



Protecting what we love.

DRAFT North Central Climate Change
Strategy



Acknowledgment of Country

The North Central Catchment Management Authority acknowledges Aboriginal Traditional Owners within the region, their rich culture and spiritual connection to Country. We also recognise and acknowledge the contribution and interest of Aboriginal people and organisations in land and natural resource management.

Document name: "North Central Climate Change Strategy

Front cover photo: Floodwaters rushing down Forest Creek at Barnadown. Credit Angela Gladman, North Central CMA

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Executive Summary

Working together to build healthy, resilient and future-ready catchments.

Climate change is already reshaping the landscapes, livelihoods and communities of North Central Victoria. The *Protecting what we love: North Central Climate Change Strategy* responds to this urgent challenge with a collaborative and forward-looking plan to build resilience, and protect what we value most: Our people, environment and the places we call home, now and into the future.

Strategic goals

This strategy sets out three overarching goals:

1. Reduce the climate change risks and vulnerabilities of natural assets and our communities that rely on them.
2. Prepare natural assets and our communities for change and ensure they have the tools and strength to respond.
3. Maximise the benefits of climate mitigation activities for biodiversity, water resources and agriculture, and avoid adverse impacts.

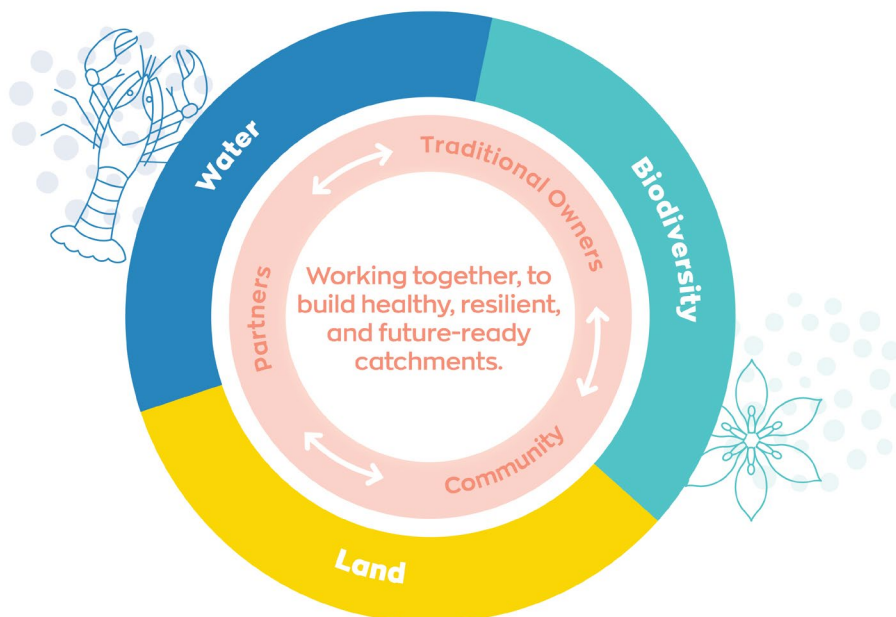
A collaborative approach

Developed in partnership with regional stakeholders, this strategy draws on the collective expertise of land managers, Traditional Owners, local government, water authorities and community organisations.

It was guided by a Steering Committee comprising representatives from the North Central Catchment Management Authority (CMA), the City of Greater Bendigo, Coliban Water, Department of Energy, Environment and Climate Action (DEECA) and DJAARA. This collaborative process ensures the strategy reflects shared values, local knowledge and a strong commitment to climate action.

Strategic foundations

As a sub-strategy of the *North Central Regional Catchment Strategy 2021–2027* (RCS), this strategy adopts the RCS's thematic framework which comprises Water, Land, Biodiversity, Community and Traditional Owners, to guide its response to climate hazards. It builds on the North Central RCS and renews the *Climate Change Adaptation and Mitigation Plan 2015*, aligning with state and national climate policies and integrating lessons from past efforts. This alignment ensures consistency with regional priorities and supports a coordinated response to climate change across all aspects of natural resource management.



Community at the heart of catchment health

The health of our catchments depends on the active participation of people across the region. Whether farming, managing land, living in towns, volunteering, working, or attending school, everyone has a role to play in caring for the region’s natural resources. An engaged and empowered community is essential for effective and enduring NRM outcomes.

Rural landholders remain the backbone of landscape-scale NRM in the region. Their stewardship, combined with the efforts of more than 160 Landcare, regenerative agriculture, and environmental volunteer groups, forms a strong foundation for community-led action.

Commitment to Country and culture

The North Central CMA acknowledges the Traditional Owners and Aboriginal and Torres Strait Islander peoples of the region, their enduring connection to Country and their leadership in land and water stewardship. This strategy supports Traditional Owner aspirations and leadership in climate and natural resource management, recognising that cultural knowledge and values are central to building a resilient future.

Climate risks and regional priorities

The science is clear: North Central Victoria is facing a future of hotter, drier conditions, with more frequent and intense extreme events such as droughts, floods, bushfires and heatwaves (DEECA 2024).

These changes threaten the sustainability of natural resources, the prosperity of communities and the health of ecosystems.

Over the past decade, our communities and landscapes have felt the brunt of climate change. The rapid pace of these changes makes it difficult for many of our native species and landscapes to adapt on their own, they need our help.

Without coordinated action, the region risks losing not only biodiversity and agricultural productivity, but also the cultural and social fabric that binds communities together.



Working together to build healthy, resilient and future-ready catchments.

Climate change is already reshaping our landscapes and communities. This strategy sets out a natural resource management approach to climate action, recognising that our landscapes are living systems that sustain biodiversity, cultural values, waterways, agriculture and community wellbeing. Through seven strategic themes, it guides collaborative, place-based adaptation and maximises the benefits of mitigation to help our environment and communities adapt and thrive in the face of change.

In pursuit of our vision — *working together to build healthy, resilient and future-ready catchments*, these priority directions guide coordinated action across climate adaptation and mitigation. They reflect the values of regional communities, Traditional Owners and partners, and aim to protect what matters, strengthen resilience and support a just transition to a climate-ready future.



While not listed as specific climate change priorities in this strategy, the following activities are already being delivered across the region through strong partnerships, collaboration and shared commitment. These actions are embedded in how we work together to deliver outcomes across land, water, biodiversity and community:

- Integrate climate considerations into all relevant frameworks, policies, plans, and strategies as they are reviewed and updated.
- Embed climate thinking across all aspects of natural asset management to support long-term resilience.
- Apply Indigenous knowledge to improve ecosystem management, in partnership with Traditional Owners and where supported.
- Promote collaboration between support organisations, land managers, industry, and government to deliver outcomes across the region.



Connecting the dots - *Bridging knowledge, planning and technical skills gaps. This way, we can better prepare for regional climate challenges, reduce risks and can adapt with confidence.*

1. Enhance the resilience of regional biodiversity and waterway values through climate vulnerability assessments and adaptation planning.
2. Guide sustainable land use and agricultural development through improved planning, landholder support and a clearer understanding of land capability under future climate scenarios.
3. Partnerships with research institutions, Traditional Owners, and local organisations are strengthened to enhance climate data quality, cultural relevance and improve decision making.
4. Support communities and regional organisations to plan for climate change using locally focused, place-based approaches.

Protecting what we love - *Safeguarding climate-vulnerable ecosystems and support community resilience through targeted adaptation, sustainable land management and emergency preparedness.*

5. Protect vulnerable waterways and biodiversity values using targeted adaptation pathways based on climate risk assessments.
6. Promote climate-smart agriculture by supporting land stewardship that improves soil health, water retention and productivity.
7. Strengthen emergency preparedness and response to protect climate-vulnerable communities, environmental assets and cultural values from extreme events.
8. Support nature-based solutions that help communities prepare for and recover from extreme events and reduce climate risks.

Connecting communities - *Making climate adaptation accessible, meaningful and beneficial by supporting communities to understand the challenge, feel confident in their role and actively take part in nature-based solutions that enhance both environmental and human wellbeing.*

9. Promote the benefits of nature-based solutions for community wellbeing and climate resilience.
10. Translate climate adaptation knowledge and successes into accessible, locally relevant information and messages that inspire community awareness, wellbeing and participation in nature-based solutions.
11. Support diverse communities to build the skills, connections, and understanding needed to lead and deliver effective climate action.

Walking with Traditional Owners - *Supporting Traditional Owners in caring for Country, integrating cultural knowledge, fire management and co-designed climate initiatives.*

12. Support opportunities for Traditional Owners to influence strategies and co-design climate change programs and projects.
13. Support self-determined leadership of Traditional Owners in caring for water, biodiversity, land and climate, grounded in cultural knowledge and connection to Country.
14. Support integration of Traditional Owner-led cultural fire management to reduce wildfire risk, where appropriate.

Partnering for change - *Strengthening climate adaptation by enhancing leadership, coordination and partnerships across organisations, communities and knowledge holders.*

15. Strengthen climate adaptation by enhancing collaboration, leadership and coordination across partner organisations and existing networks.
16. Support community-led climate solutions by building capacity, supporting local leadership and strengthening networks for place-based actions.

Integrating nature in the transition to net-zero - *Ensuring mitigation activities are planned and delivered to support improved catchment and waterway health and biodiversity.*

17. Align climate mitigation efforts with regional priorities for biodiversity, land and water management.
18. Continue to explore and advocate for credible offset initiatives that reflect regional values and deliver co-benefits, including those beyond regulated carbon markets.
19. Improve understanding and visibility of local nature-based carbon storage opportunities.
20. Advocate for community benefit from large-scale renewable energy projects, once approved, by encouraging investment in local Natural Resource Management (NRM) initiatives.

Being open to shifting direction - *Support integrated monitoring systems, adaptive management and digital innovation to enable timely, informed responses to climate risks and evolving science.*

21. Prioritise integrated monitoring and reporting systems for key environmental indicators, including support for citizen science and community-led efforts.
22. Embed adaptive management across programs to enable timely responses to emerging climate risks and new scientific insights.
23. Support investment in digital tools to improve climate data collection, analysis and access to support informed, timely responses to climate change.

Implementation and partnerships

This Strategy recognises that building resilience to climate change will depend on supporting local leadership, strengthening community networks and enabling place-based solutions that reflect the values and knowledge of the people who live and work in the region.

Implementation of this strategy will be guided by the governance and partnership arrangements established under the North Central RCS, and driven by partnerships involving:

- **Government agencies** with land management or other legislated responsibilities, as outlined in the RCS.
- **Communities** across the North Central region, whose local knowledge, leadership and action are essential to climate resilience.
- **Key stakeholders**, including non-government organisations, Landcare networks and other community-based groups.
- **Traditional Owners**, whose cultural knowledge and custodianship are central to sustainable management of our natural resources.

With limited dedicated funding, the initial focus will be on strengthening collaboration, embedding climate priorities into existing plans and updating the existing regional investment prospectus to include climate adaptation priorities. Implementation will be adaptive and staged, with short-term action plans developed as resources allow. A monitoring, evaluation, reporting and implementation (MERI) framework will track progress, support learning and ensure accountability. It will align, where possible, with existing RCS processes.

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1 Purpose and scope

1.1 Introduction

Our landscapes are more than mere backdrops. They are living, dynamic ecosystems that sustain life, support biodiversity and underpin the health of our environment. They are home to significant environmental values, including waterways and wetlands, native vegetation and wildlife. These landscapes hold deep spiritual and cultural significance for Traditional Owners, providing a vital connection to Country. They also support a diverse and productive agricultural sector while offering places for recreation, reflection and connection that are essential to the wellbeing of our communities.

Our communities and landscapes are already experiencing the impacts of climate change. Rising temperatures, shifting rainfall patterns and more frequent extreme weather events are stressing the natural systems we depend on and value.

To meet these challenges, we must adapt how we manage our landscapes. Across the region, we are committed to building a future where our landscapes and communities not only survive but thrive, recognising that thriving may look different as our environment continues to change. Achieving this vision will require harnessing the power of collaboration to address one of the greatest challenges of our time.

As we confront climate change, we know collaboration is key. The North Central Catchment Management Authority (CMA), together with local communities, Traditional Owners, government agencies, water corporations and non-governmental organisations, know that working together on climate change is essential. This strategy reflects our shared commitment to address climate change impacts on the environment and supporting the communities that rely on it.

1.2 Scope and policy context

Effective climate change adaptation requires a comprehensive approach. It needs to integrate strategies and policies at the national, state, regional, and local levels. This strategy aligns with key legislative frameworks, policies and programs, ensuring our efforts are coordinated. By working together and making informed decisions, we aim to create a sustainable future for all. We advocate for the integration of climate change considerations into all planning and strategic documents at every level.



Photo: Planting hope, one tree at a time — tackling climate change takes all of us, working together for a greener future. - Gunbower Primary School Students planting at the Gunbower Recreational Reserve Community Planting Day along the Gunbower Creek. Photo: Britt Gregory, North Central CMA

The management and protection of our regions lands, waters and biodiversity is guided by the [North Central Regional Catchment Strategy 2021-2027 \(RCS\)](#). The RCS sets a vision for integrated management across the region, identifies priority directions and targets, and provides a framework to coordinate our efforts. Climate change is a critical focus of the RCS, which prioritises the renewal of the [North Central Climate Change Adaptation and Mitigation Plan 2015](#) (North Central CMA 2015). By updating our shared knowledge and responses to climate change risks, we can better prepare for and address the challenges ahead.

The renewed North Central Climate Change Strategy (this strategy) builds on the successes and learnings of the previous Plan (North Central 2015). It explores the regional challenges and aligns with government and regional partners policies and programs. This coordinated approach ensures that climate change adaptation and mitigation priorities lead to better outcomes and investments for the region.

Governments, organisations and businesses have already developed various strategies, programs and plans to adapt to climate change (see Appendix 1 for more details). By aligning with these, this strategy ensures our regional collective efforts are part of a cohesive and comprehensive approach to protecting what we love.



2 Our Region

The north central region covers 13 per cent (three million hectares) of Victoria, including four inland river catchments: Campaspe, Loddon, Avoca and Avon-Richardson. These catchments flow northward as part of the Murray-Darling Basin.

The region includes the traditional lands of the Dja Dja Wurrung, Taungurung, Yorta Yorta, Barapa Barapa, Wamba Wamba and Wadi Wadi peoples and the clans represented by Barengi Gadjin Land Council. Continuing to work towards self-determined participation and leadership of Traditional Owners in caring for Country is an important priority of stakeholders within the region.

The region's waterways, including over 100,000 km of streams and 1,600 wetlands, hold significant economic, environmental, cultural and social value. Notably, it includes two Ramsar wetlands in Gunbower Forest and Kerang Wetlands.

Natural resources and biodiversity are essential for the economy and wellbeing of communities, with unique and threatened species present. Protecting and building ecosystem resilience is vital in the face of climate change pressures. Nature markets, such as the carbon market, offer opportunities to enhance native vegetation.

Eighty-seven per cent of the land is privately owned, with the majority dedicated to agriculture. Dryland farming covers over two million hectares, while irrigated agriculture is largely concentrated in the Goulburn Murray Irrigation District. Improving soil health and irrigation efficiency is essential. As climate change is expected to bring more extreme weather events (including droughts and floods) and reduction in rain falling over autumn, winter and spring, farmers will need to continue to adapt. Developing place-based climate change resources will be critical to support informed land use and adaptation practices.

A prosperous economy supports natural resource protection. Agriculture is the dominant land use and mainstay of the region's economy. Employment in high-skill service industries is concentrated in the southeast around Bendigo or within commuting distance to Melbourne, where the population is growing. Tourism, mining and renewable energy projects are also significant. Population growth in some areas and decline in others present challenges and opportunities. These shifts, combined with the increasing impacts of climate change, highlight the need for adaptive approaches that support sustainable development, protect natural assets and build community resilience across the region.

The region is home to more than 250,000 people, with nearly half in Greater Bendigo. With increasing temperatures, drought-tolerant green spaces and trees in urban areas will be important as they lower surface and

air temperatures by providing shade and evaporative cooling.

In the north and west of the region, an ageing population and the trend toward larger/corporate farms contribute to population decline and associated socio-economic impacts, including a reduced volunteer base.

We are fortunate to have more than 200 community-based environment groups, including Landcare groups and networks, sustainable agriculture groups and others, actively working across the region. These groups play a vital role not only in protecting and restoring natural assets but also in strengthening the region's climate resilience. Their on-ground efforts help landscapes adapt to changing conditions, support biodiversity and build community capacity to respond to climate-related challenges. Supporting these groups to continue their important work and encouraging more people to get involved in environmental volunteering are key priorities for a more resilient future.



Figure 1. North Central Region comprised of four inland river catchments: Campaspe, Loddon, Avoca and Avon-Richardson.

3 Climate change overview

Human-induced climate change is already transforming the landscapes, ecosystems and communities of north central Victoria. We are witnessing more intense rainfall, larger and more frequent floods, prolonged dry periods and hotter conditions. Events such as the Millennium Drought and the floods of 2010–11 and 2022 have left lasting impacts on the natural environment, cultural heritage, Traditional Owners and the community.

