



# Loddon Mallee Climate Ready Plan

## Acknowledgment

We acknowledge and respect all First Nations' people of Victoria as the original custodians of the land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices. We are committed to enabling self-determination for all Aboriginal people and aim to work closely with the Aboriginal community to drive action and improve outcomes especially in the context of a changing climate.

## Contributors

**Thank you** to the members of the Regional Climate Leadership Program, Youth Climate Network and Youth Climate Advisory Board, the Climate Ready People and Places Community Advisory Boards, 3CA grant recipients, community members, business owners, our partner organisations and colleagues across multiple government and non-government organisations working to support our region to become climate ready. We acknowledge the importance of working with partner, like Catchment Management Authorities, to align the Climate Ready Plan with their Regional Catchment Management Strategies.

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## ADAPT Loddon Mallee

ADAPT Loddon Mallee is a program designed to deliver a range of adaptation activities and projects that supported more traditional methods of research and engagement to development of the Loddon Mallee Climate Ready Plan. They are:

1. Climate Ready Communities
  2. Partnering for Resilience
  3. Regional Climate Leadership
  4. Youth Climate Network
  5. Caring for Country through Climate Change.
- ADAPT Loddon Mallee was supported by the Department of Environment, Land, Water and Planning and funded through the Sustainability Fund – *Supporting Our Regions to Adapt program*.

*The development of the Loddon Mallee Regional Climate Change Adaptation Strategy (Climate Ready Plan) was supported by the Victorian Government and funded through the Sustainability Fund – Supporting Our Regions to Adapt program.*



# Aboriginal artwork

The main shape represents the area known as the Loddon Mallee encompassing the Aboriginal communities that have lived there for millennia. The blue upside-down U-shapes are the people supporting communities and the journey they have walked together. The top right represents the flora and fauna – the animals and sacred lands. The bottom left represents the rivers, waterways and the animals that live in them. The orange circular shape are the Aboriginal communities that hold and share traditional knowledge that has been passed down for thousands of generations.

Knowledge, ways of being and doing connect us with Country. That connection helps Country heal. When Country is healed, Country is strong. When Country is strong, we are strong.

## **Madison Connors (née Saunders) – Yarli Creative**

My identity is what drives me. It's something that is within me and comes from the heart. My connection to my environmental surroundings is my blood line and vein to this country and the community which runs deep within. I come from a strong line of women and am following in their footsteps; I aim to embody their full form on this earth and strive to make my mob proud of the work that I create and achieve.

Madison Connors is a proud Yorta Yorta (Wolothica), Dja Dja Wurrung (Moomnom gunditj bee clan) and Gamilaroi woman. She was born and grew up in Kanny-goopna (Shepparton in Yorta Yorta language). Madison is an artist, a human rights advocate, and a mother. Her business, Yarli Creative, is a coming together of her yarka (children), her yakapna (family) and her mulana (spirit).



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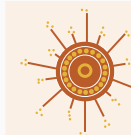
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# Community Foreword

Climate change may be the greatest collective challenge that our children and grandchildren and young people will face in their lifetimes.

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**Challenges of this scale can only be tackled together: Individuals, families, businesses and all levels of government must work together to adapt and move to a net zero emissions future. It is everyone's responsibility to get Climate Ready.**

The ADAPT Loddon Mallee team was created over two years ago, bringing together a diverse group of passionate climate leaders, united by a common goal to confront this challenge head-on.

When the program started, the world was a different place. We've since seen some of the worst bushfires, floods, storms and heatwaves on record. We continue to live through a global pandemic. While these disasters signal the climate is changing, they also reveal the strength and resilience of our communities: Every challenge has been overcome by people working together.

Community involvement in planning and development is therefore vital if we are to achieve transformative social and environmental justice. For Victoria's Climate Change Strategy to succeed at a statewide level, it needs to be applied to the real-world context of regional communities and landscapes; hence this plan.

Currently, many of the societal systems in place are maladaptive and implemented without consultation. They produce and sustain injustice, ecological destruction and the marginalisation of First Nations' peoples.

In recent years, an increasing number of communities have begun working together to ensure a more equitable and just climate transition for all people. A future where our young people, and generations to come, don't miss out on the opportunities and privileges we have today.

The Loddon Mallee Climate Ready Plan is the collective voice of our community. By focusing on collaboration and co-design across locations, ages, experience and skills sets, we build hope for the future and climate resilience, enshrined in community connection, increased support for people disproportionately impacted, an innovative distribution of ideas and more: We will become climate ready.

**Our future is bright – and not just because of increased heat from the sun's rays  
– but because as regional and rural Victorians, we shine stronger together.**

ADAPT Leaders, Community People, Places and Youth Boards

# Introduction

## A Climate Ready Victoria

**Victoria's climate is changing, and its impacts are already being experienced across our state. It is vital that everyone, from individuals to governments, prepare by taking action to reduce the potential impacts of climate change.**



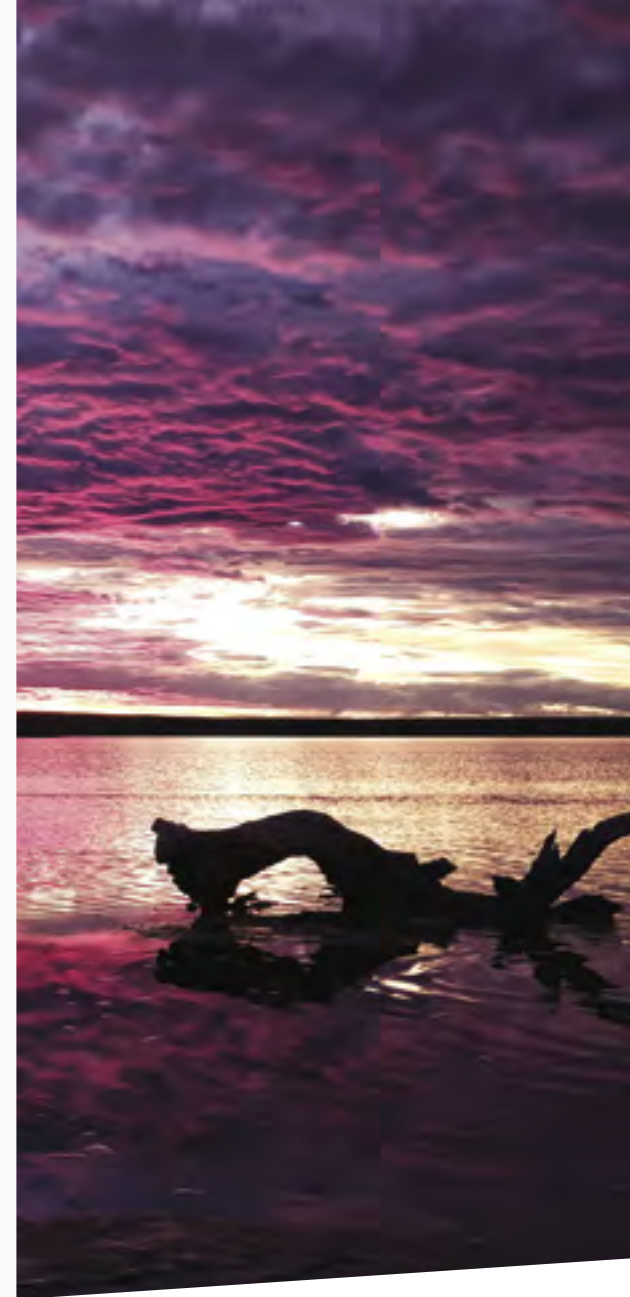
The Victorian Government has been leading transformational adaptation reform through the States' *Climate Change Act 2017* (the Act) and Victoria's Climate Change Strategy. The Act requires the preparation of Adaptation Action Plans for the seven systems every five years until 2050 to ensure Victoria is resilient as the climate continues to change. These 'systems' are Primary Production, Built Environment, Education and Training, Health and Human Services, Transport, Natural Environment, and the Water Cycle.



A big challenge remains with what does this transformation look like for all the unique communities across Victoria. No one community shares the same physical, historical, cultural, social and environmental characteristics, which can support or hinder a community from adapting effectively.



To address these barriers, the Victoria Government has funded the development of six regional climate change adaptation plans. The five-year plans take a place-based approach that aims to strengthen capacity in local communities and empower them to work together in response to local challenges that cannot be address at a State-wide level. The plans seek to provide a lens to look at systemic and cross-sectoral issues, foster collaboration and drive locally led solutions by utilising unique strengths of different communities. Funding has been provided to support the initial implementation of the plan.



