key areas of focus include:

- Natural Capital Management
- Reserve Connectivity and Management
- Restoration and Revegetation
- Future Farm Practices, and
- Community Engagement, Education, and Landscape Group Support.

What's Working - Considerations for Investment: Landscape

The region has a wonderful asset base of natural resources, which offer both environmental and financial benefits to the region and the communities within the North Midlands. The RDRP for the North Midlands encourages the following during decision making regarding future investment:

- Use the existing natural resources management strategy vision for the Northern Agricultural Region (NARVis) as a guiding resource to link to when considering investment in the action ideas. This vision: *'Sound natural resource management by a vibrant local community will support a healthy and well-functioning environment and a diversified regional economy'* can provide a sense of direction that is linked to a broader vision for the Northern Agriculture region, of which the North Midlands is located.
- Encourage partnering between individuals, groups and agencies as a critical pathway for the development of long-term sustainability in the region by offering opportunities to activate and invest in projects that bring benefit to multiple groups in the North Midlands.
- Build upon existing work done by Natural Resource Management Groups that provide underpinning research, information and guidance to the action ideas.

Landscape Action Ideas List

FOUR: RESILIENT LANDSCAPE

ACTION IDEAS

Natural Capital Management (Reporting, Monitoring and Accounting)

Incremental

4.1 Collect and collate information on the region to establish a natural resources conditioning report card – work with local groups to undertake and support this program and link to the further development of the North Midlands DVA. As part of this, investigate the existing available environmental score cards for the region (e.g. ANU / TERN) to avoid duplication.

4.2 Support the role of groups and Aboriginal ranger programs to monitor the natural assets condition report card.

4.3 Identify the existing carbon-based projects (e.g. tree) in the North Midlands to better understand the community and economic benefits (e.g. jobs creation) experienced, with a view to creating a framework that helps to better link and match future carbon projects in the North Midlands with positive community outcomes.

4.4 Ensure free and informed prior consent, develop a deeper understanding about traditional ecological knowledge for drought resilience and match this with contemporary farming practices and environment management to strengthen natural capital management of the region.

4.5 Identify opportunities to increase the education and information sessions on natural capital accounting in the region for farmers, land holders and the community to bring the value of non-production areas to the balance sheet (natural capital).

4.6 Increase carbon farming, biodiversity and emerging markets literacy and identify case studies and forums to grow knowledge and capacity across the region.

4.7 Develop strategies to enhance the visibility of the North Midlands subregion in the formulation of future Natural Capital farming programs and policies in the Mid West.

Transitional

4.8 Review and document the impact of recent dry seasons and droughts on the natural environment in the region to establish a baseline of vulnerability and identify resilience building actions for the future.

4.9 Build capacity in farmers (land holders) to identify and prioritise the natural and environmental assets of their land to work with and support ongoing management and protection of these assets in the region.

4.10 Continue to support research, development and extension activities that promote natural capital accounting practices in the agricultural systems in the region.

Transformational

4.11 Better understand and communicate the economic, social and community value of the natural resources and ecosystems of the North Midlands subregion.

Reserve Connectivity and Management

Incremental

4.12 Identify the ongoing damage from Cyclone Seroja in terms of remnant vegetation/habitat loss and identify ongoing work needed and funding sources to help on the ground groups in the short term.

4.13 Undertake spatial analysis of the region to prioritise locations to address fragmentation in reserves – connect the corridor dots.

4.14 Continue to support riparian zone restoration programs as part of improving environmental systems/flows/vegetation and connectivity.

4.15 Continue to support programs and groups focussed on restoring natural systems, conserving biodiversity, and building resilience to environmental shocks.

4.16 Audit the unique coastal elements of the North Midlands subregion that are impacted by dry seasons and drought. Work with LGAs and key stakeholders to identify and map activities that help to better manage the coastal region during times of impact.

Transitional

4.17 Create a plan of nature reserves and green belts that connect larger nature reserves together to increase biodiversity in animal and plant ecosystems in the region.

4.18 Understand the environmental, farming and community impact on road verges to identify a resilience building action plan for the subregion. As part of this, look at current research in relation to the impact of the status of roadside vegetation on pollination (and other impacts) of broadacre crops.

4.19 Explore methods to enhance and support various environmental issues and overall ecosystem resilience through the development of native vegetation.

Transformational

4.20 Create a whole of region map/resource including lands under Native Title determination showing reserves, the health of these reserves, and the planned management to build resilience for groups, landholders and communities.

4.21 Connect nature reserves and green belts to better support animal and plant communities. As part of this, investigate the potential adverse impacts on the profitability of agricultural systems. Look to local, national and global frameworks (e.g. Kunming-Montreal Global Biodiversity Framework) to provide guidance.

Restoration and Revegetation (Market Drivers)

Incremental

4.22 Provide support, education, and incentives to farmers and landholders to engage in activities that restore, protect, and revegetate vulnerable areas to ensure sustainable future farming and ecosystem development.

4.23 Identify tools, programs and forums that can help farmers and landholders to more easily document their environmental assets and identify financial incentives to integrate carbon into their future business models.

4.24 Identify current restoration and revegetation projects in the region and communicate the outcomes to extend relevant projects more broadly across the North Midlands (e.g. NACC NRM biodiversity projects extension).

4.25 Identify threats (e.g. weeds, feral animals etc) to restoration and revegetation activities to understand reduction actions required to reduce threats prior to site preparation activities.