In 2023, the Intergovernmental Panel on Climate Change (IPCC) released its Sixth Assessment Report (AR6), stating:

“Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1 °C above 1850–1900 in 2011–2020. Widespread and rapid changes in the atmosphere, ocean, cryosphere, and biosphere have occurred. Human-caused climate change is already affecting many weather and climate extremes in every region across the globe.”

— IPCC AR6, 2023

3.1 Observed changes in Victoria’s climate

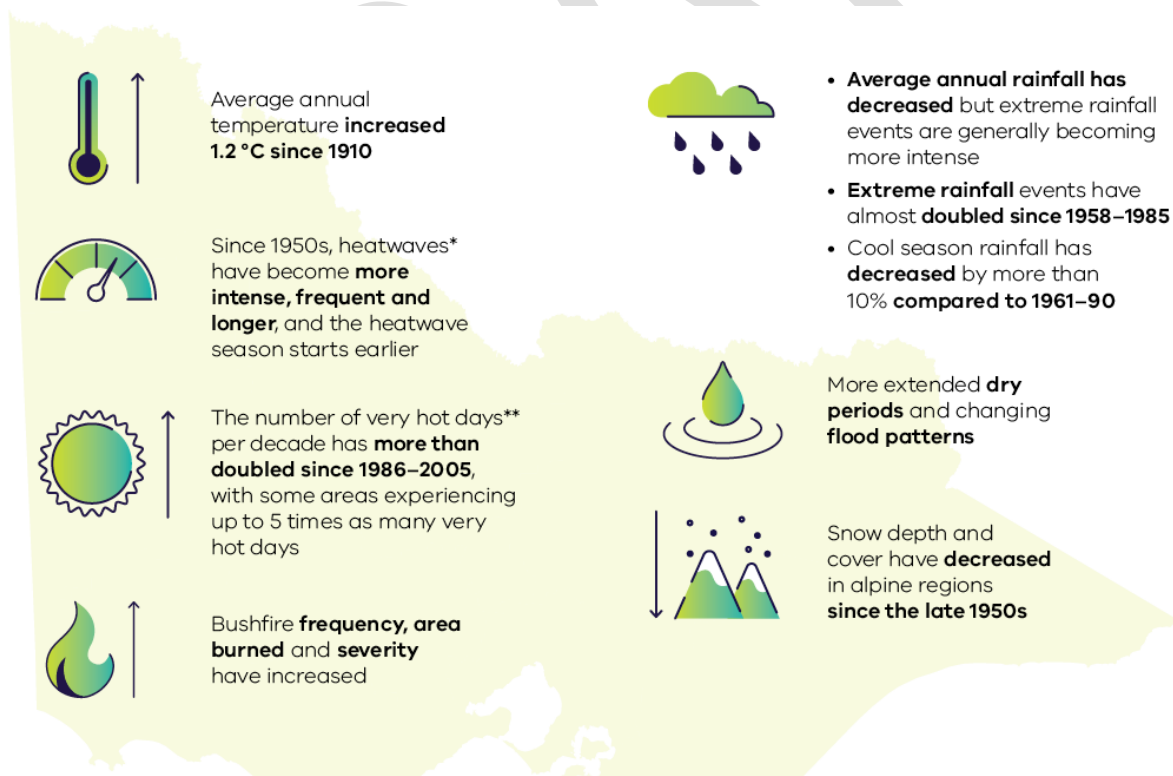
The *Victorian Climate Science Report*, published every five years under the *Climate Change Act 2017*, provides the most up-to-date insights into past and projected climate conditions for the state. Our understanding continues to evolve through new observations, improved modelling and deeper knowledge of climate processes.

This chapter presents observed and projected climate trends for Victoria. It will be updated throughout the life of this strategy as new data, modelling or research becomes available.

According to the [Victoria’s Climate Science Report 2024](#), the state has already experienced significant climate shifts:

Want to know more about science visit:

[Victoria’s changing climate or scan QR Code below](#)

* A heatwave is defined as at least 3 consecutive days above the 95th percentile of daily average temperatures

** Very hot days are defined as days with daily maximum temperature exceeding the 99.9th percentile

Figure 2. Victoria’s climate has already changed. Observations as of 2024. Source: DEECA 2024, [Victorian’s Climate Science Report 2024](#), under [CC by 4.0](#).



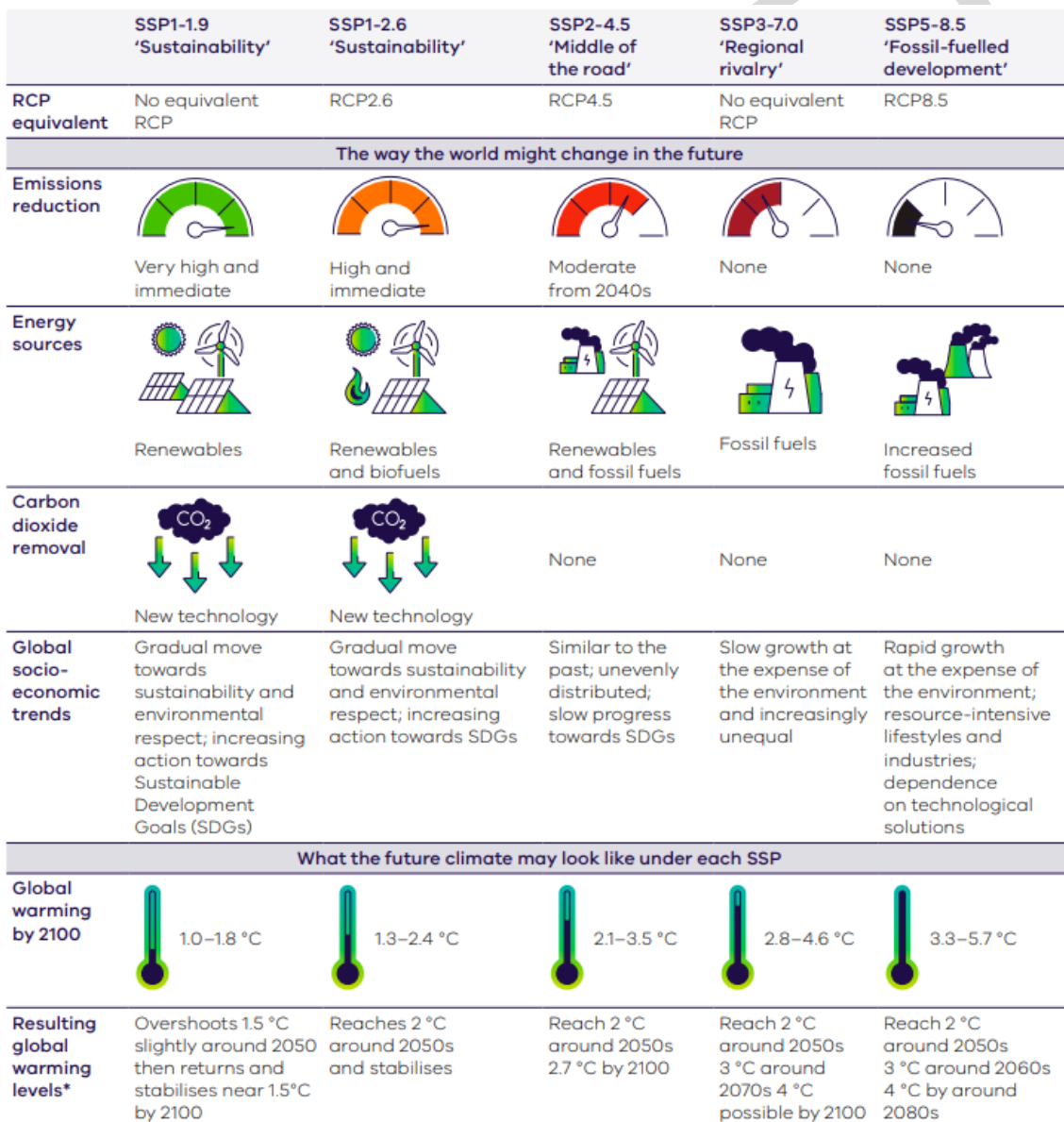
3.2 Future climate projections

The IPCC warns that:

“Continued greenhouse gas emissions will lead to increasing global warming... every increment of global warming will intensify multiple and concurrent hazards. Some future changes are unavoidable and/or irreversible but can be limited by deep, rapid and sustained global greenhouse gas emissions reduction.”
 — (IPCC AR6, 2023)

While we cannot predict the exact future, climate projections provide scientifically grounded insights into how the climate may change under different emissions scenarios. These projections are not forecasts but rather plausible ranges of change for key climate variables, such as temperature, rainfall and extreme events, over specific timeframes.

To explore these futures, climate scientists use Shared Socioeconomic Pathways (SSPs), scenarios that consider not only greenhouse gas emissions but also global trends in energy use, population growth, economic development, land use, and social and political change.



*As a general guide or 'rule of thumb'

Figure 3. An overview of the five SSPs used in modelling the global climate. The socio-economic narrative describes the broad socio-economic trends (such as population and economic growth, technological advances, patterns of consumption, inequality, etc.) that could shape future society and influence future emissions and adaptive capacity **Source: DEECA 2024, Victorian's Climate Science Report 2024, under CC by 4.0.**

3.2.1 What this means for Victoria

Regardless of the global emissions pathway, Victoria is projected to:

- Experience a warmer climate, with further increases in average temperatures and more frequent and intense hot days.
- Become drier overall, particularly during the cool season (April–October).
- See an increase in the intensity of short-duration extreme rainfall events (DEECA, 2024).

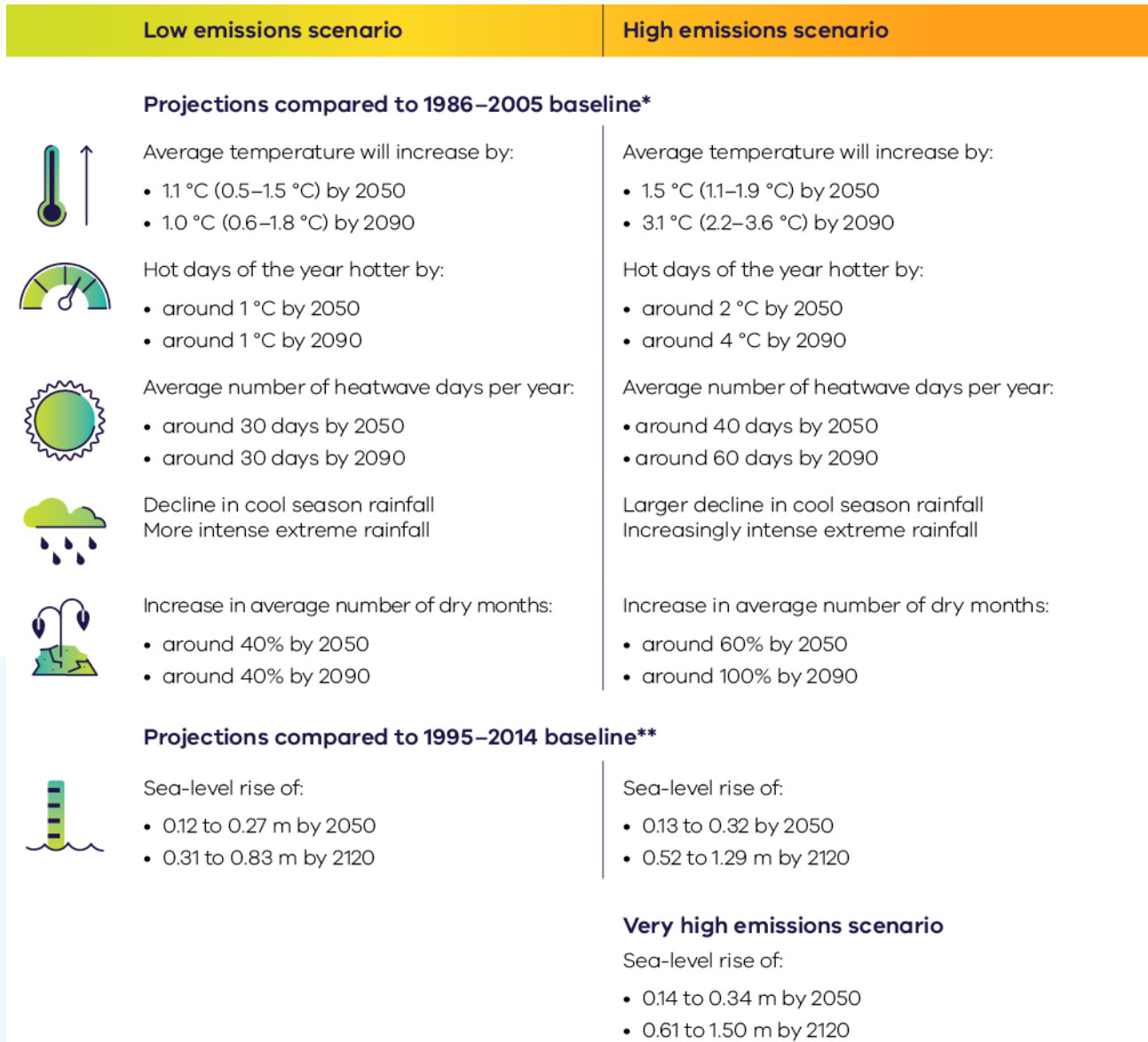


Figure 4. Projected changes for Victoria’s climate under two global greenhouse gas emissions scenarios (low and high). (DEECA 2024) * Downscaled CMIP6 projections, based on plausible low (SSP1-2.6) and high (SSP3-7.0) emissions scenarios. ** CMIP6 projections, based on low (SSP1-2.6), high (SSP3-7.0) and very high (SSP5-8.5) emissions scenarios. **Source: DEECA 2024, Victorian’s Climate Science Report 2024, under CC by 4.0.**

Victoria’s climate is changing. These statewide shifts are reshaping ecosystems, water resources and communities. The next chapter explores what this means for the north central region’s landscapes, environment and people.

4 The North Central climate change challenge

We are at a pivotal moment. The reality of climate change is undeniable and the challenges ahead are significant. This section outlines the key climate-related risks facing our region.

In the north central region, the impacts of climate change are all too familiar. Human-induced climate change is reshaping the sustainability of our natural resources and the prosperity of our communities. It touches every aspect of our lives: our towns, jobs, farms, and the cherished environment around us. Climate change is exacerbating existing challenges and putting pressure on the region resources.

The science is clear about the reality of climate change. The North Central region can expect hotter, drier conditions over time, with more frequent, intense, and longer-duration extreme events (DEECA 2024). While our region has always faced droughts, floods, fires and heatwaves, climate change amplifies these events' frequency, severity and duration.

We are already seeing:

- An increase in short-duration extreme rainfall events, such as intense summer storms.
- More frequent and intense heavy rainfall events, similar to those in 2010–11 and 2022.
- Greater fire activity in fire-prone ecosystems, driven by hotter and drier conditions.

Over the past decade, our communities and landscapes have felt the brunt of climate change. The rapid pace of these changes makes it difficult for many of our native plants, animals and crops to adapt on their own, they need our help.

Regional projections provide a more detailed, localised snapshot of climate change impacts, based on the Victorian Climate Projections 2024.



Figure 5. Regional climate change impact projections, derived from the Victorian Climate Projections 2024. Click on the fact sheet images above to access regional projection flyers developed by DEECA, or visit [Victoria's changing climate](#) for more information.

The degree of projected change depends on future global emissions (Figure 3), but the overall direction of change is consistent. Climate projections indicate a continued shift toward more extreme conditions, including altered rainfall patterns, longer and more intense heatwaves, and an increase in the frequency and severity of heavy rainfall events. These changes are contributing to heightened fire activity in many fire-prone ecosystems. Future droughts are also expected to be hotter and more intense, increasing the likelihood of compounding events that place additional stress on communities, ecosystems and natural resources.



Increased frequency and intensity of fire

Observations and climate change studies suggest fire activity is increasing in many fire-prone ecosystems and will continue to do so.

Observed changes in fire regimes, activity and fire drivers are likely to escalate with an increase in global warming. Projected changes are likely to lead to significant shifts in fire activity across the north central region.

Presented in DEECA 2024 Findings based on peer-reviewed literature.



Reduced and more variable rainfall

Winter and spring rainfall will continue to decline, Autumn rainfall may decline or possibility of little change. Most rainfall and runoff have historically occurred during the cooler months, and reductions in rainfall during this period will have a larger impact on water availability.

While there may be increases in rainfall during warmer months, they are unlikely to compensate for the declines during cooler months. Over the past two decades, streamflows have decreased and projections indicate further reductions.

Presented in DEECA 2024 findings based on peer-reviewed literature.



Prolonged and more intense droughts

Droughts in the 21st century have become noticeably hotter and this trend is expected to continue, with future droughts likely to be even hotter. This intensification can exacerbate compounding heat and drought events.

Droughts can differ in their characteristics, such as duration and type and there is growing evidence that these characteristics may shift in response to changes in rainfall distribution (see Figure 6).

Additionally, global research suggests that a warming atmosphere, which demands more moisture, could lead to faster-developing droughts with potentially more severe consequences.

Presented in DEECA 2024 Findings based on peer-reviewed literature.