# Climate justice through transformation

To support our region to get climate ready this plan aims to strengthen community resilience but acknowledges that capacity and resources are not equally shared.

**Therefore, to reduce disproportionate climate risk and ensure the benefits and burdens are shared equitably, our Climate Ready Plan aims to:**

Prioritise actions that centre the needs and voices of people most disproportionately impacted by climate change, including:



Lower income communities, people living with disabilities or illness, older residents, First Nations' peoples of the Loddon Mallee, people from new and emerging migrant and refugee communities, children and youth, women and gender diverse people.

Empower individuals, communities and businesses to lead localised action and participate in planning processes that:



Build climate knowledge and awareness, drive practical adaptation action, harness local knowledge and skills, and provide meaningful decentralised leadership opportunities.

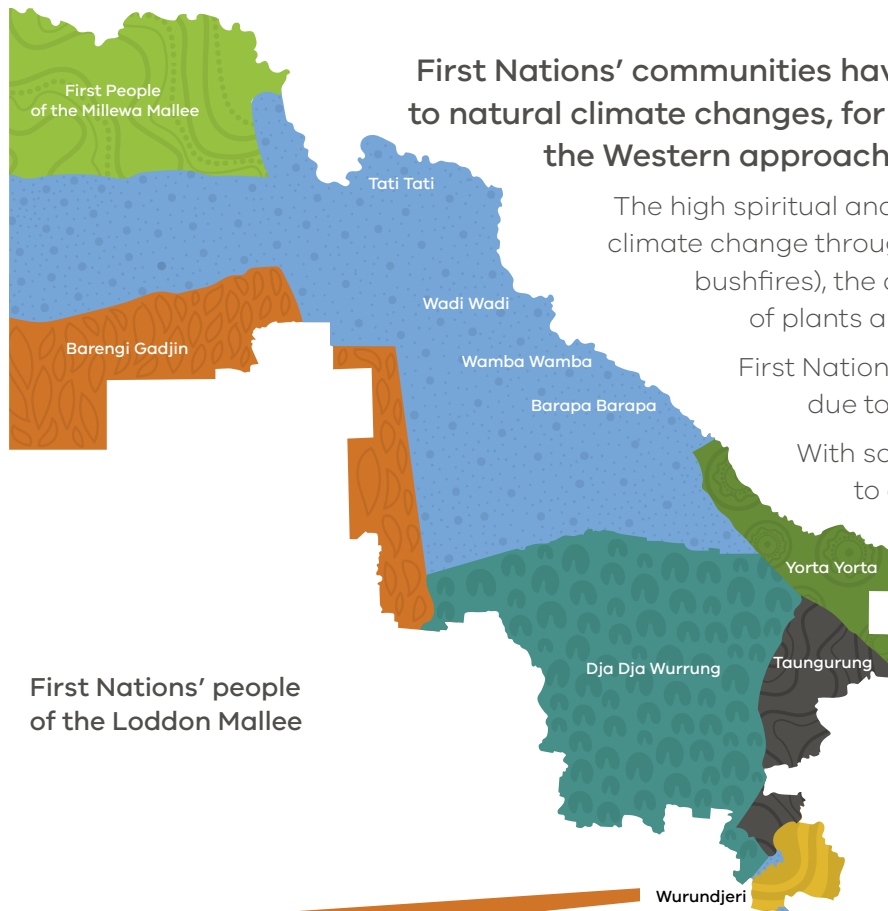
## Planning for climate change in a time of uncertainty

After a summer of record bushfires in 2019–20, our communities have had to face the social, cultural, and economic impacts of COVID-19. It is now more important than ever that we plan for future risks and strengthen community resilience.

In times of crisis, communally held values are essential to building a shared narrative and sense of purpose. If we focus on the importance of preparation and resilience we will be more likely to bring people along on the journey and give them the confidence to take action in spite of uncertainty.

# Caring for Country in a changing climate

ADAPT Loddon Mallee respects that First Nations' people have ongoing cultural obligations to their Country. We commit to enabling self-determination for First Nations' people and recognise their inherent rights and obligations to care for and heal Country, as their ancestors have done for millennia.



**First Nations' people  
of the Loddon Mallee**

**First Nations' communities have been effectively managing the lands and waters, and adapting to natural climate changes, for thousands of generations. Since European invasion and colonisation, the Western approach to natural resources management has been the dominant one.**

The high spiritual and cultural toll of colonisation is like to be further exacerbated by man-made climate change through the further destruction of cultural sites (for example, as a result of increased bushfires), the disappearance of spiritually important species (such as totem animals), and of plants and animals used for traditional food, medicine and other cultural practices.

First Nations' people may also experience disproportionately high physical health impacts due to the increase in heatwaves, emergency events, and poor air and water quality.

With so much at stake, it is vital that we invest in the capacity of local First Nations' people to care for and heal Country in a changing climate. Our region is fortunate to have the

largest population of First Nations' people in Victoria, with thousands of significant cultural sites. With their deep intergenerational knowledge and ongoing connection to Country Aboriginal knowledge has already been critical in supporting climate adaptation actions, particularly in the natural resource management area, such as cultural burning for bushfire risk reduction. We need to provide further authorship to Traditional Owner groups and First Nations' people living in the region to identify and implement their own responses to climate change. There are also many opportunities to learn from and enable the application of traditional ways of working on Country, while respecting Aboriginal ownership of that knowledge. The groundwork for how we might best approach this is integrated through this plan. For a summary of all objective and priority actions that support caring for and healing Country in a changing climate – see page 108.



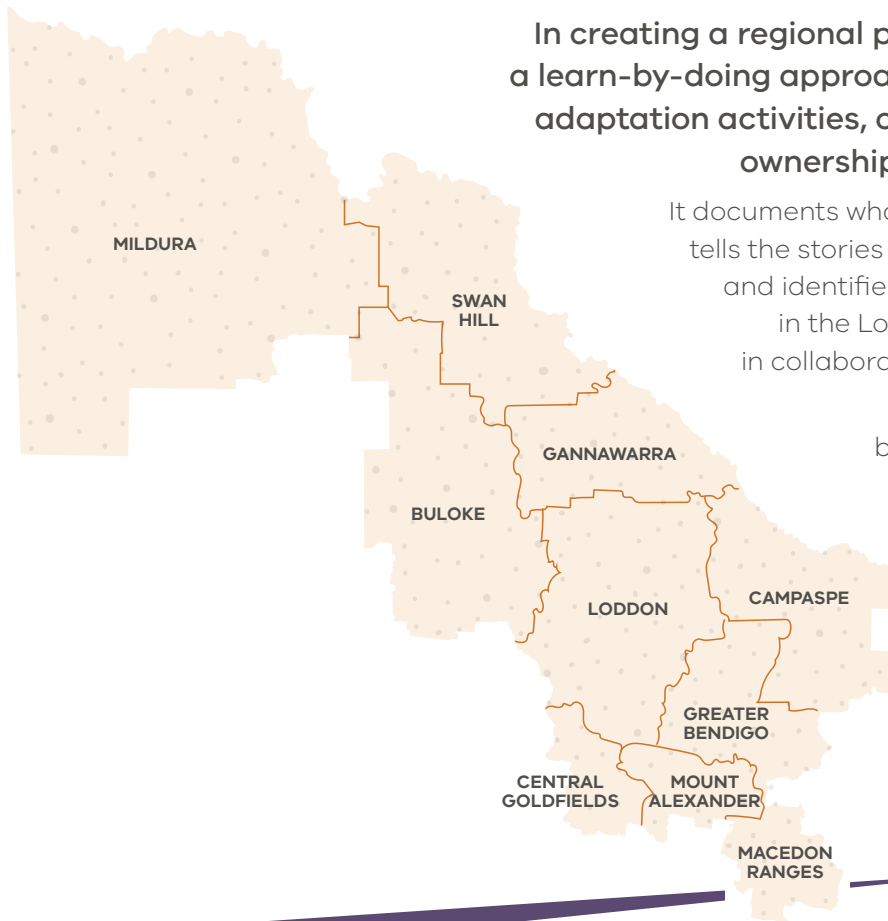
# A place-based approach to adaptation

The large geographical spread of the Loddon Mallee region, the unique nature of many of our communities and the vast scale of climate impacts requires tailored local adaptation responses.