Transitional

4.26 Identify further work required in remnant vegetation assessment to understand the impact of dry seasons and drought on road verge trees and how to manage this in the future (tree loss with lack of rainfall – impact on remnant vegetation).

Transformational

4.27 Collaborate with farmers, landholders, and stakeholders to restore ecosystems and biodiversity so the region can better endure dry seasons and drought.

Support Future Farm Practices (Revert and Convert Farm Practices)

Incremental

4.28 Support farmers and landholders to adopt farming systems and practices that have beneficial outcomes for the land and ecosystems under their management, and which lead to increased drought resilience and profitability.

4.29 Identify and promote case studies and farmers in action who are supporting the uptake of regenerative farming practices at scale that can apply to the North Midlands region.

4.30 Review how farming systems impact dust storms, temperature and water erosion in the region and identify future farming practices that lead to a reduction of impact.

4.31 Identify research into efficient machinery operations for straight runs (small areas) that provides opportunity to grow and replant in other areas using least productive land. As part of this, investigate a new land clearing formula that benefits both the agricultural need with the nature reserve preservation requirements.

4.32 Identify the role of salt resilient crops and salt resilient vegetation to impact salinity issues in the region.

4.33 Assist farmers in identifying profitable uses for land that is unsuitable for crops or livestock, emphasising the economic and business diversity benefits, while maintaining landscape and environmental benefits.

Transformational

4.34 Continue to make the business case for revegetation and restoration of land for future farming endeavours in the region.

Community Engagement, Education, and Landscape Group Support (Capacity Building)

Incremental

4.35 Support Aboriginal Ranger programs to continue to build capacity and embed traditional ecological knowledge where appropriate into the region.

4.36 Support existing community and industry groups who are undertaking education and awareness raising activities to broaden their reach or extend their work.

4.37 Establish and promote a list of drought resilient plants that are suitable to use in gardens in the subregion.

4.38 Engage with regional schools to help young members of the community to understand traditional ecological knowledge and drought resilience and match this with contemporary farming practices and environmental management.

Resilient Landscapes Partners

The North Midlands includes the following existing partners who may be well placed to support and activate Resilient Landscape projects:

- Yarra Yarra Catchment Management Group
- Northern Agricultural Catchment Council
- Aboriginal Groups (Right People *on* Right Country)

- Department of Primary Industries and Regional Development
- Department of Water and Environmental Regulation
- Department of Fire and Emergency Services
- Mingenew Irwin Group
- Morawa Farm Improvement Group
- Three Springs Farm Innovation Network
- Perenjori Farming Forward Group
- West Midlands Group
- North Midlands Agricultural Society
- Grower Group Alliance - South West Drought Hub
- Morawa Agricultural College
- MEEDAC.

This list is formative and will continue to be developed as the Plan matures and projects are implemented.

Resilient Water

Outcome:
Future focussed water systems that can sustain industry, agriculture and the community through dry seasons and drought.

Community Conversations across the North Midlands identified having appropriate water systems in place as an important part of building drought and dry season resilience across industry, agriculture and community.

Access to secure and ongoing potable water sources is vital to dry season and drought resilience in the North Midlands subregion. In addition to community resilience, access to water is essential to realise goals for economic development and diversity and must be carefully planned against current and future needs.

The Conversations also identified that there is an opportunity for the region to build a stronger community commitment across both farm and non-farm community members for a collective approach to capturing, storing and using water wisely including both potable and non-potable.

Multiple examples were given during the Conversations about the economic, social and environmental impact of when water systems had failed. Individuals are keen to see activities that can reduce risks in the current systems and develop more robust systems for the future. These examples extended to the impact of natural hazards and other related events such as major regional power outages which then have a flow on effect to the availability and security of water for the community.

Additionally, education and community awareness about the sources of water in the North Midlands and how to be a good community steward of the water that is available where identified as important. In addition to sustaining the current community and industry, water availability is critical to support new and emerging industries.

Future Drought Fund Objective: Grow the self-reliance and performance (productivity and profitability) of the agricultural sector; improve the natural capital of agricultural landscapes for better environmental outcomes; and strengthen the wellbeing and social capital of rural, regional and remote communities.

Areas of Focus

Key areas of focus include:

- Water Conservation, Harvesting and Efficiency
- Water Supply, Sources and Security
- Water Usage, Storage and Security
- Water Quality, Innovation and Adoption, and
- Water Literacy and Leadership.

What's Working - Considerations for Investment: Water

The region has a shared vision to protect its water resources and assets and encourages a shared interest and ownership of the water that is available in the region.

The RDRP for the North Midlands encourages the following during decision making regarding future investment:

- Prioritise and advocate for long term potable water security for the subregion to ensure short- and long-term community and industry stability.
- Work with regulatory bodies and key stakeholders to increase access to information that helps the region to understand its water sources, security and opportunities to protect water sources.
- Encourage and support each LGA to plan for and maximise the use of non-potable water sources to undertake community greening programs.
- Support LGAs to undertake a program to develop their own non potable Strategic Community Water Supplies Plan, with relevant government funding.
- Support the existing work of groups who are promoting waterwise planting and community gardening programs.
- Foster a sense of 'shared water responsibility' across community members in the North Midlands to encourage personal ownership of actions that help to protect, preserve and store available water.