Increased temperature and extreme heat

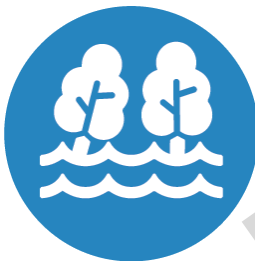
Future heatwave patterns in Victoria are expected to shift due to rising global temperatures. As warming continues, heatwaves are likely to become longer, more intense and more frequent.

Climate projections suggest a notable increase in the occurrence and severity of events where drought and heatwaves overlap. These concurrent extremes are anticipated to intensify in both duration and frequency.

Historically, Victoria has experienced around 20 heatwave days per year (1986–2005). Under a high emissions scenario (Figure 3), this number could rise substantially by 2090, with projections indicating up to 60 heatwave days annually, up to three times the historical average.

In addition, both maximum and minimum daily temperatures are expected to continue rising throughout the century, contributing to the overall increase in heat-related extremes.

Presented in DEECA 2024 Findings based on peer-reviewed literature.



Increased intensity and frequency of rainfall events (including flooding)

Rainfall intensity has increased over time due to climate change, but the effects on flooding are complex and vary by region and flood type.

Projections suggest that by 2100, extreme flood events such as those occurring once every 100 years might be twice as likely to occur by 2100 (DEECA 2024 – Figure 26). These larger floods are expected to intensify further as the climate continues to warm.

Conversely, smaller floods have shown a declining trend, with reductions in their magnitude observed over the past 50 to 70 years, estimated at around 5–13% per decade.

If emissions continue to rise at moderate to high levels, the overall risk of flooding could double by the end of the century.

While floods are a natural and necessary part of the landscape, supporting ecological processes, the increasing frequency and severity of extreme events pose serious challenges for both natural systems and communities.

Presented in DEECA 2024 Findings based on peer-reviewed literature.

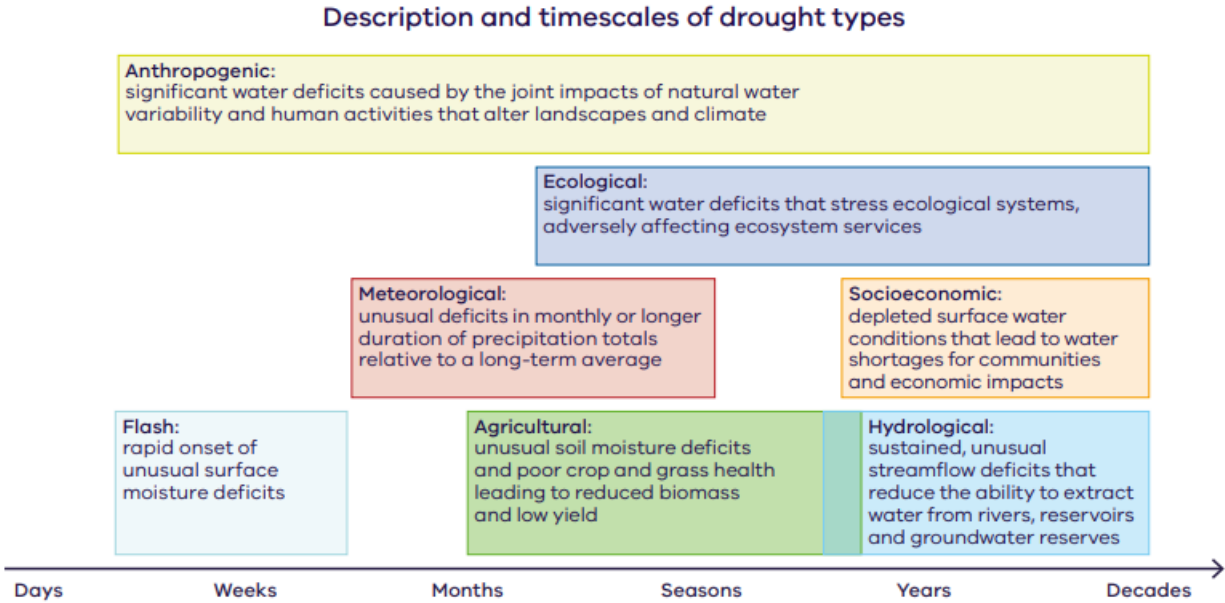


Figure 6. Description and typical timescales of different types of droughts. The horizontal axis shows increasing timescales, from days to decades. Source: DEECA 2024, [Victorian’s Climate Science Report 2024](#), under [CC by 4.0](#).

While the challenges of climate change are significant, there remains strong cause for optimism. Across the region, meaningful action is already underway. Communities, landholders, Traditional Owners and organisations are working together to adapt, build resilience and protect what matters most. From grassroots initiatives to landscape-scale projects, we are laying the foundation for a positive future.

This climate change strategy provides a solid foundation for working together to reduce climate change risks, strengthen community and natural resource resilience, and maximise the benefits of climate mitigation for biodiversity, water resources and agriculture, while avoiding adverse impacts.

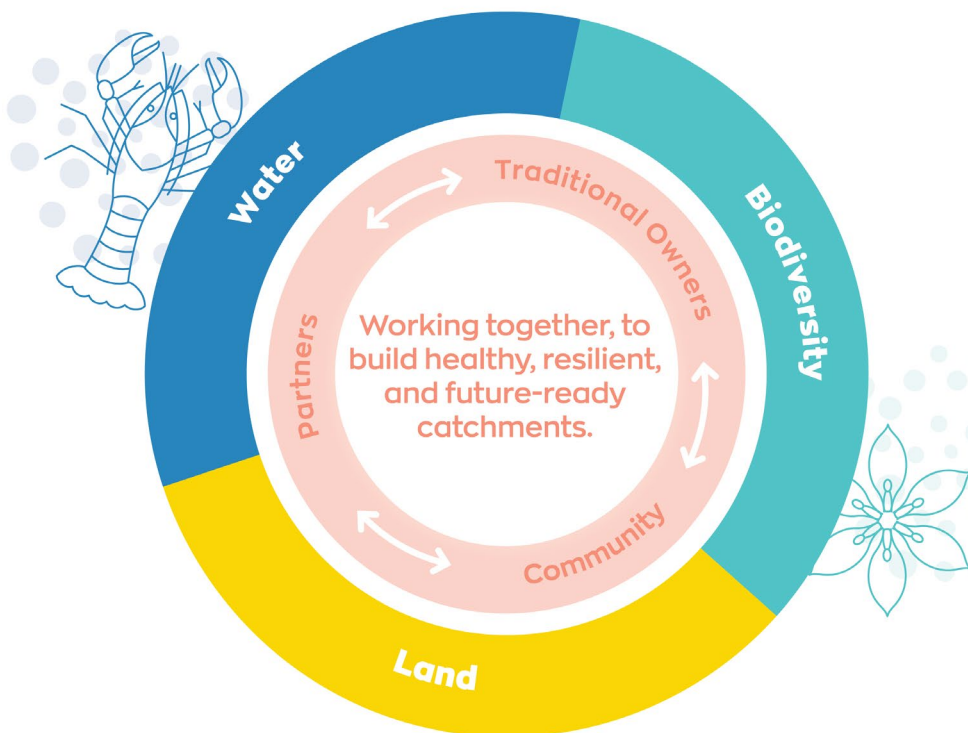
5 A thematic approach to understanding climate hazards in North Central Victoria

As a sub-strategy of the North Central Regional Catchment Strategy (RCS), this strategy adopts the RCS's thematic framework which comprises Water, Land, Biodiversity, Community and Traditional Owners, to guide its approach to understanding and responding to climate hazards. This alignment ensures consistency with regional priorities and supports a coordinated response to climate change across all aspects of natural resource management (North Central CMA 2021).

Each theme provides a lens through which climate hazards are considered:

- The Water theme considers water resources, waterways, wetlands, floodplains, water dependent species and habitats
- The Biodiversity theme focuses on terrestrial biodiversity, including native vegetation, habitats and threatened species.
- The Land theme focuses on agricultural land use and management, as well as engaging the farming community.
- The Community theme considers the contribution of the regional community to Natural Resource Management (NRM) and how to maintain and build community involvement into the future.
- The Traditional Owner theme describe the values and priorities of Traditional Owners with regards their Country and their role in caring for Country.

Within the RCS, a dedicated Climate Change page brings together all climate-related information in one place. Climate change related priority directions are also embedded within each theme, providing a clear and integrated approach. This strategy builds on those directions, reinforcing our commitment to climate resilience and coordinated action across the region.



5.1 Water

The Water theme considers surface and groundwater resources, waterways (including wetlands) and floodplains. Water-dependent species, habitat values and management are also considered under this theme.

The North Central CMA region encompasses four inland river catchments (Figure 1), which originate on the northern slopes of the Great Dividing Range and flow northward onto the expansive riverine plains of northern Victoria. These waterways, comprising over 100,000 km of streams and 1,600 wetlands, hold significant economic, environmental, cultural and social value for Traditional Owners and regional communities alike (North Central CMA 2021).

The catchments all form part of the Murray-Darling Basin, however average rainfall and streamflow is greater in the east of the region and declines across the basins moving from east to west. This influences the shape of the rivers and their floodplains, and the degree to which each river interacts with the mid-Murray River and its floodplain.

Climate change poses a significant threat to our region's waterways, exacerbating existing challenges and putting pressure on water resources. The complex interplay of historical and current drivers, such as land clearing and overgrazing, invasive plants and animals combined with future climate trends, intensifies these threats.

The region is already experiencing reduced rainfall and streamflows with projections indicating further declines (Potter et al 2016 in DELWP 2019). Increased flooding and droughts pose risks to culturally significant sites and are likely to exacerbate erosion and sedimentation.

Rising temperatures and low flow conditions degrade water quality, increasing the risk of algal blooms, especially in unregulated waterways. Wetlands face significant changes due to increased temperatures, reduced flows and evapotranspiration, potentially leading to irreversible structural changes. Ecological impacts include disrupted species' feeding and breeding patterns, increased fire danger and long-term water quality issues from ash and sediment runoff. Shifting rainfall patterns and more intense storms stress water management systems (North Central CMA 2021).

The RCS identified priority waterway and wetland assets across the region. These identified assets will guide and be adopted through the implementation of this strategy (Figure 7).

Box 1 – Delivering the right amount of water at the right time, reduced rainfall and streamflows Loddon River



Loddon River Photo: Stephen Malone Photography

While climate change is placing increasing pressure on our region's waterways through reduced rainfall, lower streamflows and more extreme weather, there are already positive steps being taken to adapt. In the Loddon catchment, targeted environmental water delivery is helping to maintain and restore critical river and wetland ecosystems, even in the face of a changing climate.

The Loddon River, flowing from the Great Dividing Range to the Murray River, supports significant wetlands such as the Kerang Lakes and Boort system, which are important habitats for waterbirds and aquatic species.

Despite being part of a highly modified irrigation network, the system allows for strategic water releases that improve native vegetation, support fish populations, and protect species like river blackfish and platypus. The reach between Loddon Weir and Kerang Weir is a key priority, as it receives no irrigation flows but offers strong potential for ecological improvement. The upper Loddon River and Tullaroop Creek are also important due to their unique biodiversity, home to species such as river blackfish and platypus.

Although the water distribution system is complex, it presents opportunities to carefully manage the timing and location of flows to achieve environmental outcomes. These efforts show how adaptive water management can deliver real benefits, even in the face of climate change.

Find out more about the current watering program [Loddon River | North Central Catchment Management Authority](#) or scan the QR code.



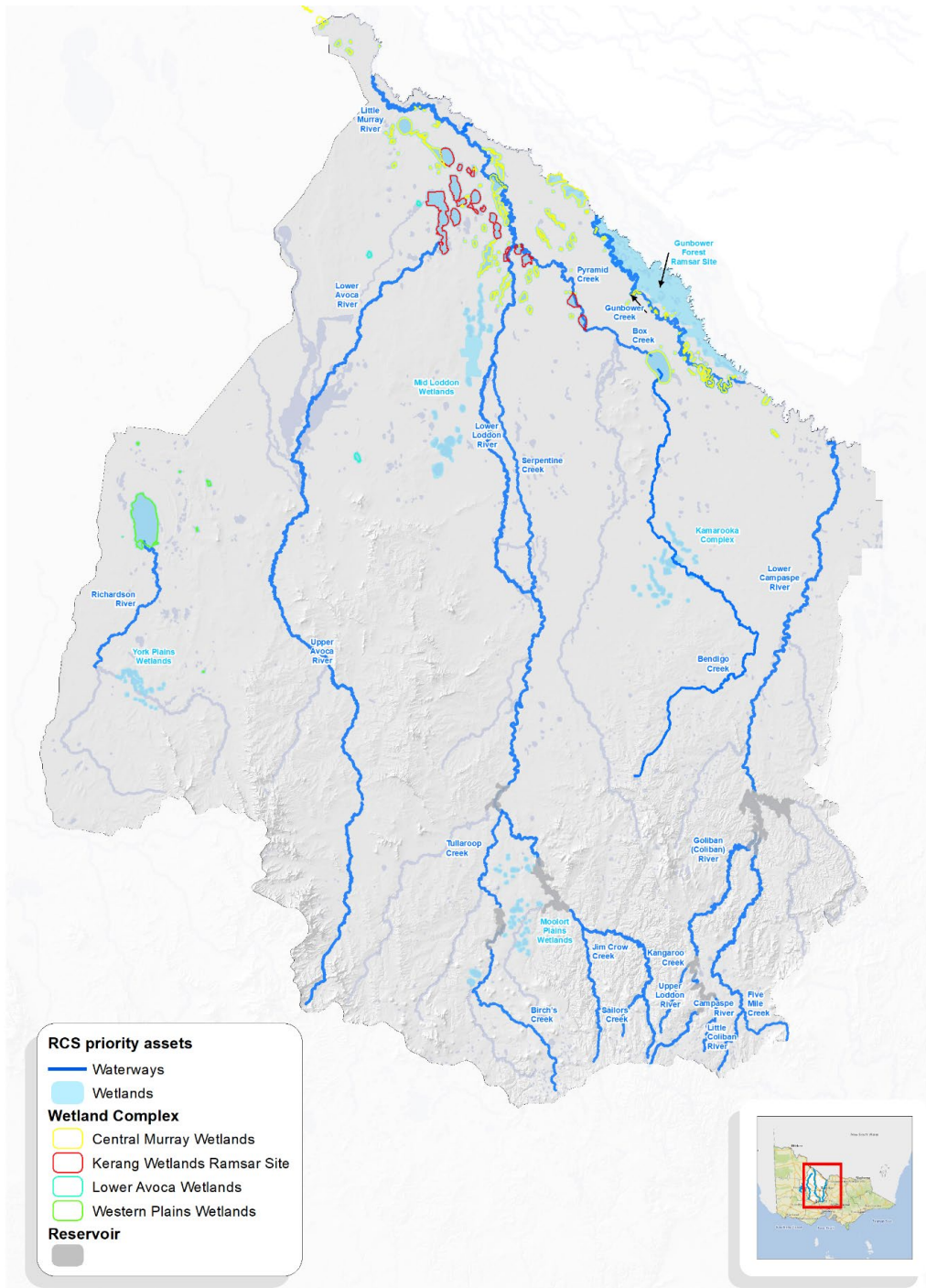


Figure 7. North Central Regional Catchment Strategy priority waterways and wetlands






The RCS set the following three priority directions for climate change within the Water theme:

- Collaborate to improve our understanding of the predicted impacts of climate change on water resources and aquatic ecosystems in the region, consider related impacts and scenarios in strategic and operational planning, and prioritise and implement urgent climate change mitigation and adaptation strategies.
- Improve current monitoring and analysis of water resources and waterways to detect long-term changes and trends due to climate change and enable timely adaptation.
- Build community awareness and capacity around the management of water resources and waterways, in the context of climate change.



5.1.1 Adaptation options – Water

The table below outlines a range of adaptation options for managing the impacts of key climate variables on waterways.

Climate change variable				
 <p><i>Increased frequency and intensity of fire</i></p>	 <p><i>Reduced and more variable rainfall</i></p>	 <p><i>Prolonged and more intense droughts</i></p>	 <p><i>Increased temperatures and extreme heat</i></p>	 <p><i>Increased intensity and frequency of rainfall events (including flooding)</i></p>
<ul style="list-style-type: none"> Establish buffers of native vegetation and reinstatement of wetlands vegetation. Focus fuel reduction burning to protect vulnerable / fire sensitive vegetation around wetlands, rivers and floodplains. Consider fire management in wetland planning. Plan to mitigate the impacts of fuel reduction burning and wildfire on sediment pollutant runoff to rivers. 	<ul style="list-style-type: none"> Removing existing artificial barriers or lowering commence to fill levels. Explore opportunities to deliver water to isolated wetlands through irrigation infrastructure. Provision of environmental water flows. Prevent disturbance to wetlands subject to over grazing or land use intensification/cropping. Increase extent and connectivity of riparian vegetation to provide shading of the river. Protection of summer base flows (regulation of timing / magnitude of extraction). Making the most of available water will be increasingly important in the hotter, drier climate predicted with climate change, and this includes floodwaters. Protect critical drought refuges in waterways to recolonise waterways after prolonged droughts. 		<ul style="list-style-type: none"> Establish buffer of native vegetation and reinstatement of wetland vegetation along riparian areas. Protection of refuge areas for fish and aquatic fauna in conjunction with pest species programs. Establishment of riparian vegetation. In stream habitat restorations. Control competing aquatic species (plant and animal). 	<ul style="list-style-type: none"> Reinstatement, where possible, of natural hydrology to allow for movement and retention of floodwaters. Management of flash surface water inflows in urban environments through swale drains and constructed wetlands. Maintenance of ground cover in strategic areas. Geomorphic recovery through works (vegetation and structural). Explore opportunities for large scale floodplain restoration to buffer against flooding.
<p>Active management to reduce current threats to waterways will lay a strong foundation for long-term climate resilience. Addressing existing pressures helps both nature and people adapt more effectively and thrive in a changing climate.</p>				



5.2 Biodiversity

The Biodiversity theme focuses on terrestrial native vegetation and habitats, including threatened species. Water-dependent species and habitats are addressed under the Water theme.