**In creating a regional plan to get climate ready, ADAPT Loddon Mallee has taken a learn-by-doing approach. We wanted to empower local community members to lead adaptation activities, create partnerships and knowledge-sharing networks, and have ownership in the development and implementation of the plan.**

It documents what we have learnt about place-based adaptation over the past two years, tells the stories of local initiatives that are supporting regional climate change adaptation, and identifies a range of key goals, objectives and priority actions for the next five years in the Loddon Mallee region. These have been developed by ADAPT Loddon Mallee in collaboration with program participants, community delegates and experts in the region.

Some of the priority actions identified in this plan can be undertaken by communities and individuals and others will require the support of different levels of government, partner agencies, financial institutions and industry. Over the next five years, ADAPT Loddon Mallee will work to support the implementation of this plan and continue to ensure local voices are represented in planning for climate change.



# Our guiding principles



## **Inclusiveness and trust**

Engage and empower a range of community members from diverse cultural, social, economic, environmental, and political perspectives. Have confidence that residents understand their own communities and are often best placed to develop projects that will assist with local climate adaptation.



## **Leadership and capacity strengthening**

Provide meaningful opportunities for decentralised, grassroots leadership. Strengthen and build adaptive capacity in the region by providing resources that give a diverse range of local people the skills and knowledge they need to influence change in organisations, workplaces, and communities.



## **Collaboration and connection**

Create networks for knowledge sharing that value lived experience and create supportive environments to trial adaptation actions. Link organisations to address the range of expertise required, geographical barriers and long-time frames involved in climate adaptation.



## **Equity and fairness**

Prioritise actions that support the people, places and sectors that are disproportionately impacted by climate change. Ensure the benefits of new and emerging opportunities are fairly shared in our communities.



## **Local and place-based**

Harness the considerable local knowledge, skills and resources in our region. Focus on strengths, values, assets and opportunities. Respect, value and share learnings of place based actions.



# Climate risks

The Victorian Government has partnered with CSIRO to help communities prepare for climate change by producing local-scale climate projections data.

This information helps us explore what climate change means locally.



By the 2050s, Loddon Campaspe can expect the following



Average maximum temperature increase up to 3.0°C



Twice as many days >38°C



Annual rainfall to decrease by as much as 20mm



Extreme rainfall and flooding expected to be more intense



Longer fire seasons and 62% more very high fire danger days

Bendigo's climate could be more like Shepparton's



By the 2050s, the Mallee can expect the following



Average maximum temperature increase up to 2.8°C



Twice as many days >40°C



Annual rainfall to decrease by as much as 19mm



Extreme rainfall and flooding expected to be more intense



Longer fire seasons and 50% more very high fire danger days

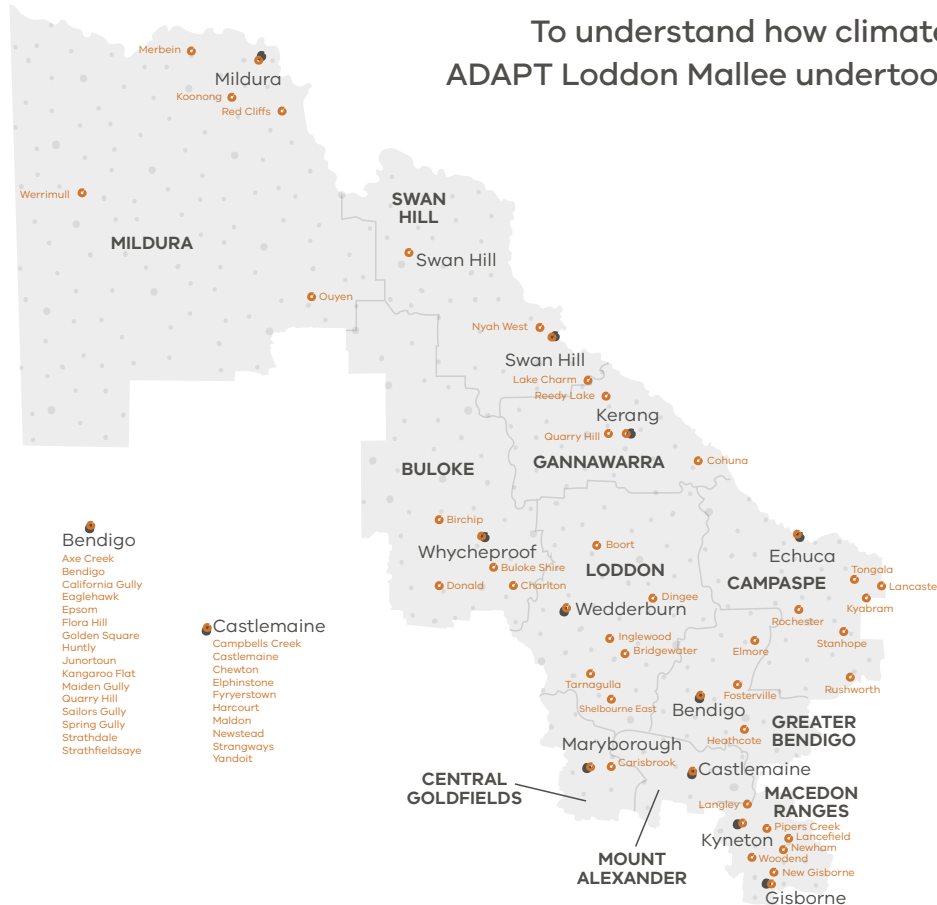
Mildura's climate could be more like Menindee, NSW



# ADAPT engagement activities and locations

Understanding how climate change is impacting our region involves not just listening to the latest science but also to experiences on the ground.

To understand how climate change was impacting communities across the region  
ADAPT Loddon Mallee undertook a variety of collaborative projects and engagement activities\*.



## Engagement activities

- More than 120 organisations directly engaged
  - Approx. 720 individuals directly engaged
  - Activities and projects in 74 different towns
    - 42 workshops
    - More than 200 surveys
- More than 12,000 indirect engagements through projects
- More than 50,000 indirect engagement through social media/newspapers
  - 100 Community Conversation kits
- 36 participants on our community working groups
- 8,000 School Climate Change Activity books
  - Desktop review of 141 documents

\* For a list of ADAPT support/sponsored projects see Appendix pg 116



# Emergenced risks and impacts

Through our engagement activities we heard from individuals, communities and businesses about local observed changes in climate, what they were most concerned about and who and what they considered most vulnerable.

## Observed changes

### 1st

Longer harsher fire seasons and bushfire smoke (air pollution)

### 2nd

Seasonal changes

### 3rd

Changed rainfall patterns and drought

### 4th

Extreme heat events

### 5th

Storms/extreme rainfall and flooding

### 6th

Ecological changes (including pest incursions)

## Community – highest concerns

- Biodiversity loss
- Impact to industries, agriculture, and local jobs
- Local food security
- Loss of green space/ access to the environment
- Loss of water sources and water poverty
- Thermal comfort of homes (including affordability of cooling)
- Impacts on outdoor recreation
- Physical health risks (heat, smoke inhalation etc)
- Mental health risks (no hope, climate anxiety etc)
- Risks to heritage sites/tourism

Our community is particularly concerned about the vulnerabilities of some groups such as youth, the elderly and volunteers, together with threats to key natural populations, such as bees, that support both our agricultural and natural ecosystems.

## Business – highest concerns

- Impacts of drought and heatwaves on staff health and job security
- Impacts of air pollution, fire, storms and water availability on their workplaces and assets
- Impacts of drought and water availability on markets, day to day operations and finances

## On vulnerability

- People disproportionately impacted by climate change due to social factors such as:
  - The elderly, young people, First Nations' people, people living in isolation, volunteer-dependent emergency services and networks and emergency service volunteers
- Food systems, biodiversity, agricultural businesses and water sources
- Recreational spaces (including community sporting facilities), green spaces (public/private gardens and existing exotic street trees) and tourism

# Welcome to our Climate Ready Plan

There is much work to be done to prepare our region. To make sense of the vast amount of information we have collected, our goals, objectives, and priority actions\* are organised into three interconnected sections - People, Places and Sectors.

These sections have been structured around four resilience planning themes of Knowledge, Connection, Wellbeing and Security that together, create the strong framework necessary to achieve a climate ready region.