Water Action Ideas List

FIVE: RESILIENT WATER SYSTEMS ACTION IDEAS
Water Conservation, Harvesting and Efficiency
Incremental 5.1 Create a community factsheet about the water sources and systems of the North Midlands to encourage understanding of how to conserve water in the subregion. 5.2 Identify grants and funding to grow placed based water harvesting capacity (e.g. gutters, tanks, downpipes, tanks at stock water points etc) across the community. 5.3 Promote opportunities that enable community members to switch to low flow shower heads and other water conservation methods (e.g. kitchen, laundry, grey water and gardens) to mitigate poor water quality during drought and dry seasons (e.g. high salinity corroding shower heads).

5.4 Identify incentives and pathways for using drought resilient/water wise plants in community and local planting. As part of this, identify the potential for Aboriginal economic opportunities to provide locally grown drought resilient seedlings.

5.5 Support partnerships between community, local government and major region businesses (e.g. agriculture and resources) to activate water harvesting and water re-use programs.

5.6 Advocate for increased support and funding to enable North Midlands LGAs to participate in waterwise programs.

5.7 Advocate for North Midlands schools to participate in waterwise programs that build capacity to become more drought and dry season resilient in the future.

Transitional

5.8 Support the development of tools that enable farm-based water conservation maps and plans for better decision making.

5.9 Investigate and promote surface water management/rehydration systems that enable the slowing down of water at the paddock by capturing and dispersing flood waters.

5.10 Investigate and share PhD/research work being done on water conservation and security in dry season regions and provide access to the North Midlands region for inclusion in research programs.

5.11 Investigate and share work in managing rising water tables.

Water Supply, Sources and Security

Incremental

5.12 Undertake an audit of all community spaces water solutions (e.g. dam, bore etc) that facilitate greening activities to identify a risk management plan to ensure continuity of green spaces during dry seasons and drought.

5.13 Identify the opportunities to harvest stormwater and wastewater (water re-use) to use on community greening programs. Include feasibility and infrastructure costs – and an audit of what is currently done and what could be done in the future. Work with stakeholders in the region to support water harvesting opportunities.

Transitional

5.14 Undertake an audit of catchment/harvesting systems across the region – do we know how we capture water across the North Midlands?

5.15 Understand the impact of dry seasons and drought on community sewerage systems. Low rainfall potentially impacts the available water from dam/tank sources to treat sewerage ponds, which requires topping up by scheme water (grey water then used to water the oval).

Transformational

5.16 All people of the North Midlands region have at least three days of water in storage at any one time to manage through a natural hazard or drought where normal water supply sources are compromised.

Water Usage, Storage and Security

Incremental

5.17 Encourage programs that support investment/incentives in water tanks and forms of water storage and security.

5.18 Create a map of community bores and dams – link to existing plans that identify sources of non-potable/potable water for future water security.

5.19 Identify the grid and back-up power sources for community scheme programs to ensure continuity of water supply during power outages. Consider how this may link to climate change adaptation and emergency management programs.

5.20 Undertake research into the groundwater water security, quality and duration of water supply. Work with key partners, DWER and Water Corporation, to create a shared resource that can help to inform LGA planning in the future.

Transitional

5.21 Understand and promote the work of DWER who manage the number of groundwater licences in the region.

5.22 Review all LGA water management strategies to identify shared elements and ability to secure funding that can benefit the region.

5.23 Identify the requirement for new or upgraded infrastructure to manage long term water security for shared community spaces to enable investment and maintenance in greening spaces.

5.24 Identify how industry uses high quality ground water in their operations and work with industry and key stakeholders to transition these systems to desalination.

Water Quality and Innovation and Adoption

5.25 Seek funding to improve water access and security, promote regional economic growth and sustainability, or build resilience to drought and climate change (e.g. DWER Community Water Supplies Partnership Program, National Water Grid Connections Fund and the Agriculture Climate Resilience Fund).

5.26 Investigate and promote cost effective water quality treatment options like desalination to improve water quality on farm and use of available ground water – link to the Water Smart Farms program.

5.27 Summarise desalination plants across the region, both on and off farm, to understand how they meet water demands and determine how desalination could be incorporated as a water security methodology for the future.

5.28 Review all agricultural irrigation activities in the region to understand how irrigation is used in the North Midlands and consider a feasibility study to inform further opportunities for the agriculture sector (link to action ideas that speak to opportunities to strengthen the subregion as a food bowl region to address food security and promote sustainability).

5.29 Identify potential new industries (e.g. horticulture, aquaculture, high value hay/lucerne production) that could be established with better ground water and use of desalination plants. Look at existing trials, early adoptions, and lessons learned (e.g. Barramundi, almond, lucerne and mixed enterprise). Look at other diversification programs using ground water (fresh and desalinated) and match to market demand.

5.30 Map locations using traditional and technical knowledge to identify potential reservoir sites in the North Midlands for non-potable water supplies.

5.31 Investigate the research into livestock tree fodder crops for Australian Carbon Credit Unit Scheme (ACCUs) and the benefits to the environment and agricultural industry (eg. negates rising water tables, supplies feed during dry seasons/droughts and supplies another stream of income).

5.32 Investigate drought tolerant grains, pastures, fodder crops and livestock – consider new breeds for the region to enhance mixed enterprise and markets, including links to the ACCUs. Seek to understand the impact on water table quality and quantity.

5.33 Develop a method, tools and plans to reduce scheme water leaks on farm over distance. Create a farmer friendly set of tools and incentives that enable uptake in identifying, fixing and reducing loss of scheme water from long distance farm infrastructure.