Biodiversity is the variety of lifeforms, including plants, animals, fungi and micro-organisms. It is the genetic diversity within species, between species and ecosystems. It underpins a healthy natural environment. It is fundamental to our economy, our physical and mental wellbeing. Native plants and animals also have intrinsic value, a right to exist. For the region's Traditional Owners, certain species have cultural or spiritual value, and biodiversity is important for Country to be healthy.

The region's natural environment includes iconic landscapes, from the forests of the Great Dividing Range and Box-Ironbark woodlands to the River Red Gum forests along the Murray River. However, much of the region has been cleared for agriculture, especially on fertile plains where native vegetation cover is now below 30 per cent. Remaining vegetation is often fragmented and continues to face degradation.

Climate change is intensifying these pressures. Significant changes in species distribution are predicted with local extinctions likely. Protecting what we have, building ecosystem resilience and connectivity are priorities for the region.

Projected climate changes pose a serious threat to biodiversity, intensifying existing issues like habitat loss, invasive species and drought. Natural resource management planning must consider climate change impacts and multiple futures.

Native vegetation is likely to be directly impacted by changes in annual and seasonal rainfall patterns and increased temperatures, leading to increased fire frequency and more favourable conditions for some weeds. These shifts can push species to their physiological limits, with evidence already showing changes in community composition and species distribution (North Central CMA 2021).

Climate change is expected to alter ecosystem distribution, composition, structure and function. Direct impacts include earlier flowering times and increased mortality of heat-sensitive species. Indirect impacts, such as increased bushfire frequency and the spread of weeds and pest animals, will further stress ecosystems. These changes threaten biodiversity, disrupt ecological processes and challenge the resilience of natural systems.

Predicting specific impacts is challenging due to complex ecosystem interactions, requiring long-term monitoring to detect gradual changes. Urgent interventions are necessary to halt and reverse declines, though it may be too late to prevent local extinctions.

The RCS identified priority biodiversity assets across the region. These identified assets will guide and be adopted through the implementation of this strategy (Figure 8).

Box 2 - Box-Ironbark Forest Restoration - Spring Plains Watershed Repair Project



Swift parrot. Photo: Courtesy of Brendan Sydes.

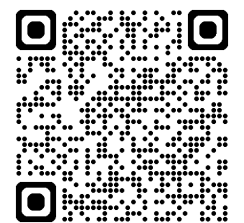
As climate change intensifies pressures on biodiversity through habitat loss, invasive species and shifting rainfall patterns, projects like the Spring Plains Watershed Repair pilot showcase what is possible when we act with purpose and innovation.

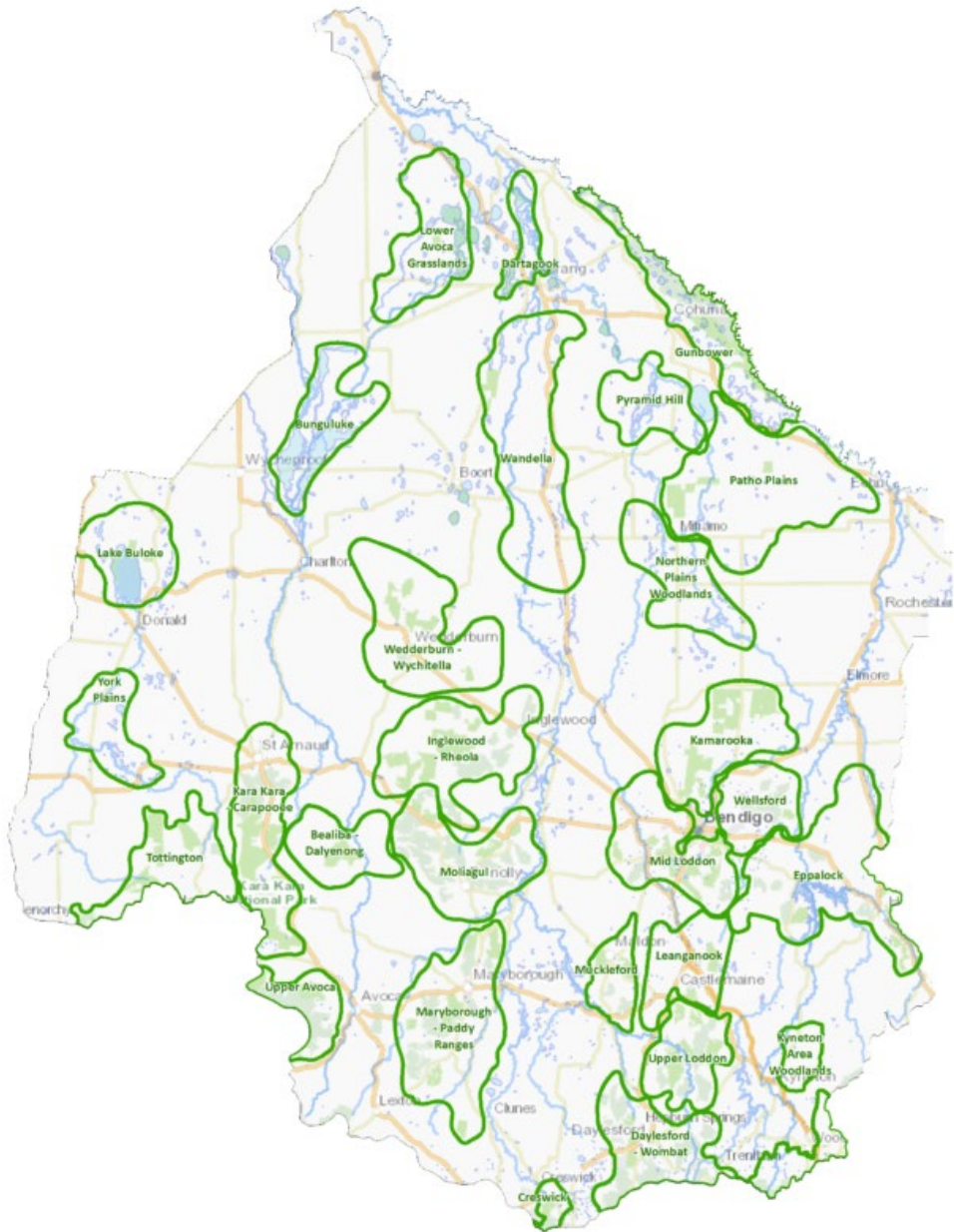
Located on Taungurung Country near Heathcote, this 138 hectare project is the first of its kind in Victoria. Led by Biolinks Alliance, it aims to restore a degraded catchment within Box-Ironbark Forest using a suite of ecological repair techniques. As a demonstration project, it's widely applicable to the hundreds of thousands of hectares of damaged Box-Ironbark Forest in Victoria.

Spring Plains Nature Conservation Reserve is a critical stopover for the endangered swift parrot. By increasing forest productivity and promoting more regular flowering, the project helps ensure these birds and many other species have access to the food they need to survive and thrive. This reduces the energy they expend searching for food and increases their chances of successful migration and breeding.

In a landscape already fragmented and vulnerable to climate extremes, this project demonstrates how targeted, landscape-scale restoration can build climate resilience and support biodiversity.

Find out more: [Spring plains — Biolinks Alliance](#) or scan QR code





 RCS Biodiversity Assets

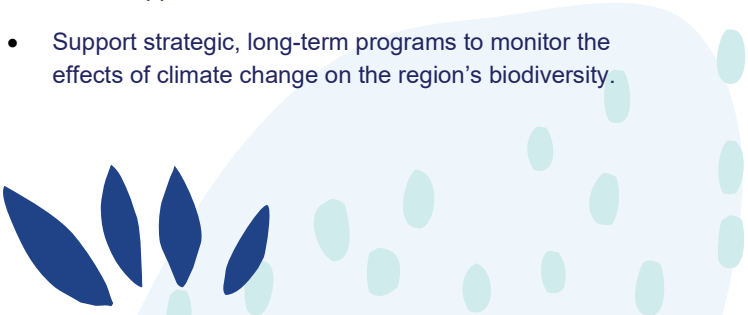
Figure 8. North Central Regional Catchment Strategy priority biodiversity assets.

The RCS set the following four priority directions for climate change within the Biodiversity theme:

- Identify regional priorities for biodiversity adaptation to climate change, including refuges to protect, areas to build climate resilience and a strategic approach to climate-wise connectivity.
- Maintain and improve the quality of our remnant native vegetation and habitats, considering climate






resilience, with a focus on RCS priority biodiversity assets.

- Build climate-wise connectivity by promoting a broad strategic approach, enabling and encouraging local investment and action, leveraging incentives and market opportunities.
- Support strategic, long-term programs to monitor the effects of climate change on the region’s biodiversity.



5.2.1 Adaptation options – Biodiversity

The table below outlines a range of adaptation options for managing the impacts of key climate variables on biodiversity.

Climate change variable				
 <p><i>Increased frequency and intensity of fire</i></p>	 <p><i>Reduced and more variable rainfall</i></p>	 <p><i>Prolonged and more intense droughts</i></p>	 <p><i>Increased temperatures and extreme heat</i></p>	 <p><i>Increased intensity and frequency of rainfall events (including flooding)</i></p>
<ul style="list-style-type: none"> • Match burning / fire regimes to tolerable fire intervals. • Identify and protect ecosystems with high sensitivity to fire. • Targeted pest animal and weed control programs to improve adaptive capacity of system. 	<ul style="list-style-type: none"> • Protect high quality remnants as reservoirs of regeneration potential. • Weed control to improve quality and condition. • Use and range of seed provenances in revegetation programs to maintain/ extend genetic diversity. • Plan and implement revegetation activities to better match local and seasonal conditions. • Improve connectivity through targeted revegetation and remnant management. • Active management of reduce threats (e.g. over grazing) on existing remnants. • Developing and integrating productive tree (and perennial vegetation) systems including farm forestry, that provide significant benefits in terms of carbon sequestration, run-off, water table control and water quality. 		<ul style="list-style-type: none"> • Increase extent and connectivity of riparian and floodplain vegetation to reduce impact of extreme events. • Establish buffer plantings along riparian areas. • Where appropriate, promote natural regeneration in riparian and floodplain environments. 	
<p>Active management to reduce current threats to biodiversity will lay a strong foundation for long-term climate resilience. Addressing existing pressures helps both nature and people adapt more effectively and thrive in a changing climate.</p>				



5.3 Land

The Land theme considers land health with a focus on agricultural land use. A significant portion of the region's landscape is under private ownership and plays a central role in agricultural production. The region's land managers are recognised as successful and innovative growers of food and fibre, who work hard to improve the condition of the natural resources on which they rely (North Central CMA 2021).

The region comprises a variety of land and soil types that sustain a diverse range of agricultural enterprises. In the steeper terrain of the uplands, land is mostly used for livestock grazing, however further north in the gentler more undulating foothills of the Campaspe, Loddon, Avoca and Avon-Richardson River basins, cropping is common, alongside mixed farming enterprises. Irrigated agriculture is concentrated within the Goulburn Murray Irrigation District (GMID), in the north of the region on the Riverine Plains (North Central CMA 2021).

In the southeast part of the region, predominantly south of Bendigo, the demographics continue to change with an increasing demand for rural residential living (lifestyle, hobby farm) development. With this expansion comes a wide range of landholders new to land management (North Central CMA 2021).

The shift toward larger, often corporate-owned farms in the north and west of the region, combined with an ageing population, is contributing to population decline and associated socio-economic challenges, including a shrinking volunteer base. (North Central CMA 2021).

Across the northern irrigation districts of the region, there has been significant change, driven by climate change, drought, irrigation modernisation, changing water policy, water trade out of the region and fluctuating commodity prices. This has reduced the amount of irrigation in the region and changed the mix of irrigation enterprise types, irrigation businesses, surface and subsurface drainage requirements (North Central CMA 2021).

Over the past two decades, the region has experienced significant climate variability, with fundamental changes in rainfall patterns and water availability since the mid-1990s. This has led to extensive periods of drought interspersed with extreme wet years and flooding. Average rainfall during the cooler months has declined over the past 30 years, a trend expected to continue.

Projections of a warmer, drier climate pose challenges for water availability and reliability, affecting both irrigated and dryland agriculture. Lower and more variable rainfall may lead to reduced water supply, increased prices, and heightened competition for irrigation water.

Extreme weather events, including prolonged heat, fire, drought and floods are likely to impact assets,

infrastructure, productive land, vegetation, animals, waterways, food safety and human health.

Changes to seasonal patterns may disrupt harvesting and production cycles, while climatic extremes could increase costs and disrupt supply chains. Pollination-responsive crops and blooming cycles may be affected, with increased fire, heat, smoke and declining water availability adding stress to pollinators.

Hotter and drier conditions are expected to result in long-term declines in crop yields, grain quality, livestock wellbeing and pasture growth. Lighter textured soils in higher relief areas will be particularly vulnerable to erosion. While higher carbon dioxide levels theoretically promote plant growth, this effect is likely to be overwhelmed by changes in temperature and rainfall. Without adaptation, the grazing industry may face declining productivity, heat stress and increased soil erosion (DELWP 2022b).

Existing biosecurity issues are likely to be exacerbated by climate change, requiring effective cross-boundary management. Increased fire danger days and bushfires can devastate agricultural land, destroying crops, causing smoke taint, killing livestock and damaging infrastructure (DELWP 2022b).

Importantly, **full-time farmers are emerging as key agents of climate adaptation**. Alexanderson et al. (2025) found that “almost two thirds of full-time farmers were confident about their capacity to adapt to changes in rainfall patterns,” compared to significantly lower confidence among part-time farmers, hobby farmers, and non-farmers. Moreover, “full-time farmers are the most proactive in adapting to climate change,” with 32 per cent adjusting financial or on-property operations due to seasonal changes, 40 per cent increasing soil carbon, and 24 per cent implementing changes to reduce carbon emissions. These figures highlight the leadership role full-time farmers play in driving climate-responsive practices, even as overall uptake remains modest.

The RCS set the following two priority directions for climate change within the Land theme:

- Work together to develop place-based climate change resources for landholders and managers, to inform adaptation.
- Undertake a land capability assessment of the region, considering values, constraints, and land use under multiple climate change scenarios, to inform land use planning and management.

Box 3 - Building resilience from the ground up: The Loddon-Campaspe Regional Drought Resilience Plan

Climate change is already reshaping the agricultural landscape of north central Victoria, bringing more frequent droughts, shifting rainfall patterns and increasing pressure on land, productivity and communities. But across the region, proactive steps are being taken to adapt and build resilience.

One such initiative is the **Loddon-Campaspe Regional Drought Resilience Plan**, developed as part of the Australian and Victorian Government's Regional Drought Resilience Planning (RDRP) Program. This place-based, community-led plan supports the region to prepare for and respond to drought by anticipating change and strengthening resilience across three key areas:

- **Economic resilience** – supporting a profitable and innovative agricultural sector.
- **Environmental resilience** – promoting sustainable land use and healthy landscapes.
- **Social resilience** – empowering adaptable and resourceful communities.

The plan is designed to guide not-for-profit organisations, government agencies, education providers, Landcare and farming groups in identifying and delivering actions that support long-term drought preparedness. The plan is supported by a grant with successful applicants delivering projects spanning mental health activities to the promotion of on-farm practices and building resilience in the natural landscape during 2025/26. By focusing on local knowledge, collaboration, and forward planning, the Loddon-Campaspe RDRP is helping to ensure that our land, industries and communities are better equipped to face the challenges of a changing climate.



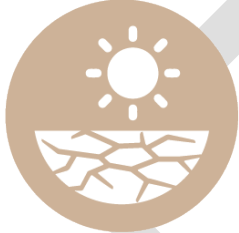




Find out more in the Loddon Campaspe Drought resilience plan [Loddon Campaspe Drought Resilience Plan](#)



5.3.1 Adaptation options – Land

The table below outlines a range of adaptation options for managing the impacts of key climate variables on land.