## People

Individuals and communities have the knowledge and tools they need to become climate ready

People in Loddon Mallee feel connected to their communities and supported to become climate ready

Individuals and communities are happy and healthy

Individuals and communities have the housing, food, financial security and access to the services they require



Knowledge



Connection



Wellbeing



Security



## Places

Our region is continuously learning about the effects of climate change on our natural and built environments

Places in our region are connected by resilient infrastructure and environmental corridors

Our natural and built environments are healthy and sustainable

Our natural and built environments are protected from the impacts of climate change



Knowledge



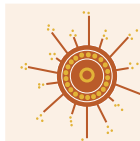
Connection



Wellbeing



Security



## Sectors

Businesses have the climate knowledge and resources they need to make confident decisions for operational continuity and competitive advantage

Local businesses feel connected, incentivised and rewarded to become climate ready

The health and safety of local workforces is protected

Local businesses have secure access to climate resilient markets, technologies, financing, and transport channels

# Section 1 – Climate Ready People

Where climate justice is centred for the wellbeing of all



# What we value

Across the region our communities have had conversations about what they most value and need to protect in a changing climate.

These conversations have informed the goals, objectives and priority actions of the Climate Ready Plan. This is what we heard:



## **Our elderly**

There is lots of combined wisdom in the elderly in our communities, but they also might be frail and more vulnerable



## **Our youth**

As young people we are very worried about the future, but we have lots of ideas and are willing to make change



## **First Nations' people**

There is so much we can learn from our Traditional Owners and how they managed the land



## **Volunteers**

We wouldn't be able to do what we do without the volunteers in this town – they are so important to keep the town going



## **Sense of community**

I love the way our community comes together especially when there is a celebration or people need help



## **Community activities**

Community sport plays an important role in the health and wellbeing of people of all ages in the community



## **Access to green space**

Being able to go for a walk, a picnic or camping makes me feel happy and connected to nature



## **Local fresh food**

We are lucky to have a farmer's market where we can buy food grown locally



## **Diversity**

We have our own strengths and our own knowledge that we have bought with us and we want to share them if we have the chance



# About our people



First Nations' people – 2.3% of our population, the highest in Victoria



40% live in regional cities



Above state average of volunteerism 26.3%



Population born overseas: 10.19%



People living with a disability 6.4%



Youth – A third of our population are aged 0–24



84% of towns have a population < 3,000 people



Two thirds of our population attend local community events



5.8% of population speak a language other than English at home



Lone person households 26.6%



Population – 23% are aged 65+



Projected population growth of 50% above the state regional average\*



Average Socio-Economic Index for Area (SEIFA) score in the Loddon Mallee 964



New and emerging communities include Karen, South Sudanese, Afghan, Burundian, Sri Lankan, Congolese and Filipino



Social housing as a percentage of total dwellings is 4.8%

\* Due to COVID-19 there may be higher than expected growth relocate to regional areas. This may result in positive economic development; however timely, proactive and adaptation-aware planning will be needed to ensure that increased housing, industry and employment options are developed in ways that are adaptive to climate changes, and without loss to valuable natural and agricultural lands



# What we want to achieve

Transformative adaptation that harnesses local knowledge and skills, and prioritises actions that centre the needs and voices of people most disproportionately impacted by climate change.

To strengthen and support resilient climate ready communities, we want to achieve four key goals based around the resilience planning themes of knowledge, connection, wellbeing, and security.



## People



Individuals and communities have the knowledge and tools they need to become climate ready



People in Loddon Mallee feel connected to their communities and supported to become climate ready



Individuals and communities are happy and healthy



Individuals and communities have the housing, food, financial security and access to the services they require



# Knowledgeable communities

Individuals and communities have the knowledge and tools they need to become climate ready



## Objectives



Increase climate knowledge through accessible and inclusive resources



Aboriginal communities, culture and cultural practices are respected and valued



Increase local knowledge sharing about local climate impacts and adaptation solutions



Prepare for emergency events by strengthening community awareness and knowledge



## Increased climate knowledge through accessible and inclusive resources

**If we want individuals and communities to be empowered to take adaptation action, it's important they understand local climate risks.**

Climate information that is both local and long-term will enable communities to address their key priorities and make incremental change. Climate education of children and youth will also allow future generations to be better prepared.

Currently, many communities are excluded from climate conversations. Our region's successful settlement and migration programs mean that we are more diverse than ever, yet information about climate change remains top-down and assumes a high level of English and written literacy.

These waves of migration have also brought with them knowledge of sustainable practices from around the globe - an asset for our region as we look for innovative solutions to meet the challenges that we face.

It is not enough to say that we are inclusive: the severity of the impacts makes collaborative engagement a priority. We need to work directly with all communities in our region to ensure that our objectives, actions, and tools resonate for all.

## Priority actions

- Funding for community-led initiatives and enterprises
- Organise a regional climate action festival

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I believe that knowledge is power, people are often scared about climate change and feel helpless. I want them to know that changes they make, even small ones, do make a difference, and that we as a community can make a change.

**Amanda Logie, ADAPT leadership graduate, Rochester**

Grass-roots projects are key to including all members of the community. They can help establish a dialogue about climate change, making people feel as though they are part of the solution.

**Louise Costa, ADAPT leadership graduate, Rushworth**

I want to change the perception and lack of knowledge on climate change. . . I want to create a better future by teaching children about the environment

**Troy Butler, ADAPT leadership graduate, Maryborough**

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## Aboriginal communities, culture and cultural practices are respected and valued

**First Nations' people have been living sustainably in our region for millennia.**

**Their worldview and connection to Country are a rich source of knowledge and innovation.**

There is a real thirst in communities, especially from young people and new migrant communities, to learn how can we implement traditional knowledge into our everyday practices to adapt to the rapidly evolving climate.

Aboriginal knowledge has already been critical in supporting climate adaptation actions.

Traditional land management practices such as cultural burns may help us respond to the increased threat of bushfires due to climate change.

Opportunities also exist to support collaboration between regenerative farming practitioners and First Nations' farming practices and indigenous plant use.

## Priority actions

- Consider traditional knowledge at all levels of decision making
- Consider and appropriately incorporate all climate policies developed by Traditional Owners into the Climate Ready Plan as they are developed and become available
- Support learning opportunities for young people and new migrant communities with First Nations' peoples

## Upcoming projects

**Planting the seed:** Developing a regenerative business model appropriate to land and community incorporating indigenous food and fibre plants. A collaborative scoping project of First Peoples of the Millewa Mallee and Food Next Door Co-op

### From little things, big things grow

A small rural school on large grounds, Elphinstone Primary faces increased risks from bushfires and heatwaves, coupled with less rainfall.

To adapt, the school is forging closer relationships with Dja Dja Wurrung Traditional Owners to ensure its grounds – and students – continue to thrive in a drier, warmer climate.

In close consultation with First Nations' people, the school community has planted a bushfood garden on a neglected part of the school grounds, choosing native species able to withstand heatwaves and flourish with minimal water, among them Midyim, Chocolate Lilies, Pigface, Warrigal Greens and Flax-Lily. With the help of Ira Barker from Aboriginal catering group Murnong Mammams, the students have learned how to use these plants in a variety of ways as part of a Reconciliation Week event – learning that will be shared with their families and community, and with other schools within the local small schools cluster.

**Elphinstone Primary School**  
– ADAPT funding



## Increase local knowledge sharing about local climate impacts and adaptation solutions

**Local people are experiencing the very real effects of climate impacts in their communities and are often able to respond with innovative place-based solutions.**

Positive storytelling helps individuals and communities see that even small actions make a difference.

Peer-to-peer learning is important because we are all figuring out what we need to do to adapt. Sharing with others what has worked, and what hasn't, will enable faster adaptation responses and help prevent maladaptation.

Story-telling also allow us to address some of the barriers to engagement; communities can lead conversations on their terms, in their languages, and with those who they trust.

### Priority actions

- Create Climate Living Lab Educational Hubs partnering with local education providers, First Nations' groups, locals and the farming community
- Deliver education forums or climate clinics between communities
- Harness social media and other platforms to share local stories



The power of story-telling has become more apparent to me through the COVID-19 pandemic. Reading stories of how community members are helping others in need during the pandemic has made me realise that we need to be telling our climate resilience stories so much more to assist in creating the 'new normal'.

**Jay Smith, ADAPT leadership graduate, Mildura**

Our local community, like many has struggled with the extremes of drought and flood. We need to explore ways to remain sustainable, to share the knowledge of those within our community with our community. There are many ways that we can do this, community gardens, education and strengthening our resilience.