5.34 Investigate the use of innovative or novel water storage equipment such as industrial water pillows/bladders as a form of farm and community water storage that reduces evaporation, increases safety and reduces contamination.

Water Literacy and Leadership

Incremental

5.35 Support and fund LGAs to review, update and communicate their emergency water plans, maps and points to the community and local emergency groups to enhance the safety of the community during times of dry season and drought.

5.36 Audit the existing water related projects being undertaken across the region to identify shared knowledge, practice change, funding and applications.

5.37 Create a waterwise literacy education program with regional schools enhance understanding of water sources of the subregion and how they can help to conserve and protect water. Consider an annual education activity that showcases what

schools are doing and celebrates the results of the children's activities. Tie into the STEM part of the curriculum. Identify a funding ambassador for the program.

5.38 Encourage greater community awareness and ownership of the shared role of water stewardship in the North Midlands across community, groups and industry via information and education.

5.39 Encourage drought resilient home and community gardens and gardening programs – establish an 'open garden' tour in the North Midlands to coincide with the wildflower season and to encourage local food production, drought resilient gardening, and greater self-reliance by the community.

5.40 Review the book 'Aboriginal Journey Ways' (How Ancient Trails Shaped our Roads by Dr Noel Nannup and Dr Francesca Robertson with Main Roads) to identify the drought aspects of this resource and identify how a similar resource for the North Midlands with a focus on dry season, drought and water resilience could be created. As part of this, deepen and strengthen the understanding of traditional water management approaches during dry seasons and droughts and local application.

Transitional

5.41 Encourage all businesses in the subregion to review their water usage and identify opportunities for increased water management.

Resilient Water Systems Partners

The North Midlands includes the following existing partners who may be well placed to support and activate Resilient Water projects:

- Local Government Authorities
- Yarra Yarra Catchment Management Group
- Northern Agricultural Catchment Council
- Water Corporation
- Co-operative Bulk Handling
- Department of Primary Industries and Regional Development
- Department of Water and Environmental Regulation
- Department of Fire and Emergency Services
- Mingenew Irwin Group
- Morawa Farm Improvement Group
- Three Springs Farm Innovation Network
- Perenjori Farming Forward Group
- West Midlands Group
- Aboriginal Groups (Right People *on* Right Country)
- North Midlands Agricultural Society
- Grower Group Alliance - South West Drought Hub
- Morawa Agricultural College
- North Midlands Schools Network
- Community Resource Centre Network.

This list is formative and will continue to be developed as the Plan matures and projects are implemented.

Monitoring, Evaluation and Learning

Overview

The Mid West (North Midlands) RDRP has been developed to identify and guide priorities and actions to build the region's resilience to future droughts. To ensure its effectiveness and for ongoing adaptive management of the Plan, a strong monitoring, evaluation and learning (MEL) cycle is needed.

The FDF approach to MEL has been adopted in this instance and is represented in Figure 22. As part of the implementation of the Plan and associated projects, a Theory of Change approach will underpin MEL planning.

MEL incorporates three key elements, specifically:

- **Monitoring**: The systematic and routine collection of data on program activities and outputs to track progress against planned targets and timelines. It serves as an ongoing process to provide stakeholders with regular insights into implementation.

- **Evaluation**: A systematic and objective assessment of a program's design, implementation, and results to determine its relevance, effectiveness, efficiency, impact, and sustainability. It provides evidence-based judgments to inform decision-making and accountability.

- **Learning**: The process of analysing, monitoring and evaluating findings, identifying lessons learned, and using this knowledge to inform adjustments and improvements to the program's strategies, implementation, and future iterations. It fosters continuous improvement and adaptation.

Theory of Change explains how the activities undertaken by an intervention (such as a project or program) can lead to change, delivering towards the desired outcomes of this Plan (pages 39).

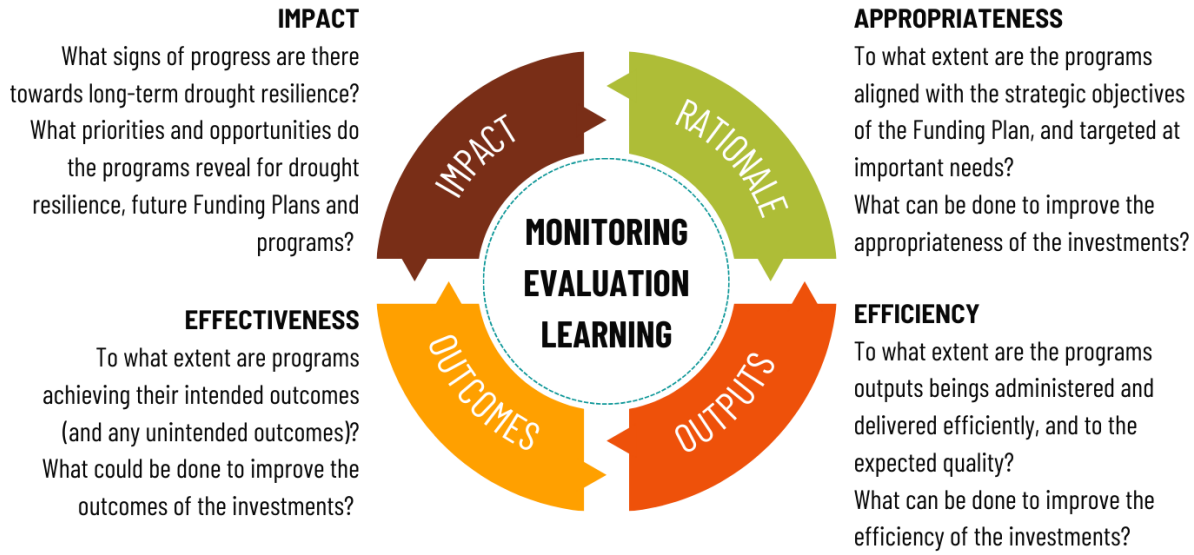

Figure 22: Adapted from Future Drought Fund (FDF) Scope of Enquiry for MEL under the Funding Plan