Climate change variable				
 <p><i>Increased frequency and intensity of fire</i></p>	 <p><i>Reduced and more variable rainfall</i></p>	 <p><i>Prolonged and more intense droughts</i></p>	 <p><i>Increased temperatures and extreme heat</i></p>	 <p><i>Increased intensity and frequency of rainfall events (including flooding)</i></p>
<ul style="list-style-type: none"> Consider timing of planned burns to avoid smoke taint. Post-fire control: increase efforts on invasive plant and animal control after fires. On farm strategies to protect assets, e.g. fuel reduction. Property level fire management planning. 	<ul style="list-style-type: none"> Implement practices to reduce compaction and tillage and retain stubble. These measures can reduce nitrous oxide loss, increase soil carbon, and improve productivity. Changes to rotational grazing to increase soil carbon and improve water retention. Increase on-farm water storage capacity. Enhance irrigation efficiency and reuse water where applicable. Diversify by owning properties across different regions, spreading risk and enterprises across various irrigation and rainfall zones. Introduce new crop varieties that are more tolerant of water stress. Introduce more water-efficient crop varieties. Adoption of alternative grazing strategies. 	<ul style="list-style-type: none"> Provide shelter and shade from extreme heat through vegetation establishment or shade structures. Ensure the provision of sheltered watering points. Trial new pasture and crop varieties. Increase ground cover through improved grazing management. Adjust milking times to avoid heat. Adjust joining times to avoid birth and lactation during summer periods. 	<ul style="list-style-type: none"> Improve and increase flood warning systems. Maintain ground cover to mitigate against erosion. Consider timing of planned burns and risk of rainfall events / flooding to reduced downstream impacts. Use ground cover crops to protect paddocks at flood risk during time of the year when floods are most likely. Undertake floodplain management activities such as land use and development planning, mitigation works, community education, emergency planning and response. 	<ul style="list-style-type: none"> Active management to reduce current threats to land will lay a strong foundation for long-term climate resilience. Addressing existing pressures helps both nature and people adapt more effectively and thrive in a changing climate.



5.4 Community

The Community theme recognises the vital role of the regional community in natural resource management (NRM), particularly in the face of emerging climate challenges. It considers current trends, challenges and opportunities, and explores how to maintain and strengthen community involvement into the future.

The health of our catchments depends on the active participation of people across the region. Whether farming, managing land, living in towns, volunteering, working, or attending school, everyone has a role to play in caring for the region's natural resources. An engaged and empowered community is essential for effective and enduring NRM outcomes.

Rural landholders remain the backbone of landscape-scale NRM in the region. Their stewardship, combined with the efforts of more than 160 Landcare, regenerative agriculture, and environmental volunteer groups, forms a strong foundation for community-led action.

However, climate change is reshaping the context in which communities operate. Communities, particularly rural landholders and volunteers, will need to adapt to more frequent extreme weather events, including heatwaves, droughts, and bushfires. Green spaces will become increasingly important as refuges from heat, while water availability will require careful balancing between environmental, agricultural, recreational and domestic needs.

Population growth in some areas, alongside demand for rural residential properties, presents additional challenges in managing development while protecting natural assets.

The *ADAPT Loddon Mallee Climate Ready Plan* identified the community's top concerns related to climate change, including:

- Longer, more intense fire seasons
- Shifting seasonal patterns and drought
- Extreme heat events and ecological disruption
- Biodiversity loss
- Impacts on local industries and employment
- Food security
- Reduced access to green spaces
- Water scarcity
- Thermal discomfort in homes
- Limitations on outdoor recreation
- Physical and mental health risks
- Threats to heritage sites and tourism

To address these challenges, the North Central RCS set a clear priority direction for climate change under the Community theme:

- Build capacity, networks and leadership to enable community-led climate solutions for land, water and biodiversity management.

This strategy reinforces that direction, recognising that building resilience to climate change will depend on supporting local leadership, strengthening community networks and enabling place-based solutions that reflect the values and knowledge of the people who live and work in the region.

Box 4 – A decade of climate leadership in Loddon Mallee



Photo courtesy of Jumpleads

Jumpleads NFP, through its community division *Make a Change*, has been a leader in building community capacity for climate adaptation across the Loddon Mallee region. Over the past decade, Jumpleads has delivered programs such as *Let's Talk About BIG Weather* and *Expand Your Impact*, engaging communities in Bendigo, Loddon, Campaspe, Central Goldfields, Buloke, Gannawarra, Mildura and Northern Grampians.

These initiatives directly support the community by:

- Normalising climate conversations and raising awareness of local climate risks.
- Building leadership and networks across diverse groups and interests including youth, women, creatives & entrepreneurs, rural and remote towns.
- Supporting community-led solutions in areas such as adaptive gardening, future farming, water management and liveable homes.

Delivered in partnership with local councils, Landcare networks, health services and other stakeholders, Jumpleads' work demonstrates how authentic community engagement can activate grassroots responses to climate challenges.






As climate pressures intensify, initiatives like those led by Jumpleads will be critical in empowering communities to lead in the stewardship of land, water and biodiversity.

Find out more: [News - Make a Change](#) or scan QR code



5.4.1 Adaptation options – Community

The table below outlines a range of adaptation options for managing the impacts of key climate variables on the community.

Climate change variable				
 <p><i>Increased frequency and intensity of fire</i></p>	 <p><i>Reduced and more variable rainfall</i></p>	 <p><i>Prolonged and more intense droughts</i></p>	 <p><i>Increased temperatures and extreme heat</i></p>	 <p><i>Increased intensity and frequency of rainfall events (including flooding)</i></p>
<ul style="list-style-type: none"> • Help facilitate green space within our communities, especially green refuges in dry periods. • Support climate ready planting to provide urban cooling and connect residents with community spaces. • Connecting action on climate change to protect what we love helps show what the community has to gain. • Focus on insurance rather than costs or sacrifice (what happens if we don't act). • Focus on health and wellbeing and emotion rather than destruction – protecting what we love and improving quality of life in the future. • Focus on preparedness and ethics (inaction is reckless) rather than uncertainty. • Focus on opportunity instead of sacrifice. Not about what we will lose, but what we will save and improve. • Provide short-term opportunities for young people to volunteer in ways that work for them. • Support citizen science initiatives. • Develop and support habitat restoration programs on farmland to enhance ecosystem function and conserve threatened species. Deliver forums or programs with communities. • Community conversation sessions that focus on strengths and protecting what people value. • Create awareness information products for land and water practices that build resilience for current and future climate. • Establish a program that supports the coordination of scientific-based recovery programs, community engagement and citizen science programs. • Establish funding opportunities to improve the ecological structure, function, and composition of ecological communities across the region. • Undertake floodplain management activities such as land use and development planning, mitigation works, community education, emergency planning and response. • Facilitate climate change communications workshops to help communities raise awareness of impacts and solutions 				



5.5 Traditional Owners

The North Central CMA region includes the traditional lands of the Dja Dja Wurrung, Taungurung, Yorta Yorta, Barapa Barapa, Wamba Wemba, Wadi Wadi peoples and clans represented by Barengi Gadjin Land Council (Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk). Figure 9 shows the boundaries of Country for those with Registered Aboriginal Party status under the *Aboriginal Heritage Act 2006* and labels show approximate location of other traditional lands.

The term 'Traditional Owners' acknowledges the distinct custodial rights of peoples who, over countless generations, have a unique spiritual, social and cultural connection with their Country, and it respects the principles of 'Right people for Country'.

The North Central RCS sets some priority directions for Traditional Owners as follows:

- Continue to build partnerships with Traditional Owners towards self-determined participation and leadership in water and biodiversity planning and management.
- Support the assessment and documentation of cultural values (tangible and intangible), traditional ecological knowledge and practices.
- Collaborate to protect and enhance cultural values (tangible and intangible), through integrated management, including the use of indigenous biocultural knowledge and practices.
- Build capacity both ways, respecting the value of traditional knowledge, and the right of its custodians to determine if/how it is shared and used.
- Support and enable opportunities for Traditional Owners to return species of importance to the landscape.
- Support the integration of Traditional Owner-led cultural fire management.

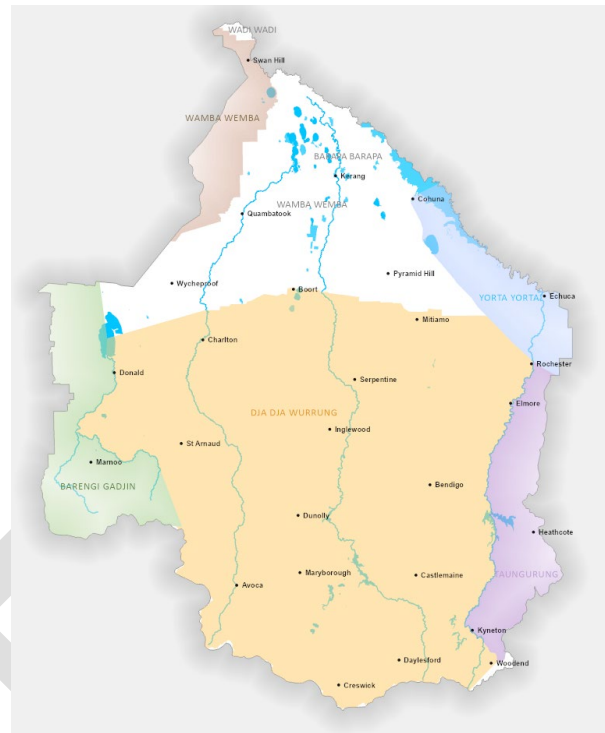


Figure 9. Country boundaries for those with Registered Aboriginal Party status under the *Aboriginal Heritage Act 2006* and labels show approximate location of other traditional lands. The non-recognised area has not been determined and both Barapa Barapa and Wamba Wemba have an interest in the area.

6 Strategy approach

6.1 Vision and goals

Our Vision: Working together to build healthy, resilient and future-ready catchments.

Through partnerships, we will reduce risks and strengthen the resilience of key environmental assets and communities. Together, we will build active, climate-aware communities that champion environmental stewardship and climate action. By enhancing their capacity to adapt, recover and thrive in the face of climate change impacts, our landscapes will continue to flourish for generations to come. The strategy provides a collaborative framework for regional partners to work together.

Our goals are to:

1. Reduce the climate change risks and vulnerabilities of natural assets and our communities that rely on them.
2. Prepare natural assets and our communities for change, and ensure they have the tools and strength to respond.
3. Maximise the benefits of climate mitigation activities for biodiversity, water resources and agriculture and avoid adverse impacts.

6.2 Guiding principles

The development and implementation of this Strategy is guided by a set of principles to determine priority directions. These principles are:

- **Be collaborative:** Initiatives should involve shared goals and responsibilities among appropriate partners.
- **Incorporate broad knowledge resources:** Use a broad range of knowledge resources (cultural, community, scientific).
- **Be prepared to take some risks:** Be courageous, innovative and adaptable in the face of uncertainty.
- **Foster long-term stewardship:** Promote long-term stewardship and build community capacity.
- **Be effective and impactful:** Prioritise initiatives that are effective, achievable and impactful, delivering multiple outcomes that are low-cost, high-impact, and aligned with strategic and regional goals.
- **Prioritise vulnerable assets:** Focus on initiatives that address vulnerable social, environmental and physical assets threatened by climate change, without compromising achievable outcomes.

6.3 Responding to climate change: A shared responsibility

Everyone has a role to play in adapting to climate change, from all levels of government to communities and individuals.

This Strategy was developed in collaboration with partners across the region, leveraging the collective expertise and perspectives of many partners. Working together in this way helps us develop more resilient and effective management strategies that can better handle the complex challenges we face. While there are significant hurdles ahead, there's already a lot of great work happening in our region and this strategy will highlight some of these successes.



Participants gathered at the Bendigo Climate Summit to discuss regional climate challenges and collaborative solutions. Photo: Shane Carey.

This strategy is designed for use by diverse individuals and organisations involved in managing and protecting our region's natural environment and communities (Figure 10).

Australian three levels of government agreed on the [roles and responsibilities for Climate Change adaptation in Australia in 2012](#). It was agreed that all levels of government were responsible to:

- Help build the adaptive capacity of individuals, groups and businesses, in particular vulnerable communities.
- Provide accurate climate information for private parties to adapt.
- Ensure that regulatory arrangements and policy settings do not distort private incentives and market signals and facilitate climate change adaptation.
- Provide public goods and services and manage public assets.



Figure 10. Key partners in north central Victoria with shared responsibilities for climate change action and resilience.

Box 5 - Working together for healthy Coliban catchment in the face of climate change

The Upper Coliban catchment is a vital source of raw water for over 130,000 people and holds significant environmental, social, cultural and economic value. However, the catchment is under increasing pressure from existing and future development, uncontrolled livestock access to waterways and the escalating impacts of climate change.

Without a coordinated, long-term approach, the health of the catchment will continue to decline, threatening the ability of Coliban Water to meet its service obligations cost-effectively and diminishing the liveability and resilience of surrounding communities.

In response, a 20-year **The Integrated Catchment Management Plan** has been developed. This plan represents a collaborative effort between Coliban Water, North Central CMA, DJAARA, local councils, landholders, community groups and government agencies. It aims to secure a safe and reliable water supply for communities across central and northern Victoria, while also enhancing river health, biodiversity and catchment condition.



Revegetation Photo courtesy BushCo

By working together across sectors and communities, the region is better positioned to address all risk including climate change impact, protect vital natural assets and ensure sustainable outcomes for both people and the environment.



7 Working together to build healthy, resilient, and future-ready catchments.

To manage the anticipated impacts of climate change in North Central Victoria, we must identify and concentrate on key areas that will drive impactful change. This section outlines the regional initiatives and strategies essential for reducing the risks and vulnerability of natural assets and communities to climate change. It also aims to strengthen resilience and enhance the capacity of the community and natural resources to anticipate and respond successfully to change. Six key themes have been identified for the priority directions for this strategy.

While not listed as specific climate change priorities in this strategy, the following activities are already being delivered across the region through strong partnerships, collaboration and shared commitment. These actions are embedded in how we work together to deliver outcomes across land, water, biodiversity and community:

- Integrate climate considerations into all relevant frameworks, policies, plans, and strategies as they are reviewed and updated.
- Embed climate thinking across all aspects of natural asset management to support long-term resilience.
- Apply Indigenous knowledge to improve ecosystem management, in partnership with Traditional Owners and where supported.
- Promote collaboration between support organisations, land managers, industry, and government to deliver outcomes across the region.



Water



Community



Traditional Owners



Biodiversity



Land

7.1 Connecting the dots

Bridging knowledge, planning and technical skills gaps. This way, we can better prepare for regional climate challenges, reduce risks and can adapt with confidence.

To combat climate change, we need a united effort. We must fill the gaps in knowledge, planning and technical skills. This section outlines key strategies for decision-making, setting priorities and gathering evidence for climate adaptation and mitigation.











We focus on:

- Integrating adaptation into regional planning and policy.
- Identifying and supporting vulnerable species and ecosystems.
- Promoting sustainable land use and agricultural practices.
- Strengthening collaboration with Traditional Owners.
- Empowering communities through scenario planning and visioning.

We aim to strengthen the resilience of our natural assets and communities. We will encourage innovation, strengthen partnerships and consider climate change in every planning effort.

Priority directions

Themes

- | | | | | | |
|--|---|---|---|---|---|
| 1. Enhance the resilience of regional biodiversity and waterway values through climate vulnerability assessments and adaptation planning. |  |  |  | | |
| 2. Guide sustainable land use and agricultural development through improved planning, landholder support and a clearer understanding of land capability under future climate scenarios. | | |  | | |
| 3. Partnerships with research institutions, Traditional Owners and local organisations are strengthened to enhance climate data quality, cultural relevance and improve decision-making. |  |  |  |  |  |
| 4. Support communities and regional organisations to plan for climate change using locally focused, place-based approaches. |  |  |  |  |  |



Water



Community



Traditional
Owners



Biodiversity



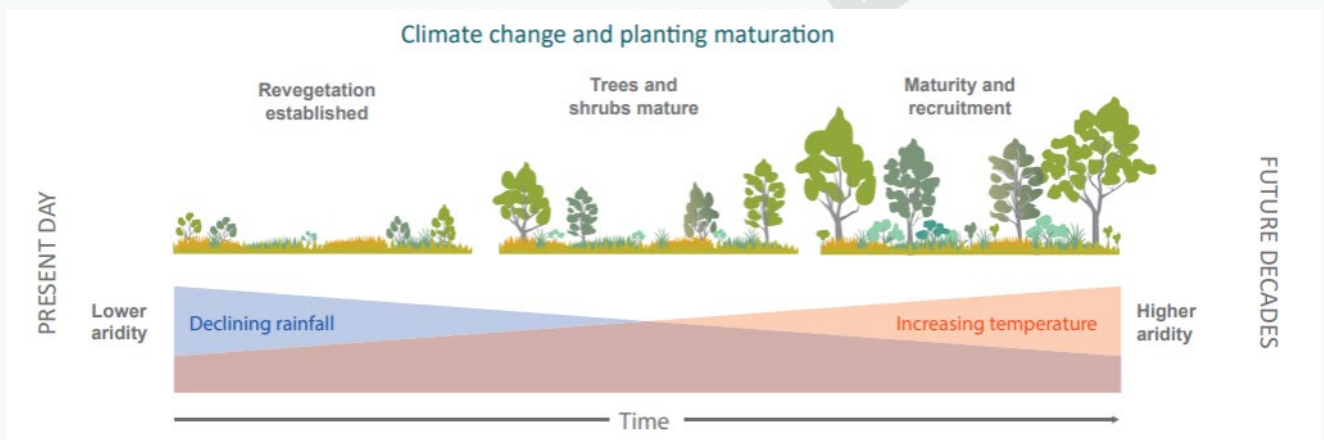
Land

Box 6 – Climate ready revegetation – North Central CMA and Greening Australia.