**Amanda Logie, ADAPT leadership graduate**





## Prepare for emergency events by strengthening community awareness and knowledge

### **The increase in emergency events posts a disproportionate risk to the most vulnerable in our communities.**

A lack of clarity around what to do and who should do it continues to be a barrier to planning and acting in response to emergency events.

Language barriers, social isolation and digital inequities can be inhibitors to receiving and understanding emergency warnings.

People in communities who are living with a disability or long-term health issues can be particularly vulnerable during bushfires due to a lack of accessible information, emergency housing and access to health services.

Young people in the region want to be involved and should be empowered and resourced to make meaningful contributions to emergency preparedness, response and recovery efforts.

### Priority actions

- Co-design emergency response education targeting people disproportionately impacted

6

Not having family or supports available to help them in an emergency i.e. no transport, nowhere to go. It's very hard to make a plan if you cannot think of a practical solution as to HOW to evacuate.

**Amy Atkinson, Maldon  
Neighbourhood  
House Coordinator**

We [people living with disability or illness] face a lack of accessible information and participation regarding adaptation and disaster risk reduction and emergency relief

**Eva Whyte, Community  
worker, Castlemaine**

Some young people don't drive – we feel like we have been left out of the conversation around emergencies, especially bushfires

**Jemille McKenzie, ADAPT  
leadership graduate, Bendigo**

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# Connected communities

People in Loddon Mallee feel connected to their communities and supported to become climate ready



## Objectives



Continue to strengthen local networks and support communities to leverage off existing ties in their neighbourhoods



Enable continued involvement in community activities to strengthen social cohesion



Continue to strengthen local leadership capacity and opportunities



Connect communities to external support





## Continue to strengthen strong local networks and support communities to leverage off existing ties in their neighbourhoods

**Community led organisations, with their deep local knowledge and networks, play a critical role in keeping communities strong and connected.**

They see firsthand the risks and challenges people are facing at the local level and provide critical social and health services to those who need support. They are also trusted by the community when external organisations or government may not be.

One of the challenges that community organisations face is their reliance on ageing volunteers and grants-based funding to support their grassroots work.

Young people want to be involved in community work but often feel 'locked out'.

### Priority actions

- Provide support and resources not-for-profit and non-government organisations and local community leaders to embed climate ready planning when working in community
- Provide short-term opportunities for young people to volunteer in ways that work for them







## Enable continued involvement in community activities to strengthen social cohesion

**Community activities such as sport and recreation activities, localised learning, community meals, men's sheds, even catching up with neighbours over a coffee all help to build shared values and sense of community.**

Loddon Mallee communities have a strong sense of place which we can harness to build resilience to a changing climate by supporting our communities to work together towards protecting what they most value about living in their communities.

Due to migration and relocation shifts that have occurred over the past decade, both regionally and internationally, there is a pressing need to ensure that newer community members are also involved in activities to promote resilience for all.

## Priority actions

- Peer to peer knowledge sharing opportunities and forums
- Community conversation sessions that focus on strengths and protecting what people value

### A place where everyone belongs

Sustainable community development starts with a focus on what's strong, not wrong. For Neighbourhood Collective Australia, this means focusing on people's strengths and abilities to build community resilience in their own way – including how best to adapt to a changing climate. It's why this grassroots not-for-profit organisation supports The Old Church on the Hill, a vibrant, volunteer-run community space in Bendigo's Quarry Hill where more than 30 community groups come to share ideas and expertise, celebrate their cultural diversity, and learn from each other's strengths.

Communal passata making, fruit preserving, repair cafés and construction workshops bring different generations together to learn new skills and develop connections, while the community garden and low-waste pantry support local food production and resilience. Future initiatives for the community hub include a monthly environmental networking dinner, slow-fashion workshops and an on-site op shop.

**Neighbourhood Collective Australia**





## Continue to strengthen local leadership capacity and opportunities

**Community leaders and volunteers have a crucial role to play, by informing and supporting local business and community groups to adapt to changes in our climate.**

We need to build and strengthen climate change adaptation leadership across the region with a diverse range of emerging community leaders. People leading change in their local community benefit from strong connections with others who share their sense of purpose and desire to influence change.

Peer networks allow leaders to reflect on different needs and strengths in their local community and the different styles of leadership and processes needed to influence and engage community members. Leadership opportunities and skills building programs will allow participants to collaborate, pool resources, develop skills and build networks to maximise immediate adaptation impact and build future adaptive capacity.

### Priority actions

- Establish leadership networks for multicultural communities
- Establish a climate adaptation for youth councils project that encourages each local youth council to develop their own adaptation plan
- Continue to support climate leadership capacity building programs

### Our story is just beginning

The Youth Climate Network is a support network for young people with a shared goal to protect our planet. It's given us the tools and knowledge to act, and a platform where our ideas for a climate ready future are valued and supported. In 2020, work began at our Youth Climate Retreat. We left the weekend with a sense of purpose, hope and community, our ideas collated into achievable goals and actions.

In 2021, we gathered again for a day of cultural learning, forging a connection to Dja Dja Wurrung Country. Informed by these experiences, our Youth Climate Advisory Board ensures young people are heard and our aspirations are reflected in government policy – including in the Climate Ready Plan. By embedding young people in frontline discussions on climate action in our region, we are empowered to protect – and feel hopeful in – our planet's future.

**Meghan Walker, Youth Climate Network participant**





## Connect communities to external support

**Loddon Mallee has a strong culture of volunteerism with numbers well above the state average.**

Through volunteering, our communities are doing great work to address some of the most significant social issues, including climate change. Without them, our local businesses, environment and residents will be much more vulnerable to the impacts of a changing climate.

We need to support our local volunteers to be sustainable by building stronger community partnerships and networks. Providing meaningful access to decision-makers, financial resources and funding opportunities will help our overall resilience.

## Priority actions

- Create a local register of climate funding opportunities and grant writing support
  - Provide greater access to non-competitive funding for grassroots projects
  - Create an adaptation advisor/ambassador program to promote adaptation planning and skills
- Create an information hub that links individuals and communities to organisations that encourage, enable and support people to take action



# Well and happy communities

Individuals and communities are happy and healthy



## Objectives



Recognise and address the physical health impacts of climate change



Recognise and support the mental health and wellbeing impacts of climate change



## Recognise and address the physical health impacts of climate change

### Climate change affects health in many ways.

Physical health is impacted directly by the increased intensity and frequency of extreme weather events such as prolonged heatwaves, floods and bushfires; and indirectly through worsening air quality, changes in the spread of infectious diseases, risks to food safety and drinking water quality.

These climate impacts will disproportionately impact children, pregnant women, older people, those experiencing homelessness and First Nations' people. Rural and regional communities already face challenges when trying to access affordable and appropriate health services. Climate change impacts will place additional strains on these services.

### Priority actions

- Invest in targeted support for people living with disabilities, health issues and the elderly in emergency events
- Create mobile climate wellness clinics targeting the most disproportionately impacted

6

I encourage my students to make everyday changes that will make a big difference in their local environment and influence those around them which can lead to change on a much bigger scale.

Students are involved in the conception, planning, advertising and completion of projects at the school, such as, planting trees, growing their own produce and worm farming. This gives them a sense of power and influence in mitigating change and adapting to the changing climate.

Raelene Gooch, Educator  
Bendigo

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## Recognise and support the mental health and wellbeing impacts of climate change

### Climate change can affect people's mental health, both directly and indirectly.

Emergency events may have resulted in loss or damage of homes or livelihoods that take a significant toll on mental health. Climate change is impacting our green spaces and recreational activities that are required to support our wellbeing.

Extreme heat and heatwaves and resulting lack of sleep can also affect mental health. For many people especially youth and parents of children, fear of what the future holds is also increasing anxiety and distress.

Providing communities with opportunities to implement adaptation at an individual and community level, as well as within the natural environment, could remove a sense of disempowerment or lack of control that can be associated with the enormity of climate change.

Creative projects have an important role to play in engaging people in climate risks and adaptation action including celebrating diversity, encouraging innovation, and providing a sense of hope and inspiration.

### Priority actions

- Co-design support projects with youth that address climate anxiety
- Support community-led green spaces

### Upcoming projects

- **Climate resilience is... an art exhibition.** The exhibition will feature 20 local artists who will explore and reflect on current and future actions that communities are undertaking to ready themselves for unprecedented climatic change events and impacts.

### Giving local voices to a global problem

EndGame podcast is an evocative series of short, sound-rich audio features exploring the impacts of climate change on the more personal aspects of our lives – shedding light on the fears and motivations we rarely give voice to.