Figure 23: MEL framework that formed part of Community Conversations

Evaluation

Key Evaluation Questions

The Key Evaluation Questions for the RDRP are:

1. To what extent has the Plan been implemented and has impacted on the regional stakeholders' capacity and resources to better plan, manage and recover from climate challenges?

2. What changes/support are/is needed to ensure that the Plan best provides an effective framework for action and stakeholders can effectively work together towards implementing those actions?

Assumptions underpinning the implementation of the Plan

The FDF MEL plan identified the following assumptions for the RDRP to be effectively implemented. Assumptions are the underlying beliefs or conditions that are presumed to be true or hold constant for the program to be successful in achieving its intended outcomes. They are the links in the causal chain that are not directly controlled by the program but are necessary for the planned activities to lead to the desired results.

Key assumptions affecting outputs to 1–2-year outcomes:

- Regional stakeholders have the capacity and capability to participate in strategic planning.

- Regional stakeholders are willing to cooperate with each other on regional planning.
- Program design is sufficient to give regional stakeholders opportunities to identify and communicate regional drought resilience needs.
- Relevant planning at other scales can be aligned.
- Regional communities are motivated to take ownership of completed plans and actively seek to implement them.
- Communities are willing to share learnings with other regions.
- There are sufficient learnings to inform future program design.

Key assumptions affecting outcomes from 3-4 years:

- Supporting consortia of local governments/stakeholders representing a region will result in changes in practice through those regions.
- There are sufficient opportunities for regions to implement elements of plans.
- Plans contain implementable activities to build drought resilience across Australia.
- Regions continue to review, update and implement their plans.

These assumptions will need to be monitored during the implementation phase to provide feedback and highlight areas that require further intervention.

Monitoring

MEL Data Collection Methods

As part of the implementation of the RDRP, data will be collected at established points. Collection and collation of data will be integrated as part of collaborative planning, ongoing analysis and review of existing data, along with methods such as surveys, interviews, focus groups, and case studies. In designing the data collection process, consideration will be given to balancing qualitative and quantitative data to provide deep and rich data capture. Dependent on resourcing, potential methods for data collection include:

Tracking participation and engagement:

- **Attendance registers**: Maintain simple sign-in sheets for workshops, training sessions, and community meetings related to the drought resilience plan.
- **Number of participants**: Regularly count the number of individuals, enterprises, or community groups participating in different program activities.
- **Community group meetings**: Track the frequency and attendance of any established community working groups or committees involved in the Plan's implementation.
- **Website/social media engagement**: Monitor website visits, social media likes, shares, and comments related to the drought resilience initiatives.

Tracking Resource Distribution and Utilisation:

- **Distribution logs**: Keep records of any resources distributed, including who received them and when.
- **Usage records (where feasible)**: For shared resources, track usage patterns if possible (e.g., through simple logbooks).

Tracking Implementation Progress:

- **Activity completion checklists**: Regularly monitor progress status of initiatives within the plan.
- **Timeline monitoring**: Compare the actual progress of activities against the planned timeline outlined in the drought resilience plan. Note any delays or accelerations.
- **Number of infrastructure projects completed**: For projects involving infrastructure, track the number of completed projects.

Gathering Feedback:

- **Informal check-ins**: Encourage project staff or local facilitators to have informal conversations with participants to gather their initial reactions and feedback on activities.
- **Simple feedback forms** (short and easy to complete): After key events (e.g. workshops), distribute very short forms with 1-2 open-ended questions or simple rating scales (e.g., "How useful did you find this session?").
- **Verbal feedback collection**: Train staff or volunteers to note down key feedback received during interactions with stakeholders.
- **Focus groups**: Facilitated discussions with small groups to gather in-depth feedback on experiences and perceptions related to the drought resilience plan, providing rich qualitative insights.
- **Case studies**: In-depth look at specific examples or situations to understand how the drought resilience plan works in practice and to identify key lessons and contributing factors.

Transition to the North Midlands Resilience Network

As part of the ongoing governance of the RDRP, the Project Advisory Group (PAG) will seek to transition to the North Midlands Resilience Network (NMRN). This network, in partnership with the Mid West Development Commission (MWDC), will oversee the implementation, monitoring, and evaluation of the Plan, and help to share and showcase the projects from the Plan to extend the adaptive learning and capacity building across the subregion.

The NMRN will serve as a regional coordination body. Further details, including membership, governance structure, and reporting mechanisms, will be developed as part of the transition process.

Investment Framework

The Investment Framework for the North Midlands RDRP is designed to guide investment decisions and ensure that the RDRP builds on existing activities and priorities. To avoid duplication, a stop/go assessment is incorporated to ensure proposals consider existing work or deliver on an identified need.

The Framework, shown on page 80, provides a consistent process to guide decision making and categorises investment, with a focus on place based and collaborative approaches. Investments that build knowledge are also incorporated.