A tree planted today could have a lifespan of a century or more and will likely see significant changes in the coming decades including warmer average temperatures and declining rainfall caused by climate change.

While Australian plants are renowned for their resilience, the predicted changes in climate will be a significant challenge for the growth and survival of plants across their lifetime as well as for future generations

By using models and tools to better understand how climate change will impact the future climatic conditions at a particular site, anyone planning a restoration project can increase the likelihood of their revegetation surviving (and hopefully thriving!) under predicted future conditions. That is, to create climate resilient revegetation. To maximise genetic variation (and therefore the resilience of plants to withstand a range of climatic changes), climate adjusted provenancing should be used alongside local provenancing.

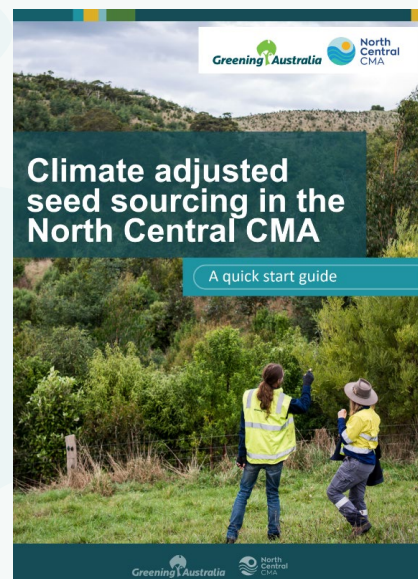


Climate change and planting maturation, (Greening Australian and North Central CMA 2025)

The process of undertaking climate resilient revegetation considers future climate change during the initial planning stages of a restoration/revegetation project. North Central CMA and Greening Australia have worked on a guide to help understand how to consider climate adjusted seed sourcing in revegetation projects.

The next stage of this project is to look at supporting the removal of barriers to applying these guidelines, such as the ability to source seed that aligns with the guidelines.

Find out more visit:
[Climate adjusted seed sourcing in the North Central CMA](#)
 or scan the QR code

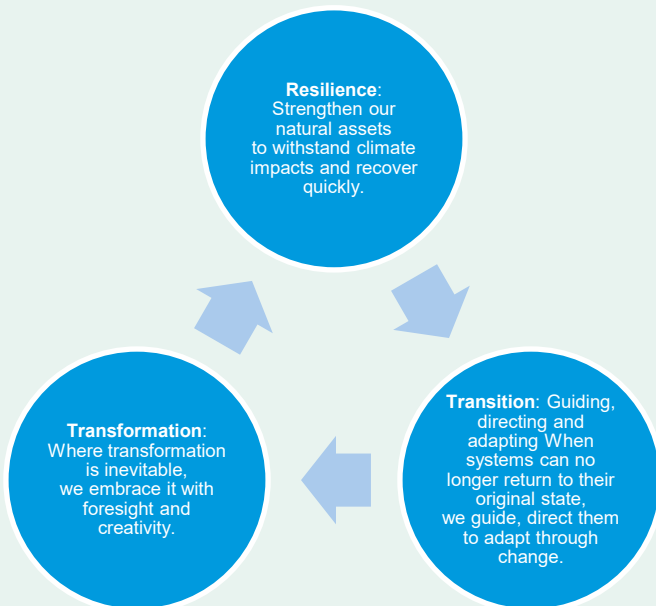


Box 7 - Building climate resilience for our region: Priorities for adaptation

Climate change is already reshaping our landscapes, affecting biodiversity, water resources and agricultural productivity. As these pressures intensify, we need more than short-term fixes. We need a proactive, flexible approach that enables us to respond decisively, recover effectively and reimagine boldly how we manage our natural systems.

We acknowledge that some landscapes and ecosystems will undergo significant and sometimes irreversible change. Rather than resisting this reality, we can lead the way by facilitating transitions, supporting adaptation and embracing transformation where needed. This is not about giving up, it's about acting with intention to protect what we value, even as those values evolve.

Adapting to a changing climate doesn't mean losing the essence of what we care about, it means evolving our strategies to uphold those values in new ways. To guide this, we apply the Resilience–Transition–Transformation (RRT) Adaptation Framework, which helps us understand how different systems respond to change and what kinds of actions are most effective.



The RRT framework helps us understand where a system sits along this spectrum and what kind of action is needed.

- **Resilience:** Strengthen our natural assets to withstand climate impacts and recover quickly. We take deliberate action to **resist change** where possible and preserve the ecological and productive systems that underpin our region's identity and economy. This may include:
 - Protecting native vegetation and biodiversity corridors.
 - Providing environmental water flows to waterways.
 - Supporting farming practices to build soil health and reduce erosion.

- **Transition:** Guiding, directing and adapting when systems can no longer return to their original state. We guide, direct them to adapt through change. We **direct change** to maintain ecological function, food security and community values in new forms. This may include
 - Introducing climate-resilient crop varieties, including climate adjusted plantings in revegetation and modifying livestock systems.
 - Adjusting land and water management practices to reflect new rainfall patterns.
 - Supporting species migration and habitat shifts.

- **Transformation:** Where transformation is inevitable, we embrace it with foresight and creativity. We **accept change** not passively, but as an opportunity to innovate for long-term sustainability, ensuring that both nature and agriculture can thrive in new ways. This may include:
 - Designing for new ecosystem types in areas where previous systems can no longer thrive.
 - Relocating species or agricultural activities to more suitable climates.
 - Consider repurposing land for emerging uses such as carbon farming or biodiversity stewardship.

By applying this framework, we can make informed, place-based decisions that reflect the realities of a changing climate. It empowers us to protect what we can, support what is evolving and plan confidently for what's next. Most importantly, it enables us to act with purpose, optimism and leadership, to ensure that our landscapes, waterways, farms and communities remain healthy, productive and resilient for generations to come.



7.2 Protecting what we love

Safeguarding climate-vulnerable ecosystems and support community resilience through targeted adaptation, sustainable land management and emergency preparedness.

Protecting our natural assets and communities is crucial for a climate-resilient future. This section outlines our commitment to addressing climate challenges, both now and into the future, through practical, on the ground actions.

A key principle of this work is that by reducing current threats to the things we value, we lay a strong foundation for long-term climate resilience. Addressing existing pressures helps both nature and people adapt more effectively and thrive in a changing climate.

We aim to reduce the vulnerability of natural assets and build community resilience. We will work with land managers, promote climate-smart practices and improve habitat connections. Support local projects, prepare for extreme events and connect with the wider community.

These actions ensure that we protect what we value: our environment, our people and our way of life, for now and for future generations.

Priority directions

Themes

5. Protect vulnerable waterways and biodiversity values using targeted adaptation pathways based on climate risk assessments.
6. Promote climate-smart agriculture by supporting land stewardship that improves soil health, water retention and productivity.
7. Strengthen emergency preparedness and response to protect climate-vulnerable communities, environmental assets and cultural values from extreme events.
8. Support nature-based solutions that help communities prepare for and recover from extreme events and reduce climate risks.



Water



Community



Traditional Owners



Biodiversity



Land



Box 8 - Emergency preparedness and response plan for biodiversity and natural capital assets in the North Central region

The North Central Emergency Preparedness and Response Plan for biodiversity and natural capital assets seeks to reduce the impact of catastrophic events on biodiversity and agricultural natural capital assets. The Plan considers the most likely disaster scenarios for the North Central, including fire, flood, drought, major storms, disease and pest outbreaks.

The Plan identifies mitigation measures in advance of emergency (preparedness), response activities during events and recovery activities post events. The Plan identifies activities that are “business as usual,” already funded or underway, actions that have been previously funded as part of an emergency management role, as well as gaps in action. Actions can only be delivered if funding is made available.

This Plan focuses on biodiversity assets, Ramsar wetlands and agricultural natural capital assets identified as priority assets in the *North Central Regional Catchment Strategy 2021-27* (RCS) and the Regional Land Partnerships Addendum to the RCS, and with high to medium susceptibility to a specific emergency. Assets with low susceptibility are out of scope and will not have emergency management actions documented in this Plan.



Plains-wanderers on the Patho Plains, photographed on a covenanted property. Photo: D. Baker-Gabb.

Find out more visit [Emergency Preparedness and Response Plan for biodiversity and natural capital assets in the North Central region](#) or scan QR code



7.3 Connecting communities

Making climate adaptation accessible, meaningful and beneficial by supporting communities to understand the challenge, feel confident in their role and actively take part in nature-based solutions that enhance both environmental and human wellbeing.

Building resilient communities requires a collaborative approach to sharing knowledge, experiences and resources. This section outlines priority directions to involve the community in learning and skill-building.

We aim to support communities by highlighting successful projects. We also want to help people connect with nature, make wise choices and act together. We aim for a sustainable and climate-resilient future through strong partnerships in the region.

Priority directions

9. Promote the benefits of nature-based solutions for community wellbeing and climate resilience.
10. Translate climate adaptation knowledge and successes into accessible, locally relevant messages that inspire community awareness, wellbeing and participation in nature-based solutions.
11. Support diverse communities to build the skills, connections, and understanding needed to lead and deliver effective climate action.

Themes



Water



Community



Traditional Owners



Biodiversity



Land

Box 9 - Nature-led community resilience, Creswick creek

Nature-led Community Resilience (NLCR) is an emerging approach to disaster recovery and climate adaptation that recognises the reciprocal relationship between people and nature. Rooted in the idea that healing nature helps heal people, NLCR supports both ecological restoration and community wellbeing in the aftermath of extreme events.

As climate change increases the frequency and severity of bushfires, storms and floods, the role of nature in recovery is gaining recognition. Evidence from Australia and globally highlights how connection to nature can support emotional recovery, strengthen social bonds and foster long-term resilience.

In 2024, the Arthur Rylah Institute for Environmental Research developed the [Nature-led Community Resilience \(NLCR\) Toolkit](#), providing practical guidance for integrating nature into disaster recovery efforts. This approach is now being piloted in the North Central region, with a flagship project underway along Creswick Creek.

On 5 January 2022, a severe storm event caused widespread flooding in Creswick, damaging 180 primary residences, displacing 55 residents and resulting in over \$35 million in combined agricultural and business sector losses.

The community, led by the Creswick Angling Club, has mobilised around shared goals that align with both ecological and social recovery:

- Reducing future flood risk by removing woody weeds and improving creek flow.
- Restoring fishing access and enhancing habitat for native species like platypus and fish.
- Improving community wellbeing through the creation of a walking track between Calemben Park and Gillies Road.
- Reconnecting people with place, fostering stewardship and a sense of hope through hands-on restoration.



Creswick Angling Club members at their project site on Creswick Creek.
Photo: Shenandoah Bruce North Central CMA

These actions align with the *North Central Regional Catchment Strategy 2021–27*, demonstrating how community-led, nature-based solutions can build resilience to future climate-driven events.

By integrating ecological restoration with community recovery, the Creswick Creek project exemplifies how nature-led resilience can be a powerful tool in adapting to a changing climate, supporting both the land and the people who care for it.

Find out more about visit [Nature-led Community Resilience \(NLCR\) Toolkit](#) or scan QR code.



7.4 Walking with Traditional Owners

Supporting Traditional Owners in caring for Country, integrating cultural knowledge, fire management and co-designed climate initiatives.

The north central region is home to seven Traditional Owner groups, each with deep, enduring and unique connections to Country. In recognition of their knowledge, leadership and aspirations, a set of priority directions has been developed that broadly applies across all groups. These directions were shaped through engagement during the development of the *North Central Regional Catchment Strategy 2021–2027* and reflect shared goals for healing and caring for Country.










These directions are intentionally high-level to ensure they remain relevant over the life of the strategy. Their implementation will be self-determined and will vary across groups, depending on capacity, investment opportunities and priorities on Country.

Over time, the application of these directions may evolve in response to:

- Self-determined positions and approaches from each Traditional owner.
- The development of new strategies and plans that further enable self-determination.
- The creation or renewal of Country Plans.

Priority directions

Themes

12. Support opportunities for Traditional Owners to influence strategies and co-design climate change programs and projects.			
13. Support self-determined leadership of Traditional Owners in caring for water, biodiversity, land and climate, grounded in cultural knowledge and connection to Country.			
14. Support integration of Traditional Owner-led cultural fire management to reduce wildfire risk, where appropriate.			

Further and ongoing discussion are required with each Traditional Owner to explore how climate change can be considered in supporting Traditional Owner aspirations.



Water



Community



Traditional Owners



Biodiversity



Land

Box 10 Turning 'wrong way' climate 'right way'



DJAARA Launching *Climate Change Strategy: Turning 'wrong way' climate, right way* Photo: courtesy of DJAARA

Dja Dja Wurrung Clans Aboriginal Corporation (trading as DJAARA) launched the *Climate Change Strategy: Turning 'wrong way' climate, 'right way'* in May 2023.

The Climate Change Strategy recognises the importance of taking a holistic approach to both climate change mitigation and adaptation. It highlights the need for climate solutions that are transformative and empower Dja Dja Wurrung to lead.

The Strategy is grounded in the principles of sitting with and listening to Country. It emphasises how Dja Dja Wurrung People (Djaara), Dja Dja Wurrung Country (Djandak) and Climate are intimately connected. There is no healing climate without healing People and Country.

DJAARA developed the strategy collaboratively with Dja Dja Wurrung Members through a Wartaka, meaning to 'come together with purpose' in the Dja Dja Wurrung language. A Wartaka involves bringing a group of Dja Dja Wurrung Members together for them to provide cultural guidance and knowledge on a specific project and to understand their priorities or concerns.

This engagement process was integral to informing the six interconnected action areas in the Strategy and for developing actions to ensure the plants and animals, no matter how small, are considered in our approach to climate change. The six action areas are Djaara (People), Djandak (Country), Galka (Trees), Djandak Wi (Fire), Gatjin (Water) and Wura wura (Sky Country).

The Climate Change Strategy also represents DJAARA's continued efforts to bridge Traditional and Western knowledge gaps. This work is a way to communicate and engage with others around Dja Dja Wurrung's aspirations and unique approach to climate. The Strategy encourages all those who share the responsibility of Caring for Djandak to walk together with us to address climate change.

This case study illustrates how the Priority Directions, particularly those relating to self-determination, cultural knowledge, and climate leadership are being brought to life through Traditional Owner-led action.

The DJAARA Climate Change Strategy is a powerful example of Traditional Owner-led climate action that aligns with the Priority Directions of this strategy. It demonstrates how self-determination, cultural knowledge and holistic care for Country can shape transformative responses to climate change. This case study highlights the importance of walking together, supporting Traditional Owners to lead, inform and co-design the future of land, water and climate management in the region.

7.5 Partnering for change

Strengthening climate adaptation by enhancing leadership, coordination and partnerships across organisations, communities and knowledge holders.

Effective climate action requires strong partnerships and shared responsibility. This section highlights our commitment to fostering collaboration among various stakeholders, including land managers, government agencies, local communities and industry groups. By working together, we can develop and implement strategies that address climate change impacts across water, biodiversity, land and community assets. Through joint efforts, we aim to enhance conservation actions, improve emergency management, support climate-ready revegetation and build resilience in our ecosystems and communities. Together, we can create a sustainable future for all.

Priority directions

15. Strengthen climate adaptation by enhancing collaboration, leadership and coordination across partner organisations and existing networks.
16. Support community-led climate solutions by building capacity, supporting local leadership and strengthening networks for place-based actions.

Themes



Water



Community

Traditional
Owners

Biodiversity



Land

Box 11 – Greater Bendigo Climate Collaboration

The Greater Bendigo Climate Collaboration is a bold, city-wide initiative uniting businesses, community organisations, households and schools in a three-year journey of climate action. Launched in July 2022, it was born from a shared desire for collective impact. It aims to:

- Foster cross-sector partnerships to deliver impactful, city-scale climate projects.
- Strengthen regional collaboration and advocacy for climate initiatives.
- Host a nationally significant Climate Summit to accelerate the path to net-zero emissions.
- Unlock local and regional economic opportunities through climate action.
- Advance Traditional Owner values and aspirations for healing Country through practical support for Aboriginal self-determination.
- Build a long-term movement for climate collaboration through to 2030.
- Empower homes and businesses to take immediate action and transition to zero impact.

Key initiatives include:

- The Greater Bendigo Zero Emissions Roadmap, outlining 35 priority projects and 50 advocacy positions.
- A Regional Zero Emissions Roadmap, developed with the Central Victorian Greenhouse Alliance.
- The Beat the Power Bills Business Program, helping businesses transition to renewable energy.
- A Business Renewables Buying Group, enabling collective power purchasing agreements.
- A working group for electric vehicle transition, supporting long-term investment decisions.

Find out more about visit [Greater Bendigo Climate Collaboration | City of Greater Bendigo](#) or scan QR code.



8 Integrating nature in the transitioning to net-zero

Ensuring mitigation activities are planned and delivered to support improved catchment and waterway health and biodiversity.