Using empathetic storytelling to resonate with listeners' own experiences and concerns, EndGame seeks to build knowledge and support mental wellbeing as we come to grips with climate change.

Listening to the series also connects audiences across time and space, building community around our shared humanity and the importance of working collaboratively and nurturing our bonds with Country.

The project has since evolved to the creators thinking about adaptation, around living with climate change and finding positive and affirming ways to contribute to local climate actions.

**Endgame podcast**  
– ADAPT funding

# Secure communities

Individuals and communities have the housing, food, financial security and access to the services they require



## Objectives



Provide climate ready housing and shelter for the most disproportionately impacted



Build resilience of local food systems



Increase regional education and employment opportunities



Increase reliable access to services



Support the most vulnerable in our communities in emergency events



## Provide climate ready housing and shelter for the most disproportionately impacted

**Heat waves are severely impacting individuals and families who are living in thermally inefficient housing including public housing, private rental and privately-owned accommodation.**

The highest temperatures in the region are often recorded in the lowest socio-economic areas where there is a lack of green space and a high proportion of people who are vulnerable to heat. This includes the elderly, those who are socially isolated and those who do not have, or cannot afford to run, air-conditioning (including young people).

Living in these conditions considerably decreases people's capacity and ability to adapt and recover from the effects of extreme heat and heatwaves. The flow on effect puts a significant burden and cost onto local health, social and welfare services.

Due to the impacts of COVID-19 pandemic there may be higher than expected growth as people move away from metro Melbourne. This growth is putting pressure on low cost housing in the region and increasing the risk of homelessness especially for youth, older women and low-income families. Timely, proactive and adaptation-aware planning will be needed to ensure that climate ready secure housing is available to all.

### Priority actions

- Provide free energy and water assessments for low-income households
  - Encourage alternative housing models
- Deliver workshops for low cost retrofitting of houses for liveability

6

Last night in Mildura [November 2020] the temperature didn't drop below 30°C, I'm lucky – I have air-con and can afford to turn it on but I know lots of people who either don't have air-con or even if they do, they can't really afford to run it.

**Jemima Lotika**  
**Youth Climate Network and**  
**MA Public Health student**  
**Mildura**

One barrier is the potential expense that is needed – lots of older people have AC but don't use it due to the expense or a notion of frugality. Lots of people don't see themselves as 'vulnerable' until there is an incident.

**Amy Atkinson**  
**Maldon Neighbourhood**  
**House coordinator**

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## Build resilience of local food systems

### **Increasing temperatures, changing rainfall patterns and higher frequency of extreme events are affecting regional food security .**

Impacts of COVID-19 have highlighted how reliant most communities are on non-local food. There has been a resurgence in locally grown produce and home gardens, as well as interest in traditional bush foods.

To secure our food system we need to diversify to offer a range of opportunities for community members to grow (and sell) food. Investing in spaces, such as community gardens/supported agriculture, can increase access and reduce barriers to participation while minimising outlay for those without access to growing space.

### Priority actions

- Support First Nations' led bush food projects
- Connect multicultural growers with landholders to scale up food production
- Invest in community garden spaces particularly in communities with low food security

### Upcoming projects

**Climate ready young growers** – In partnership with ADAPT Loddon Mallee, Peppergreen Farm in Bendigo will deliver a series of five workshops to 20 young growers. Each session will be linked to a climate ready theme while participants learn food growing skills such as soil preparation, seasonal produce, pest and weed management, plant propagation and composting

**An introduction to food systems and climate change for young people** – Food Next Door in Mildura will develop and deliver a series of six, two-hour classes for young people from the local Congolese and Burundian communities to learn about climate change in the context of food systems. The course will cover small scale farming using regenerative practices, in growing vegetables in an arid climate

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I'm very motivated to build a strong local food system to complement some momentum already underway in the Mallee. Especially under current circumstances, we are seeing how important it is that everyone has access to locally grown and fresh produce. I strongly believe in the power of growing food together to produce positive social, environmental and economic outcomes.

**Rachel Kendrigan, ADAPT leadership graduate, Mildura**

Food security is of high importance in my mind as it will have great social and environmental outcomes. Many people in Australia are missing out on healthy, fresh and local food. Supporting communities to increase their food security will increase resilience and adaptive capacity.

**Tim Read, ADAPT leadership graduate, Castlemaine**

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## Increase regional education and employment opportunities

### The challenges of climate change also bring opportunities.

While the rapid growth in renewable energy in our region is a positive mitigation action it's important that the benefits of these new industries are equitably shared with local communities. Renewable energy isn't the only climate-related sector primed for growth. Other opportunities include health and human services, eco-friendly construction and green space management to help regional towns and cities prepare for changes in climate. The technologies and skills required for climate ready jobs will provide an opportunity for regional youth to innovate and develop new skills and competencies needed in a future workforce.

Proactively positioning the region for these opportunities also promotes skilled migration in a similar way to that seen in agriculture and the health sector.

### Priority actions

- Explore scholarship opportunities for regional youth in climate ready careers
- Develop strategies for regional retraining in new industries







## Increase reliable access to services

**The vulnerability of regional communities to the impacts of climate change is influenced by their ability to access services.**

People living in small regional towns and isolated communities (particularly elderly and those with existing health conditions) may already have limited public transport and experience economic disadvantage and digital inequity.

Young people or those from new and emerging migrant communities may not drive or have access to a reliable vehicle. The distances between where they live and the services they require, can make fuel costs prohibitive.

An unfavourable combination of these factors leaves many people and communities in our region more vulnerable.

## Priority actions

- Resource community-based transport alternatives
- Deliver mobile support service programs





## Support the most vulnerable in our communities in emergency events

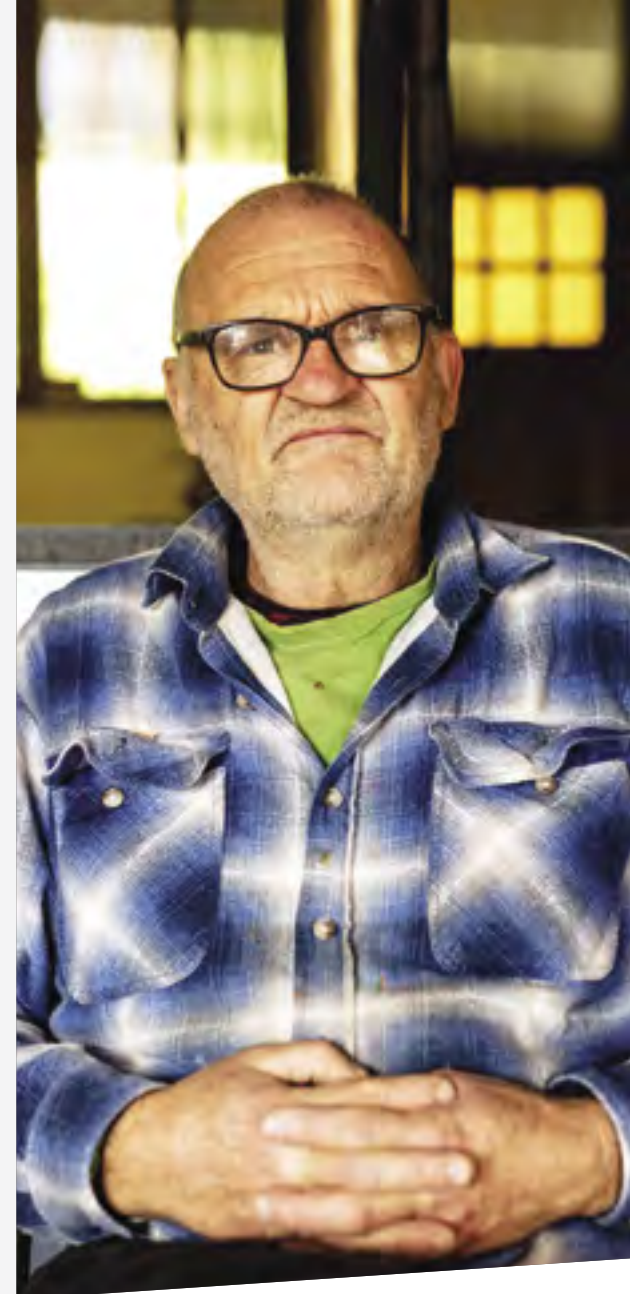
**Climate change-induced crises such as bushfires and floods exacerbate existing vulnerabilities in our communities.**

The elderly, those living with disability or existing health conditions, people with limited English proficiency, people experiencing homelessness, pregnant women and babies, Aboriginal people and people who cannot drive (including young people) are particularly at risk. Emergency events have also been shown to worsen domestic violence rates to which women and gender diverse people are particularly vulnerable.