Using an adaptive approach, adjustments will be made in future to respond to ongoing monitoring of funded projects, stakeholder feedback, and changing contextual conditions.

Projects considered for investment should also align with the 10 Standing Principles for the subregion, as shown on pages 3-4.

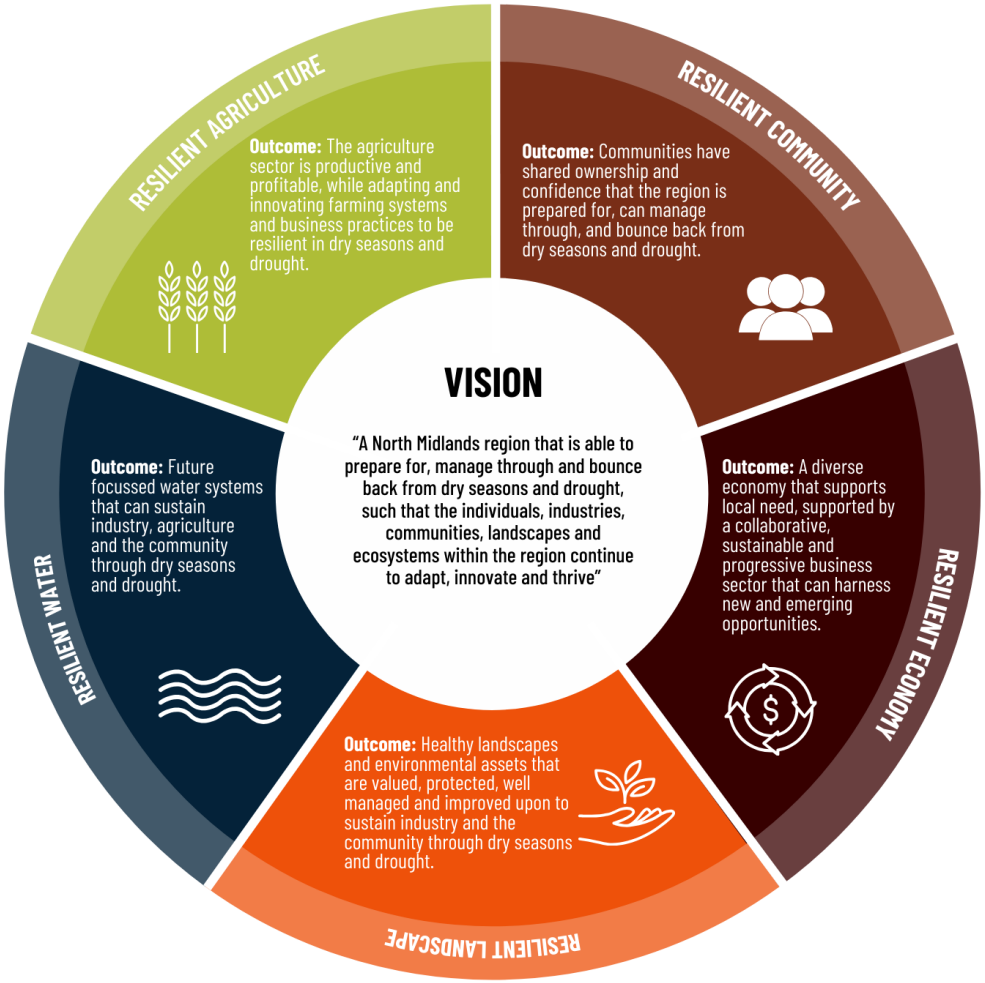

Figure 24: Vision and Outcomes.

Stop/Go Assessment

To avoid duplication investment proposals should build on existing work or deliver on a new area of need or opportunity.

PRIORITISATION CRITERIA

Public Good

Ensure investments have strong potential to enhance public good (including equity considerations) and generate shared benefits (not private benefit), consistent with the aim of the Future Drought Fund.

Integrated Benefits

Where possible investments should integrate building environmental, economic and social resilience. Prioritise projects with the highest potential to enhance drought resilience across the region and those that leverage existing policies, programs and knowledge.

Feasibility & Governance

Funded projects should have an identified project lead, timelines, available resources, risk assessment and stakeholder support. Investments with confirmed co-contribution will be prioritised.

Financial Sustainability

Preference should be given to projects that can demonstrate financial viability in the long term unless a net benefit and/or market failure is demonstrated.

Collaboration

Ensure investments are informed by, and/or tightly align with, the RDRP and stakeholder engagement conducted during the RDRP process. Projects that have broad support from local communities, Traditional Owners, and industry groups should have priority.

Place Based

Ensure investments are suitable to the North Midlands region. For investments suitable only at a more localised scale, ensure equitable distribution across the region, or strong evidence of need.

INVESTMENT CATEGORIES

Knowledge Building Investment

Invest in the development of new research and data to increase the understanding of drought impacts and preventative activities across social, economic and environmental domains. Supports evidence-based prioritisation of projects, programs and infrastructure.

Project or Program Investment

Invest in practical projects and programs that enhance community capability and capacity and share knowledge across the region.
Focus on projects that improve liveability, support economic diversification, landscape restoration, and greater water stewardship across the region. Can be direct or shared.

Infrastructure Investment

Support the development and upgrade of infrastructure that contributes to long term water security for the community and industry.

Monitoring & Evaluation

Projects must have clear metrics to assess the performance of investments in terms of their contribution to drought resilience. Monitoring and Evaluation Plans should be provided with specific indicators aligned with the in relevant RDRP outcomes, data collection methods and evaluation timelines.