As the North Central region, and Australia and the world more broadly, moves toward a net-zero emissions future, it is essential to recognise the role of nature in both mitigating and adapting to climate change. Natural systems, including native vegetation, wetlands and soils, are powerful allies in reducing greenhouse gas emissions and enhancing climate resilience.

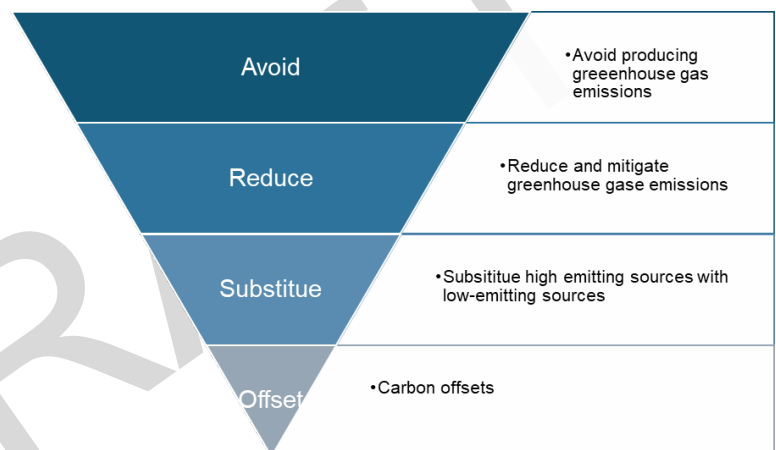
This chapter focuses on how the region can integrate nature-based solutions into its climate mitigation efforts, ensuring that actions to reduce emissions also support ecosystem health, biodiversity and community wellbeing. It aligns with broader state and national climate goals and reflects the region's commitment to a nature-positive, climate-resilient future.

8.1.1 The role of nature in climate mitigation

Climate change mitigation involves reducing greenhouse gas emissions and/or increasing carbon sequestration.

The mitigation hierarchy prioritises:

1. Avoiding emissions,
2. Reducing emissions,
3. Substituting high-emission sources with lower-emission alternatives, and
4. Offsetting unavoidable emissions through carbon sequestration.



For unavoidable emissions, nature-based solutions such as restoring native vegetation, improving soil health and protecting wetlands offer valuable opportunities to offset emissions. These approaches not only sequester carbon but also deliver co-benefits including improved water quality, biodiversity conservation and enhanced landscape resilience. While approved carbon accounting methods currently exist for environmental plantings and soil carbon, methods for wetland-based sequestration (known as teal carbon) are still under development under the Australian Carbon Credit Units (ACCU) Scheme (Clean Energy Regulator). [ACCU Scheme methods | Clean Energy Regulator](#).

Restoring native vegetation remains the most commonly implemented nature-based solution for carbon offsetting under ACCUs within the North Central region. These projects not only contribute to carbon sequestration but can also enhance biodiversity, landscape connectivity and ecosystem resilience.

Importantly, there are emerging opportunities for landholders to benefit from offset initiatives without engaging directly in regulated carbon markets such as the ACCU Scheme. Programs like Grow Towards Zero (see Box 12) leverage the offset needs of local organisations to support biodiversity-focused plantings within the region, creating locally relevant and accessible pathways for participation.

Over recent years, considerable discussion has highlighted barriers to carbon market engagement for Victorian landholders, including issues related to land size, land value and administrative complexity. These challenges underscore the need for flexible, inclusive and locally tailored approaches that enable landholders to contribute to climate mitigation while also supporting ecological and community outcomes.

Across the North Central region, farmers are already adopting a wide range of practices aimed at increasing soil carbon. As Alexanderson et al. (2025) observed, *“farmers reported a wide range of practice changes aimed at increasing soil carbon, with a strong emphasis on reducing soil disturbance.”*

Despite this widespread adoption, there remains a gap in awareness of carbon market opportunities. Alexanderson et al. (2025) found that while 31 per cent of farmers had changed their operations in the past five years to increase soil carbon, only 7 per cent reported having good knowledge of market mechanisms that support carbon farming. Farmers may be primarily motivated by agronomic and ecological benefits, rather than by external financial incentives linked to carbon markets. There is also caution around the value and risk management considerations associated with current soil carbon market mechanisms. While engagement with these markets remains limited, there may be future opportunities for

participation, provided that mechanisms are appropriately designed, accessible and aligned with landholder needs and values.

8.1.2 Maximising co-benefits and avoiding trade-offs

Within this strategy the focus for mitigation activities is focused on maximising the benefits of mitigation activities for natural assets, while avoiding unintended consequences. Poorly planned mitigation efforts, such as large-scale monoculture plantations or land-use changes that displace biodiversity, can undermine ecological integrity and community trust.

By embedding biodiversity and ecosystem health into mitigation planning, we can ensure that climate action is nature-positive, delivering long-term benefits for both people and the environment. Monitoring and evaluation will be essential to ensure that mitigation actions deliver their intended outcomes and avoid negative trade-offs.

8.1.3 Community and partnership in nature-based mitigation

Supporting community-led initiatives, enabling access to carbon markets and ensuring equitable benefit-sharing are essential to building trust and participation in climate action. Traditional Owner knowledge and leadership are especially important in guiding land stewardship and carbon practices that are culturally and ecologically appropriate.

This approach ensures that biodiversity conservation is not treated separately from climate action, but rather as a foundational element of a climate-resilient transition. By safeguarding and restoring ecosystems that support carbon sequestration and climate adaptation, we can deliver co-benefits for nature, people and the climate.

8.1.4 Integrating biodiversity and landscape principles into carbon plantings

As part of our regional approach to climate change mitigation, nature-based solutions, such as carbon plantings, play a critical role in sequestering carbon and delivering co-benefits for biodiversity, water quality and landscape resilience. To ensure these projects are ecologically sound and climate-resilient, it is wise to consider the following principles, drawn from regional best practice and ecological research:

1. **Planting appropriateness**
Carbon plantings should align with the original Ecological Vegetation Class (EVC) of the site to avoid inappropriate afforestation, particularly on former native grasslands or shrubby ecosystems. Forest projects must not occur on areas that did not naturally support forests (e.g. some wetlands and grasslands/shrublands).
2. **Landscape connectivity and remnant vegetation**
Projects should aim to connect existing remnant vegetation and retain large old trees. Enhancing connectivity supports species movement and resilience under climate change. Consideration of patch diversity, size and edge habitat is also important.
3. **Creating biodiverse habitats**
Plantings should maximise species diversity within the appropriate EVC, including shrub layers and aim for structural complexity. Staggered infill planting and long-term management (e.g. weed and fire control) are essential for habitat quality.
4. **Climate-ready revegetation**
Species and seed provenance could be selected with future climate conditions in mind, if barriers to this are removed, ensuring plantings are resilient to future conditions.
5. **Riparian and wetland restoration**
Riparian revegetation is a regional priority due to its role in water quality, flood mitigation and habitat provision. While carbon methodologies for wetlands (teal carbon) are still in development, these areas hold future potential for carbon projects and should be monitored for emerging opportunities.
6. **Design for longevity and ecological processes**
Carbon projects must be designed for permanence (25–100 years), with clear plans for ongoing management and risk mitigation. Projects should also account for ecological processes such as natural disturbances and species interactions.
7. **Managing perverse outcomes**
Carbon plantings must avoid unintended consequences such as water interception (plantings lead to reduced water availability through significant land use change), increased fire risk near settlements or displacement of high-value agricultural land. Projects should be located and designed with these risks in mind.

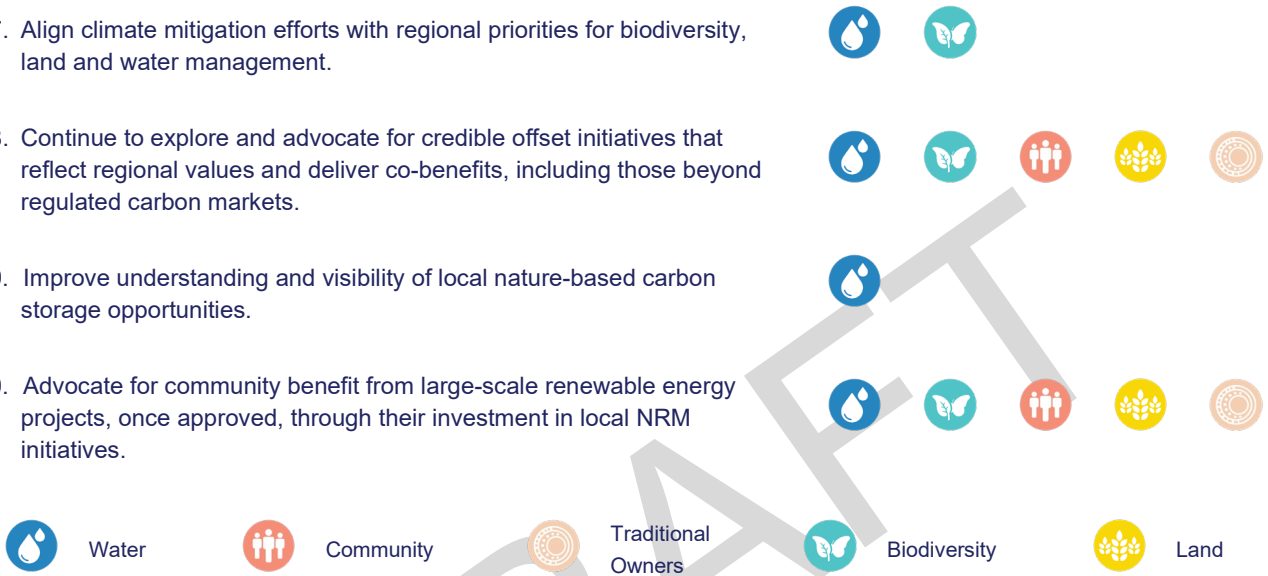
8.1.5 Priority directions

The following priority directions guide the region’s approach to nature-based climate mitigation:

Priority directions

- 17. Align climate mitigation efforts with regional priorities for biodiversity, land and water management.
- 18. Continue to explore and advocate for credible offset initiatives that reflect regional values and deliver co-benefits, including those beyond regulated carbon markets.
- 19. Improve understanding and visibility of local nature-based carbon storage opportunities.
- 20. Advocate for community benefit from large-scale renewable energy projects, once approved, through their investment in local NRM initiatives.

Themes



Box 12 - Grow Towards Zero - Cultivating Community Carbon in Central Victoria

Local councils and the North Central CMA are working together to support community-led carbon action through the *Grow Towards Zero* initiative. In partnership with the City of Greater Bendigo and the shire councils of Macedon Ranges, Hepburn, and Mount Alexander, the initiative enables landholders to undertake large-scale revegetation projects on their properties.

Grow Towards Zero uses investments in carbon offsets to restore valuable habitats, connect fragmented landscapes and address biodiversity loss. By aligning carbon offset needs with local environmental priorities, the initiative delivers multiple benefits, from climate mitigation to improved ecosystem health and community engagement.

This project demonstrates the power of regional collaboration in delivering climate solutions that are locally grounded, environmentally effective and socially inclusive.

Find out more: [Grow Towards Zero – Cultivating Community Carbon in Central Victoria | North Central Catchment Management Authority](#)



Revegetation at Axedale Photo Tracey Harbridge, North Central CMA



As the region works toward net-zero, integrating nature into climate mitigation is not just an environmental imperative, it’s a strategic opportunity. By aligning climate action with biodiversity conservation and community values, we can create a more resilient, equitable and sustainable future for North Central Victoria.

9 Being open to shifting direction

Support integrated monitoring systems, adaptive management and digital innovation to enable timely, informed responses to climate risks and evolving science.

In the face of climate change, it's crucial to remain adaptable and responsive. This section outlines our commitment to establishing robust frameworks for monitoring and evaluating key information across various asset themes, including water, biodiversity, land and community. By implementing strategic, long-term programs and supporting integrated citizen science initiatives, we aim to gather valuable data, assess progress and make informed decisions. This approach ensures that we can detect long-term changes, address emerging challenges and continuously improve our efforts to build resilience and sustainability in the region.

Priority directions

Themes

21. Prioritise integrated monitoring and reporting systems for key environmental indicators, including support for citizen science and community-led efforts.



22. Embed adaptive management across programs to enable timely responses to emerging climate risks and new scientific insights.



23. Support investment in digital tools to improve climate data collection, analysis and access to support informed, timely responses to climate change.



Water



Community



Traditional Owners



Biodiversity



Land

Box 13 - Monitoring and protecting woodland birds in Central Victoria

Connecting Country has placed woodland birds at the heart of its landscape restoration strategy, recognising their ecological importance and vulnerability in the face of climate change. These birds act as indicators of habitat health, with species diversity reflecting environmental conditions increasingly shaped by a changing climate.

Woodland birds are classified as Threatened - Victorian Temperate Woodland Bird Community. Climate change adds further pressure, altering food availability, breeding cycles and migration patterns. Connecting Country support their survival through habitat restoration, community education and ongoing monitoring.

BirdLife Australia has been harnessing the enthusiasm and skill of citizen scientists with great success for decades. Engaging the community in bird monitoring not only strengthens data collection but also fosters awareness of the importance of woodland birds.



Photo courtesy Connecting Country

Between 2010 and 2017, Connecting Country conducted regular bird surveys across 50 sites in the Mount Alexander Shire and surrounding areas. This long-term monitoring program offers rare and valuable insights into how woodland bird populations are responding to environmental changes, including those driven by climate variability and extreme weather events.

The program stands out as a well-designed example of long-term ecological monitoring, providing critical data on how woodland birds are faring over time and how restoration activities influence their habitats. Since 2018, the program has evolved into a community-based initiative, inviting volunteers to help monitor key bird species. This grassroots approach empowers community to explore the shire and contribute to tracking important bird populations.

By restoring native vegetation, educating the public, and supporting citizen science, Connecting Country offers a well-rounded model for conservation, one that will be increasingly vital in the face of climate change.

Find out more or get involved visit [Woodland birds – Connecting Country](#) or scan QR code.



10 Outcomes

The delivery of this strategy will contribute to achieving the following regional outcomes from the *North Central Regional Catchment Strategy 2021-27* and the next iteration:

- Increased overall extent of native vegetation from 2017 levels, by 2037.
- Increased overall extent of native vegetation from 2017 levels, by 2035.
- Increase in the area permanently protected between 2017 and 2037.
- Increase of revegetation in priority locations for habitat connectivity between 2017 and 2037.
- Increased area of priority assets under sustained weed control by 2037.
- Increased area of priority assets under sustained herbivore control by 2037.
- Increased area of priority assets under sustained predator control by 2037.
- Improved management of irrigation and drainage systems, considering efficiency of water use and opportunities for ecological connectivity, by 2041.
- Improved land health considering productivity, adaptive capacity and ecological function, by 2041.
- More community members connected to nature, working to protect, improve and monitor our regions natural assets, by 2041
- Traditional Owners self-determined participation and leadership in cultural and natural resource management, by 2041

11 Implementation, monitoring and evaluation

This strategy is a sub-strategy of the North Central RCS and will be implemented through the governance, partnership and delivery arrangements established under the RCS framework. Its success will rely on strong collaboration, shared responsibility and adaptive management.

Implementation will be driven by partnerships involving:

- **Government agencies** with land management or other legislated responsibilities, as outlined in the RCS.
- **Communities** across the North Central region, whose local knowledge, leadership and action are essential to climate resilience.

- **Key stakeholders**, including non-government organisations, Landcare networks and other community-based groups.
- **Traditional Owners**, whose cultural knowledge and custodianship are central to sustainable management of our natural resources.

Climate change is a shared challenge and a shared responsibility. Everyone has a role to play in delivering this strategy. Appendix 2 outlines the roles of different actors in supporting implementation, from policy and planning to on-ground action and advocacy.

Implementation will be influenced by the availability of funding and resources and will require a flexible, staged approach that can adapt to emerging opportunities and challenges.

The initial focus of this strategy will be on strengthening governance arrangements to support collaboration, coordination and integration across the region. This includes:

- Clarifying roles and responsibilities among partners.
- Embedding climate adaptation priorities into existing strategies, delivery plans and operational frameworks.
- Facilitating knowledge sharing, capacity building and joint planning efforts.

While many strategic priorities can be integrated into the ongoing work of regional partners, some actions will require targeted investment. To support this, a regional investment prospectus will be developed to:

- Attract government and philanthropic funding.
- Leverage private sector and carbon market opportunities.
- Align regional priorities with broader climate and biodiversity funding programs.

A key enabler of implementation is *Priority Direction 2* from the strategy:

“Strengthen climate adaptation efforts by developing a regional investment prospectus and exploring diverse funding sources.”

This direction will be central to progressing implementation and ensuring the strategy remains dynamic, responsive and aligned with emerging opportunities.

Subject to available resources, a series of short-term (3 to 5 year) implementation plans could also be developed to:

- Translate strategic priorities into actionable steps.
- Identify lead and supporting partners for each priority.
- Outline timeframes, resource needs and potential funding sources.



- Provide a framework for monitoring progress and evaluating outcomes.

Monitoring, Evaluation, Reporting and Improvement (MERI)

Monitoring, evaluation reporting and Improvement will be integrated into the implementation process to ensure transparency, accountability and continuous improvement.