While we all have a role to play in managing risk and responses to emergency events, we cannot expect people to prepare if they don't have the physical capacity or funds to do so. We need to support local communities and neighbourhood groups to identify those at most risk and support them with the resources required to address the risk.

### Priority actions

- Provide essential emergency equipment for households
- Set up community heatwave shelters able to accommodate overnight stays, particularly in remote communities



# Climate Ready stories

Sharing traditional knowledge with the next generation



A two-day community activity, led by Barapa land and water, was held at Reedy Lake, near Kerang. The event focused on the impacts of climate change on land and water, and sharing Aboriginal cultural practices.

Children from local schools, their families and other local community members joined with local First Nations' people who conducted a Welcome to Country and Smoking Ceremony, cultural storytelling and traditional basket weaving. Children and community members also participated in planting a native forest garden in an area that was previously overrun with weeds. The forest garden, once established, will be a resource for the whole community to enjoy.

By recognising that First Nations' people have an over 80-thousand-year history of adaptation, the event highlighted the importance of working together to understand and respond to the local impacts of climate change.

**Barapa Land and Water**  
– 3CA Grant



# Climate Ready stories

Translating risk into summer safety



Knowing how to prepare for an emergency is critically important for all of us. That's why Bendigo Community Health Services has created an online, in-language resource specifically for people with refugee backgrounds to help them stay safe during bushfires and heatwaves – emergencies that are only set to increase in frequency and severity over the coming years.

The service's Bushfire and Summer Safety Refugee Resource Hub features a series of emergency preparedness videos for people with refugee backgrounds in three languages: Karen, Dinka and Dari. Since its launch at the end of 2020, the hub has received more than 11,000 hits. The service's bilingual support team has also worked closely with the Country Fire Authority and City of Greater Bendigo to create an in-language bushfire safety series of community workshops.

"It's trailblazing work," says the service's Kaye Graves. "No one else in the state is doing this."

**Bendigo Community Health Services**



# Climate Ready stories

Banking on a sustainable farming future



The Food Next Door cooperative, connects under-utilised farmland with landless framers to develop small-scale regenerative agricultural projects. These projects require access to affordable irrigation water which, in times of water scarcity, can be up to five times the regular price. To increase the security and resilience of local food sources during the periods of low water supply, the community-owned water bank project was developed.

The Mildura Community Water Bank supports these farmers to build a sustainable local food economy and provide affordable fresh produce to the community. Donations of water are received by the Bank from water holders for members, and funds donated are used to buy water. To date, 11.6 megalitres of water have been contributed to this unique initiative.

**Mildura Community Water Bank**  
– 3CA Grant



# Climate Ready stories

Being part of something bigger



The power to adapt to a changing climate resides within communities, and it's been harnessed for maximum impact by the Regional Climate Leadership Program. Since 2020, this initiative has supported 24 emerging community leaders from the region to come together, collaborate, pool resources, develop skills and build networks to help their local communities get climate ready.

"The most common way people give up their power is by thinking they don't have any," says program graduate Melanie Scaife, quoting the American novelist Alice Walker. "Thanks to the program, I now understand the latest climate science, am across climate adaptation initiatives in the region, and have acquired the skills to help my community prepare for what's to come."

Graduates have completed 18 months of face-to-face and online learning, and are now leading a range of community projects across the region, including in regenerative agriculture, wildlife conservation, waste management and bushfire preparedness.

Regional Climate Leadership Program – ADAPT funding



# Climate Ready stories

Healing community through gardening



A group of keen gardeners in Rushworth concerned about extreme weather impact on their backyards witnessed their exotic plants suffer and fail in the heat - exacerbating their sense of hopelessness. Concern also for local wildlife in escalating summer heatwaves led the community to wanting a better understanding of habitat, resilient plant species and local natural environment.

The community project began by revitalising what was a weed-infested site on the edge of town into indigenous wildflower beds. Every week the area became a hive of activity of weeding, pruning, re-planting and mulching. The working bees brought the community together and built a sense of shared purpose and new initiatives emerged including a community food swap, home-grown produce and recipes, a seed bank, demonstration site and art resource for botanic drawing classes, natural dying and basket weaving.

**Rushworth Community Garden**  
– Climate Leader Louise Costa



# Climate Ready stories

We need to talk about climate change



Research shows Victorians are overwhelmingly concerned about climate change, but shy away from discussing it among friends and neighbours. If we can't even talk about it, how can we prepare for what's to come? To encourage community conversation, Maldon resident and Regional Climate Leadership Program graduate Melanie Scaife is volunteering her time to write a column for the Tarrangower Times, her town's much-loved local newspaper.

"The column, 'Long live Tarrangower!', focuses on all we hold dear within our community – its people and its places – and how we can protect them into the future," says Melanie, "from climate-proofing our homes to reducing waste, growing our businesses with low environmental impact, and raising resilient children in a climate-altered world."

"I'm drawing on all I've learned from my professional career as a writer and editor, but also from the ADAPT climate leadership program, to hopefully shift community concern into action, and help us find common ground."

**Long Live Tarrangower**  
– Climate Leader Melanie Scaife



# Climate Ready stories

## Small town gets climate ready



Climate Ready Maldon is working to raise awareness in the community about climate change and encourage early preparation. Hundreds of Climate Ready packs were distributed to the Maldon community, with a focus on older and vulnerable people.

Packs contained information that included practical actions such as how to create cool zones in homes, making bushfire, emergency and heatwave plans and raising awareness of climate change impacts.

Community workshops were delivered by project partners, Maldon Hospital and the Maldon Fire Brigade. A volunteer action group continues to work with Maldon residents to assess their homes and make adaptive changes to homes and behaviour.

**Climate Ready Maldon**  
– 3CA Grant



# Climate Ready stories

Preparing the next generation for bushfires



When she was 12-years old, Jemille McKenzie escaped the worst of the 2009 Black Saturday bushfires thanks to her mother's vigilance, something she's never forgotten. Now 24, she's determined to ensure other young people living in regional Victoria, as well as people living with a disability, stay safe by knowing how to reduce their risk of being caught in a bushfire.

Jemille has developed a bushfire response resource in consultation with – and specifically tailored for – these two groups. It features clear, concise information to help them understand the risks and develop a fire plan, and is available in multiple formats, from easy-to-access fridge magnets to a braille version for the vision impaired. Jemille is now in discussions with relevant stakeholders for the resource to be distributed throughout regional Victoria.

Young climate leader  
Jemille McKenzie

# Section 2 – Climate Ready Places

How we protect our natural and built environments



# What we value

Loddon Mallee communities have identified what in the natural and built environments that they most value and want to protect in a changing climate.

This informed the goals, objectives and priority actions of the Climate Ready Plan. This is what we heard:



## Country of First Nations' People:

Always was  
always will be  
Aboriginal land



## Biodiversity

All flora and fauna  
are very important  
and need protecting.  
It also attracts tourist  
for bird watching etc  
we don't want to wait  
until it's too late



## Lakes and waterways

The lake is important  
for recreation activities  
and reducing stress  
levels. It also helps the  
community by  
attracting tourists



## Parks and forests

Time in nature with  
families and children  
creates memories  
and builds life skills



## Urban Green Space

We need to have  
trees and gardens  
in towns and cities,  
it's important  
for mental health  
and wellbeing



## Community recreation facilities

Community sport  
has an important  
role to play in the  
health and wellbeing  
of people of all ages



## Bike links and parks

We need more  
bike trails so people  
can ride to work.  
And for recreational  
purposes



## Heritage homes and buildings

The older buildings  
and history of the town  
are valued by locals.  
Historical buildings  
entice weekenders and  
provide money for  
local businesses



## Transport Infrastructure

Freight trains are  
very important  
for transporting  
farmers produce



Train and bus  
lines connect us  
to other Victorian  
locations but  
we need more



# About our places



Loddon Mallee region occupies more than 25% of Victoria, around 59,000 km<sup>2</sup>



Primary habitat to 37% of Victoria's threatened species



Food bowl of national significance, contributing over \$2 billion or 17% of the State's agricultural output



Over \$1bn per annum tourism industry, including 7.7 million visits to the region's natural and cultural attractions



30 hospitals  
212 schools



56.5% of housing stock >30 years old



Unceded lands of 12 First Nations' groups with countless places of cultural significance



1.7 million hectares of public land. 25 state and national parks (17,000km<sup>2</sup>)



71% agricultural land



69% of region's energy needs renewably generated



65,461 Km of roads



23.4% of roofs have solar or 37,292 installations



Major rail 1,978.8km



73% of approx. 140,000 homes are built with no energy efficiency standards



98 Cultural burns planned from 2020–23



Home to four Ramsar Wetlands



18 endangered ecological communities



21% have unreliable internet access





# What we want to achieve

As a region, we have many unique assets which will require local approaches to safeguard against climate vulnerabilities, both now and into the future.