Adaptive Management

This framework adopts an adaptive management approach that allows for adjustments to the investment strategy based on ongoing monitoring of funded projects, stakeholder feedback, and changing contextual conditions.

Figure 25: Investment Framework.

Next Steps

This plan establishes a foundational framework for the North Midlands region to identify and communicate its drought resilience priorities. Achieving the outcomes will require ongoing, coordinated action among stakeholders. It is also acknowledged that many of the actions will require investment.

To track progress, a MEL framework will support implementation, ensuring transparency and accountability. This framework will measure the effectiveness of drought resilience actions and allow for continuous improvement.

The investment framework also ensures that funding is prioritised against a range of criteria and aligns with the priorities of stakeholders and the community in the North Midlands subregion. The framework ensures that investments build on existing work or deliver against an evidenced need, and prioritise place based (community led) and collaborative investment.

Moving forward, this Plan serves as a living document – one that will evolve with changing conditions, emerging research and ongoing stakeholder input. By embedding drought resilience into regional planning, we can build on the strengths of the North Midlands region to prepare for and respond to dry conditions and drought.

As strategic documents are revised and updated the priorities articulated in this Plan should be embedded. All local governments in the subregion should consider how the RDRP and accompanying DVA can support strategic planning for the future that actively embeds dry season and drought resilience. In addition, the range of organisations identified in the literature review, and within each theme, should look to embed the RDRP priorities into their work.

As part of the ongoing governance of the RDRP, the PAG will transition to the North Midlands Resilience Network (NMRN). This network, in partnership with the MWDC, will oversee the implementation, monitoring, evaluation and adaptive learning of the plan.

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Table of Figures

Appendix A: Key Policy Context

Policy and strategic documents included in the Mid West (North Midlands) Drought Background & Context Report.

National

- Drought Response, Resilience and Preparedness Plan 2019 Australian Government
- National Climate Resilience and Adaptation Strategy 2021-25 Australian Government
- State of the Climate 2022 Bureau of Meteorology

State

- Climate Adaptation Strategy 2023 (DWER)
- Climate Health WA Inquiry Final Report 2020 (WA Health)
- Foundations for a Stronger Tomorrow: State Infrastructure Strategy 2022 (DPLH)
- Regional Planning and Infrastructure Frameworks 2015 (DPLH)
- State Infrastructure Strategy (Infrastructure WA)
- State Planning Strategy 2050 (DPLH)
- WA Climate Change Policy 2020 (DWER)
- WA Natural Resource Management Framework 2018 (DPIRD)
- WA Primary Industries Plan 2020-24 (DPIRD)
- WA Regional Development Framework 2023 (DPIRD)

Regional

- Drought Impacts on Water Resources of the Mid West 2022 (MWDC)
- Mid West Development Commission Strategic Plan 2023-26 (MWDC)
- Mid West Investment Plan 2011-21 (MWDC)
- Mid West Regional Blueprint 2015 (MWDC/RDA)
- Mid West Regional Planning and Investment Framework 2015 (DPLH)
- Mid West Regional Water Supply Strategy 2015 (DWER)
- Northern Agricultural Region's Natural Resource Management Strategy 2021-2030 (NACC NRM)
- Regional Drought Resilience Plan for the Mid West Region 2023 (MWDC/DPIRD)

Sub-Regional

- North Midlands Community Wellness Plan 2020-2023
- Regional Drought Resilience Plan for the Mid West Region 2023 (MWDC/DPIRD)
- Shire of Carnamah Strategic Community Plan and Corporate Business Plan 2021-2031 (combined)
- Shire of Coorow Corporate Business Plan 2018-2024
- Shire of Irwin Strategic Community Plan 2021-2031
- Shire of Mingenew Strategic Community Plan 2019-2029
- Shire of Morawa Strategic Community Plan 2018-2028
- Shire of Perenjori Strategic Community Plan 2017-2027
- Shire of Three Springs Strategic Community Plan 2018-2028

Appendix B: Scoring for Drought Vulnerability Assessment

The following scores have been calculated against the measures and sliding scale as presented in the Pilot Program Regional Drought Resilience Plan for the Mid West region.

Table 1: Indicators for drought exposure, sensitivity and adaptive capacity.

Index Component	Indicator	Score
Exposure	Projected change in temperature and growing season rainfall	4
	Change in timing of autumn break	3
	Change in drought frequency	5
Sensitivity	Production risk (crop and livestock)	3
	Trend in NDVI (lowest 10%)	4
	Percent employment in agriculture (SA2 combined)	3
Adaptive Capacity	Percent unemployment	3
	Physical capital / access to infrastructure	3
	Groundwater quality	4
	Soil capability	3
Average	Total score = 35	**3.5**

Due to high variability across the region, most scores had to be averaged.