The MER framework will:

- Track progress against priority directions.
- Measure outcomes for climate resilience, biodiversity and community wellbeing.
- Inform adaptive management and future updates to the strategy.

Where possible, MER will align with existing RCS reporting processes and use shared indicators to reduce duplication and improve consistency.

12 Conclusion

The North Central Climate Change Strategy sets a clear and ambitious direction for building a resilient, adaptive and nature-positive future for our region. Grounded in the themes of the Regional Catchment Strategy, it acknowledges that climate change is not a distant threat, it is a present and growing challenge that demands coordinated, inclusive and sustained action.

Importantly, we are already doing great work. Across the region, communities, Traditional Owners, landholders, local governments and agencies are taking meaningful steps to adapt, innovate and lead. This strategy builds on that strong foundation, recognising and amplifying the efforts already underway.

It highlights the importance of working with nature, empowering communities and fostering strong partnerships to respond to climate risks and seize emerging opportunities. It outlines priority directions that will guide investment, planning and on-ground action across landscapes, industries, and communities.

Achieving the vision '*Working together, building catchments that are healthy, resilient and future-ready*' will require continued leadership, innovation and collaboration at all levels. Everyone has a role to play.

13 Abbreviations / Terms and Definitions

Adaptation pathways are broadly understood as sequences of actions, that can be implemented progressively, depending on future dynamics.

Adaptation strategies refer to the methods and approaches used to adjust to the impacts of climate change, enhancing resilience and reducing vulnerability.

Capacity building is a conceptual approach to development that focuses on understanding the obstacles that inhibit people, governments, international organisations and non-governmental organisations from realising their developmental goals, while enhancing the abilities that will allow them to achieve measurable and sustainable results.

Carbon sequestration is the process of removal and storage of carbon dioxide from the atmosphere in carbon sinks (such as forests, woody plants, mangroves or soils).

Climate Projections are scientifically modelled estimates of future climate conditions based on different emissions scenarios.

Climate-Smart Agriculture refers to farming practices that increase productivity, resilience, and reduce emissions.

Climate-Wise Connectivity refers to ecological linkages designed to support species movement and ecosystem function under changing climate conditions.

Co-design is about challenging the imbalance of power held within groups of individuals, who make important decisions about others' lives, livelihoods and bodies. Often, with little to no involvement of the people who will be most impacted by those decisions. Co-design seeks to change that through building new relationships, capability and capacity for boundless curiosity. It uses inclusive convening to share knowledge and power.

Community Engagement is to consult the community, increase awareness and promote the involvement of community members in a particular event, activity or project.

Compounding Events are multiple climate hazards occurring simultaneously or sequentially, amplifying their impacts.

Country includes the land, water and all living things.

Cultural Fire Management refers to fire practices led by Traditional Owners that support ecological health and reduce wildfire risk.

Downscaled Projections are refined climate model outputs that provide more detailed, localised information for regional planning.

Drought Refuges are areas within ecosystems that retain water during droughts and provide critical habitat.

Environmental Volunteering refers to community-led activities focused on protecting and restoring natural assets.

Environmental Water Flows are water allocated to maintain or improve the health of aquatic ecosystems.

Floodplain Restoration is the reinstatement of natural floodplain functions to buffer against flooding and improve ecological health.

High Emissions Scenario (SSP5-8.5) is a pathway representing continued high greenhouse gas emissions and limited climate action.

Land Capability Assessment is the evaluation of land suitability for various uses based on physical and climate-related factors.

Nature-Based Solutions are actions that use natural systems to address climate challenges, such as carbon sequestration or flood mitigation.

Place-Based Approaches are strategies tailored to the specific environmental, cultural, and social context of a location.

Region refers to the North Central Catchment Management Authority area.

Riparian Areas are zones adjacent to rivers, creeks and wetlands streams that support vegetation and provide ecological benefits.



Acronym	Definition
ACCU	Australian Carbon Credit Unit – represents one tonne of carbon dioxide equivalent stored or avoided by a project.
ACCU Scheme	Australian Carbon Credit Unit Scheme – the national framework for issuing and managing carbon credits in Australia.
ADAPT	ADAPT Loddon Mallee Climate Ready Plan – a regional initiative supporting climate adaptation planning.
AR6	Sixth Assessment Report – the IPCC's most recent comprehensive climate report, published in 2023.
CMA	Catchment Management Authority
CMIP6	Coupled Model Intercomparison Project Phase 6 – a global climate modelling framework used in IPCC reports.
DEECA	Department of Energy, Environment and Climate Action
DELWP	Department of Environment, Land, Water and Planning – former name of DEECA
DJAARA	Dja Dja Wurrung Clans Aboriginal Corporation
EVC	Ecological Vegetation Class
GMID	Goulburn Murray Irrigation District
IPCC	Intergovernmental Panel on Climate Change – UN body assessing global climate science.
MER	Monitoring, Evaluation and Reporting
NLCR	Nature-led Community Resilience – an approach to disaster recovery and climate adaptation integrating ecological restoration and community wellbeing.
NFP	Not-for-Profit
NRM	Natural Resource Management
RCS	Regional Catchment Strategy
RDRP	Regional Drought Resilience Planning
RRT	Resilience–Transition–Transformation – a conceptual framework guiding climate adaptation strategies.
SSPs	Shared Socioeconomic Pathways – scenarios used in climate modelling that combine emissions trajectories with socioeconomic trends.

14 References

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- North Central CMA 2021, *North Central Regional Catchment Strategy 2021–2027*, <https://northcentral.rcs.vic.gov.au/>

15 Appendices

Appendix 1 - Strategic links and plans

National

- [Climate Change Act 2022](#)
- [Environmental Protection and Biodiversity Conservation Act 1999 \(EPBC Act\)](#)
- [Australia's Biodiversity Conservation Strategy 2010-2030](#)
- [Australia's strategy for Nature 2019-2030](#)
- [Australian Government's Net Zero Plan and Australian Government's Powering Australia Plan](#)
- [Australian Rainfall & Runoff – A Guide to Flood Estimation](#)
- [Bush Heritage Australia Strategy 2030](#)
- [Managing RAMSAR wetlands under a changing climate 2023](#)
- [National Climate Resilience and Adaptation Strategy 2021-2025](#)
- [Threatened Species Action Plans 2022-2032](#)
- [National Agricultural Innovation Policy Statement 2021](#)
- [National Soil Strategy 2021](#)
- [National Soil Action Plan 2023-2028](#)
- [National Statement of Climate Change and Agriculture 2023](#)
- [Managing RAMSAR wetlands under a changing climate 2023](#)

State

- [Catchment and Land Protection Act 1994](#)
- [Climate Action Act 2017](#)
- [Flora and Fauna Guarantee Act 1988 \(FFG Act\)](#)
- [Wildlife Act 1975](#)
- [Environment Protection Act 2017](#)
- [Water Act 1989](#)
- [Water Industry Act 1994](#)
- [Local Government Act 2020](#)
- [Emergency Management Act 2013](#)
- [Safe Drinking Water Act 2003](#)
- [Building Victoria's Climate Resilience 2022](#)
- [Discussion Starter – Developing the new Victorian Waterway Management Strategy](#)
- [Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria 2020](#)
- [Empowering Landcare Communities 2023-2033](#)
- [Invasive Plants and Animals – Policy Framework 2010](#)
- [Land Management Strategy Parks Vic 2022](#)
- [Landcare Victoria Strategic Plan 2021-2024](#)
- [Natural Environment Climate Change Adaptation Action Plan 2022-2026](#)

- [Nature conservation Strategy 2021-2031 – Parks Victoria](#)
- [Northern Region Sustainable Water Strategy 2009](#)
- [Pilot Water Sector Climate Change Adaptation Action plan](#)
- [Primary Production Adaptation Action Plan 2022-2026](#)
- [Protecting Victoria's Environment – Biodiversity 2037](#)
- [Strong, Innovative, Sustainable – A new Strategy for Agriculture in Victoria](#)
- [Technical Guidelines for Waterway Management 2024](#)
- [Trust for Nature Statewide Conservation Plan 2021-2030](#)
- [Victoria Climate Change Adaptation Plan 2017-2020](#)
- [Victoria's Bushfire Management Strategy](#)
- [Victoria's Bushfire Management Strategy Implementation Plan 2024-27](#)
- [Victoria's Climate Change Strategy](#)
- [Victoria's Water in a changing climate](#)
- [Victorian Environmental Water Holder 10 Year Strategy 2023-2033](#)
- [Victorian Floodplain Management Strategy](#)
- [Victorian Renewable Energy Zones Development Plan – directions Paper 2021](#)
- [Victorian Rural Drainage Strategy 2018](#)
- [Victorian Waterway Management Strategy 2013 \(to be updated 2024-25\)](#)
- [Water Cycle Environment Climate Change Adaptation Action Plan 2022-2026](#)
- [Water for Victoria](#)
- [Water is Life Traditional Owner Access to Water Roadmap](#)

Regional

- [North Central Regional Catchment Strategy 2021-2027](#)
- [North Central Climate Change Adaptation and Mitigation Strategy 2015](#)
- [North Central Regional Floodplain Management Strategy 2018-2028](#)
- [Emergency Preparedness and Response Plan for biodiversity and natural capital assets in the North Central region 2024](#)
- [North Central Victoria Regional Sustainable Agriculture Strategy 2016](#)
- [North Central Victoria Soil Health Action Plan](#)
- [Caring for country – A sustainable land management guide for rural living in north central Victoria](#)

Local / sub regional

- [Adapt Loddon Mallee – Loddon Mallee Climate Ready Plan](#)
- [Buloke and Northern Grampians Landcare Network Strategic Plan 2019-2024](#)
- [Buloke Shire Council – Climate Action Plan](#)



- [Campaspe Shire Council – Environment Strategy 2022-2026](#)
- [Central Goldfields Climate Action Plan 2022-2030](#)
- [Central Highlands Water – Climate Change Adaptation Plan 2020](#)
- [Central Victorian Greenhouse Alliance – Strategic Plan 2022-27](#)
- [City of Ballarat – Biodiversity Strategy Healing Country Together](#)
- [Coliban Water – Biodiversity Benefits Strategy 2022-2032](#)
- [Coliban water – Our Strategy dhelk gatjin dhelk balak](#)
- [Coliban Water – Urban Water Strategy 2022](#)
- [Connecting Country Biodiversity Blueprint overview](#)
- [Connecting Country Restoring Landscapes Across Mount Alexander 2014-2024](#)
- [Dhelkunyangu Gatjin Working together to heal water Gatjin Strategy 2023](#)
- [Gannawarra Shire Council - Climate change Adaptation and Mitigation Strategy](#)
- [GMWater Sustainability Strategy 2015](#)
- [Greater Bendigo - Biodiversity Strategy and Action Plan 2023-2033 & Climate change and Environment Strategy 2021-2026](#)
- [Loddon Murray Irrigation Region – Irrigation Drainage Strategy](#)
- [Loddon Mallee Bushfire Management Strategy 2020](#)
- [Loddon Mallee Regional Renewable Energy Roadmap \(Central Victorian Greenhouse Alliance, and DELWP\).](#)
- [Loddon Mallee Zero Emissions Roadmap – Central Victorian Greenhouse Alliance, COGB ad Regional Development Victoria](#)
- [Loddon Plains Landcare Network Blueprint for Action 2020](#)
- [Macedon Ranges Shire Council Biodiversity Strategy 2018](#)
- [Loddon Shire Council – Environmental Sustainability Strategy 2013-2018 – Action Plan](#)
- [Mitchel Shire Climate Emergency Action Plan](#)
- [Moorabool Shire Sustainable Environment Strategy 2016-2026](#)
- [Mount Alexander Shire Council – Climate Change Strategy & Climate change Strategy Action Plan 2023/24](#)
- [Mount Alexander Shire Council – Environment Strategy – 2015-2025](#)
- [Mount Alexander Shire Council – Roadside Conservation Management Plan 2024-2029](#)
- [Mount Alexander Shire council – Urban Tree Policy 2023-2028](#)
- [Nature Network – Blueprint for Action 2023](#)
- [Northern Regional Sustainable Water Strategy 2009](#)
- [Pyrenees Shire Council – Climate Change Response and Mitigation Action Plan \(2021\)](#)
- [Sustainable Hepburn 2022-2026](#)
- [Swan Hill Rural City Council – Sustainable Living Strategy 2017-2027](#)
- [Turning ‘wrong way’ climate, right way – Dja Dja Wurrung Climate Strategy 2023-2034 and Joint Management Plan for the Dja Dja Wurrung Parks and Galk-galk Dhelkunya Forest Gardening Strategy 2022-2034.](#)
- [Upper Campaspe Landcare Network 2019](#)
- [Upper Coliban Integrated Catchment Management Plan 2017 \(Healthy Coliban Catchment\)](#)

Appendix 2 - Roles and responsibilities

North Central Catchment Management Authority

- Lead development, implementation, and monitoring of the Regional Catchment Strategy and sub-strategies (e.g. Climate Change Strategy).
- Identify priority natural assets for protection, including from climate change.
- Engage and educate the community.

Commonwealth Government

- Provide national leadership on climate adaptation.
- Deliver high-quality national and regional climate science and projections.
- Manage federal assets and programs, embedding climate risk into planning.
- Maintain a strong economy and social safety net to support vulnerable groups.
- Fund climate adaptation programs and research.

State Government

Department of Energy, Environment and Climate Action, Department of Jobs, Skills, Industry, and Regions, Parks Victoria, Department of Health, VicGrid, Victorian Environmental Water Holder (VEWH)

- Deliver adaptation responses across policy areas (e.g. health, planning, transport, environment).
- Provide regional climate science and support consistent approaches.
- Collaborate with the Commonwealth on national priorities and evaluation.
- Promote climate resilience and adaptive capacity.
- **VEWH:** Manage environmental water delivery using adaptive planning with CMAs, Traditional Owners and communities.

Water Authorities

Grampians Murray Water, Goulburn Wimmera Mallee Water, Coliban Water, Central Highlands Water, Lower Murray Water and Western Water

- Assess climate impacts on water systems.
- Improve energy efficiency and reduce emissions.
- Research climate impacts on water use.
- Provide environmental and recreational water.

- Deliver infrastructure and water efficiency projects.
- Contribute to sustainable water strategies and groundwater plans.

Local Government

Buloke, Campaspe, Central Goldfields, Gannawarra, Hepburn, Loddon, Macedon Ranges, Mitchell, Moorabool, Mount Alexander, Northern Grampians, and Pyrenees Shire Councils, Swan Hill Rural City Council and City's of Ballarat and Greater Bendigo. Central Victorian Greenhouse Alliance.

- Implement adaptation aligned with state and federal legislation.
- Assess and manage climate risks to local assets and services.
- Inform higher levels of government about local needs.
- Collaborate across councils and with state agencies.
- Build community resilience and awareness.
- Ensure local planning incorporates climate considerations.
- Partner with communities and stakeholders on climate action.

Land Managers / Farmers

- Adopt sustainable land management to build resilience.
- Deliver on-ground carbon sequestration projects (e.g. in soils, vegetation, wetlands).

Soils groups and productivity groups e.g. Vic Hub Drought and Innovation

- Conduct agronomic and climate-related research.
- Explore social dimensions of climate change.
- Deliver extension services and technical support to farmers.

Traditional Owners and Aboriginal people

Dja Dja Wurrung, Wamba Wemba, Barapa Barapa, Barengi Gadjin Land Council, Yorta Yorta, Taungurung, Wadi Wadi

- Lead climate and cultural heritage initiatives.
- Undertake land-based employment and carbon projects.
- Communicate climate impacts on Country and cultural values.
- Recognition and Settlement Agreements made under the *Traditional Owner Settlement Act 2010 (Vic)* for example the *Dja Dja Wurrung Recognition and Settlement*

Agreement 2013. Communicate the impacts of climate change on RAPs and other Traditional Owner groups to the Government.

- Appropriately manage water supply risks using available guidelines, frameworks and markets

Landcare Networks and Landcare Groups

- Share local knowledge and raise awareness.
- Deliver on-ground projects (e.g. revegetation, weed control).
- Build community capacity.

Regional Sustainability Groups

Bendigo Sustainability Group, Mt Alexander Sustainability Group, Macedon Ranges Sustainability Group, Central Victorian Greenhouse Alliance

- Build community resilience and engagement.
- Promote sustainable living and reduce environmental footprints.

Environmental Advocacy Organisations

- Advocacy and engagement with government
- Provide independent critique and evaluation of public policy.
- Market research, education and awareness raising.
- Campaign coordination

NGO's with NRM and biodiversity focus e.g. Bush Heritage, Trust for Nature, Central Victorian Biolinks

- Statewide conservation planning for biodiversity and connectivity.
- Direct land management
- Scientific and technical advice for land managers.

Community

Communities and individuals have roles and responsibilities across the natural environment to:

- Understand climate change impacts to the natural environment and actively manage their own risks:
- Plan and act responsibly to reduce the exposure of their own person, families, private property and livelihoods to risks caused by climate change impacts.
- Develop innovative local responses to climate change risks.
- Explain to government and decision-makers what the community needs and values.
- Support and encourage adaptation efforts on the ground.