Table 2: Raw Scores for indicators

Indicator	Measure and Scale	Raw Score (Source)
Projected change in temperature and growing season rainfall	Sliding scale 1-5 1. No increase in number of hot days, no change or an increase in rainfall 2. Moderate increase in number of hot days (<2.5), moderate decrease in rainfall (<15%) 3. High increase in number of hot days (<2.5 more hot days), moderate decrease in rainfall (<15%) **4. Moderate increase in number of hot days (<2.5), large decrease in rainfall (≥15%)**	12-15 more hot days annually compared to 1994-2023 = 5 April to October rainfall decline 5% compared to 1994-2023 =2-3

Indicator	Measure and Scale	Raw Score (Source)
	5. High increase in number of hot days (≥2.5 more hot days), large decrease in rainfall (≥15%)	
Change in timing of autumn break	Sliding scale 1-5 1. Percentage decrease in timing of the autumn break – break occurs earlier 2. Autumn break occurs later (0-2%) **3. Autumn break occurs later (3-5%)** 4. Autumn break occurs later (6-8%) 5. Autumn break occurs later (≥9%)	3-6% averaged (but over 6% in the northeastern part of the region) – see DVA
Change in drought frequency	Sliding scale 1-5 1. Three or four fewer droughts 2. One or two fewer drought 3. Equal number of droughts 4. One or two more droughts **5. Three or four more droughts**	3 to 4 more (isolated pockets experiencing 1 or 2 more) – see DVA
Production risk (crop and livestock)	Sliding scale 1-5 1. Very low risk – good production, good soils and high average NDVI 2. Low risk **3. Moderate risk** 4. High risk 5. Very high risk – marginal production, poor soils and low average NDVI	Averaged as moderate (ranging from very low to very high, with generalised increasing risk inland) – see DVA
Trend in NDVI (lowest 10%)	Sliding scale 1-5 1. NDVI 181-200 2. NDVI 161-180 3. NDVI 141-160 **4. NDVI 121-140** 5. NDVI 100-120	Averaged as 121-140 (majority of the eastern region and parts of the west and south 121-140 with higher scores 140-160 in the north-west to central area) – see DVA
Percent employment in agriculture (SA2 combined)	Sliding scale 1-5 1. Very few people employed in agriculture (<10%) 2. Few people employed in agriculture (10-20%) **3. Some people employed in agriculture (20-30%)** 4. Many people employed in agriculture (30-40%) 5. Very many people employed in agriculture (>40%)	11.8% Irwin SA2 & 35.9% Morawa SA2 (averaged as SA2 similar size) = 23.85%
Percent unemployment	Sliding scale 1-5 1. Very low unemployment (0-2%) 2. Low unemployment (2-3%) **3. Moderate unemployment (3-4%)** 4. High unemployment (4-5%) 5. Very high unemployment (>5%)	Average moderate (ranges from 0-5% categories across region) - see DVA
Physical capital / access to infrastructure	Sliding scale 1-5 1. Critical road and/or water infrastructure within 10km 2. Critical road and/or water infrastructure 10-25km away **3. Critical road and water infrastructure 25-50km away**	Averaged 25-50km (moderate) Ranged from very low to moderate, some high and very high in pastoral area. See DVA

Indicator	Measure and Scale	Raw Score (Source)
	4. Critical road and water infrastructure 50-100km away 5. Critical road and water infrastructure more than 100m away	
Groundwater quality	Sliding scale 1-5 1. ≤500mg/L Total Dissolved Solids 2. 500-999mg/L Total Dissolved Solids 3. 1000-2999mg/L Total Dissolved Solids **4. 3000-6999mg/L Total Dissolved Solids** 5. ≥7000mg/L Total Dissolved Solids	Average 3000-6999 (500-3,000 in west and up to 7,000 along coast, and over 7,000 in the east with 3,000-7,000 in far east.
Soil capability	Sliding scale 1-5 1. High to very high capability 50-70% 2. Moderate to very high capability >70% **3. Moderate to very high capability 50-70%** 4. Low to very low capability 50-70% 5. Low to very low capability >70%	Averaged as moderate to very high (very high localised variability – see DVA)
Total score (mean)	Sliding scale 1-5: 1.Low vulnerability **3.Moderate vulnerability** 4.High vulnerability	3.5 (mean)

Appendix C: Vulnerability Mapping

Using the same methodology as used in the Pilot Program Mid West Regional Drought Resilience Plan (MWDC, 2022) impact combines exposure and sensitivity.

As per the Pilot region, data used in the composite map to demonstrate **exposure** is:

- Change in growing season rainfall (historical, projected)
- Change in maturing season temperature (historical, projected)
- Rainfall intensity (events > 10mm, events > 25mm)
- Change in root zone soil moisture
- Change in timing of the autumn break
- Change in drought frequency
- Change in potential wheat yield
- Distance from the coast.

Data used in the composite map to demonstrate **sensitivity** is:

- Production
    - Average potential wheat yield
    - Crop production (t/ha; wheat, canola, barley)
    - Livestock production (numbers; sheep, cattle)
    - High quality agricultural land
    - NDVI at the end of the growing season (20yr average)
- Other
    - Water quality
    - NDVI at the end of the growing season (lowest 10percent)
    - Average household income
    - Farm profit
    - Percentage employment in agriculture
    - Average farm size
    - Presence of bores and dams
    - Farm diversity
    - Accessibility and remoteness index
    - Population trends
    - Areas declared water deficient.

Future use of NDVI as a measure could investigate splitting cropping production and non-cleared estate NDVI, with the non-cleared estate contributing to sensitivity in the 'other' category (NACC, 2024).

Human capital was measured in the Pilot region against:

- population over 65 years
- percentage of unemployment.

Natural capital was measured in the Pilot region as:

- Water
    - important water resources
    - groundwater resources
    - groundwater quality

    - proclaimed water protection areas
- Other
    - soil capability
    - plant available soil moisture
    - native vegetation extent
    - trend in NDVI
    - surface salinity

MID WEST
DEVELOPMENT
COMMISSION