**To strengthen and support resilient climate ready places, we want to achieve four key goals based around the resilience planning themes of knowledge, connection, wellbeing, and security.**



## Places



Our region is continuously learning about the effects of climate change on our natural and built environments



Places in our region are connected by resilient infrastructure and environmental corridors



Our natural and built environments are healthy and sustainable



Our natural and built environments are protected from the impacts of climate change



# Knowledge and place

Our region is continuously learning about the effects of climate change on our natural and built environments



## Objectives



Recognise the collectively held knowledge of First Nations' peoples as a foundation for caring for and healing Country



Increase our knowledge of the impacts of climate change on the natural environment to support future resilience



Understand the opportunities for innovation to design better homes, neighbourhoods and cities





## Recognise the collectively held knowledge of First Nations' peoples as a foundation for caring for and healing Country

First Nations' people draw on local knowledge, traditions and healing practices, gathered over hundreds of generations, to maintain the strength and balance of the different parts of the Country they care for.

In an increasingly changing climate, we need to respectfully recognise the wealth of knowledge held by local First Nations' peoples through their connection to Country. Despite their intergenerational knowledge of caring for and healing Country, First Nations' people have limited participation in climate-change discussions and decision-making forums. Working together through respectful partnerships and enabling Traditional Owners to plan for climate change on Country will also support local resilience.

### Priority actions

- Engage First Nations' peoples in climate dialogues and decision-making forums
- Support Traditional Owners to plan for Climate Change through country plans

### Upcoming projects

**Djaara Climate Change Strategy Development Project** – Djaara will develop a strategic position on climate change, including a policy and priority areas for actions. The project aims to increase understanding of climate change impacts on Country and identify culturally appropriate adaptation measures. It will also build clarity on engaging with the topic of climate change domestically and internationally

Knowledge, ways of being and doing connect us with Country. That connection helps Country heal. When Country is healed, Country is strong. When Country is strong, we are strong.





## Increase our knowledge of the impacts of climate change on the natural environment to support future resilience

**We are dependent on natural ecosystems for our survival, yet we know very little about how our local natural environment is responding to climate change.**

The natural environment allows people to connect with nature and enables cultural and spiritual connections while providing diverse opportunities for outdoor recreation and learn about our environment. The natural environment also plays a critical role in maintaining and improving liveability in our society.

To address the impact on our natural environment, it is critical that we support activities to identify and prioritise knowledge gaps, drawing on research and local knowledge to build our environmental understanding.

### Priority actions

- Create guidelines that capture existing knowledge for undertaking climate ready and site appropriate habitat restoration
- Create awareness information products for land and water practices that build resilience for current and future climate
- Create a social media education series on the importance of ecosystem services, function and species in a changing climate
- Support citizen science initiatives

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There's currently very little organised, rigorous monitoring or survey work being done on Victorian amphibian populations and local data collection is enormously valuable for many reasons beyond just investigating the effects of climate change.

**Ecologist's response to local citizen science project**

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## Understand the opportunities for innovation to design better homes, neighbourhoods and cities

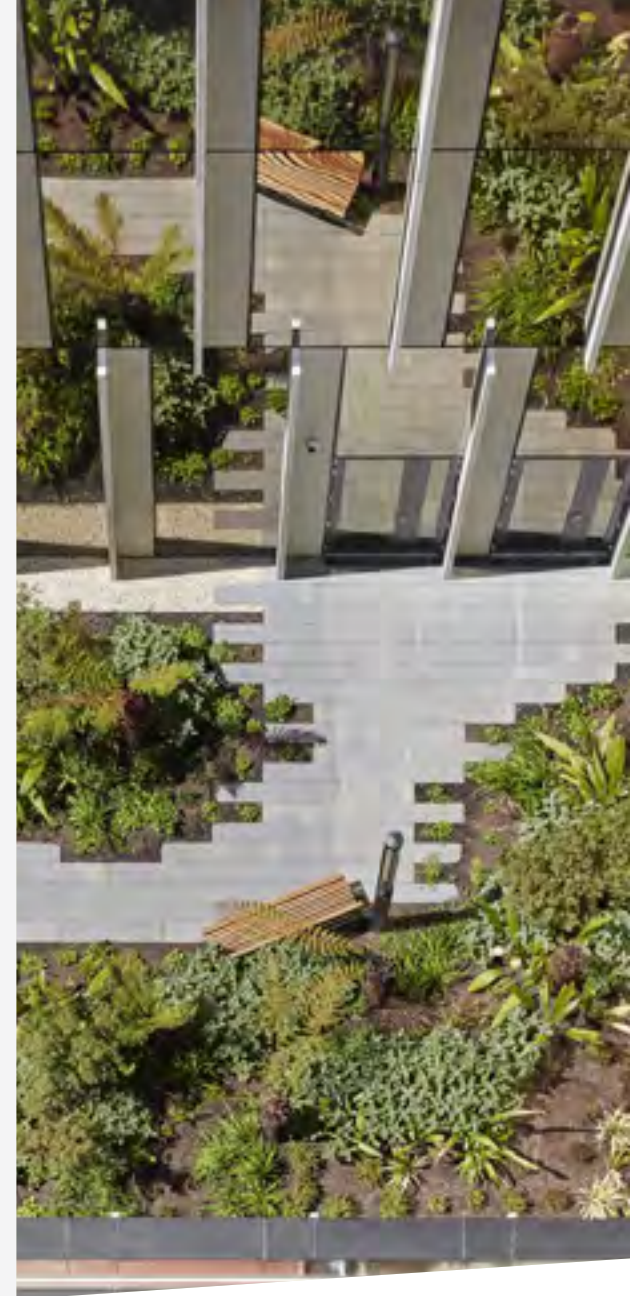
### **An effective response to climate change requires innovation for cleaner and more resilient infrastructure.**

Our built environments will be subjected to more frequent and intense climatic impacts than in the past, and we will be living in a climate not yet experienced before. These environments are the setting for most of our daily activity, from our homes to where we work, shop, and socialise.

The built environment also includes the supporting infrastructure, such as water supply, telecommunications, and energy networks. Innovating adaptation measures to our built environment will ensure the long-term integrity of the assets we interact with every day. Innovating to transition our built environment to support a decarbonised, sustainable economy will also be vital.

### Priority actions

- Create climate ready guidelines for developers and incentives for new builds to be more climate resilient
- Subsidise education and training opportunities for builders and tradespeople to embrace innovation
- Encourage green space such as green roofs and walls in our cities and towns
- Utilise youth councils and groups to ensure they are included in future planning and projects
- Investigate innovative water systems such as rainwater harvest through porous surfaces



# Connected places

Places in our region are connected by resilient infrastructure and environmental corridors



## Objectives



Keep our communities connected during extreme weather and natural disasters



Take steps to ensure climate ready regional transport infrastructure



Upgrade our community spaces to ensure they are ongoing place of safety and connection



Increase landscape connectivity to support native flora and fauna populations within urban and rural environments





## Keep our communities connected during extreme weather and natural disasters

**In recent years we have seen extreme weather disconnecting hundreds of individuals and families.**

To improve preparedness for and recovery from extreme events, we must strengthen resilience and flexibility into our technology and/or infrastructure. We also need various solutions to deal with the range of disasters, including bushfires, heatwaves, floods, and storms in many different ways. Solutions include: better mobile coverage, backup systems and power supplies, deployable or movable information, communications or energy generation technologies.

Social media and mobile technologies are valuable tools that give people the ability to access, create and or share disaster information. They also contribute to communities being able to organise themselves to effectively respond to disasters.

### Priority actions

- Develop opportunities for communities to access deployable or movable information and communications or energy generation technologies in times of emergencies
- Enable communities to work collaboratively with electricity and telecommunication networks to be prepared for extreme weather events
- Increase community resilience to disaster through microgrids with energy storage







## Take steps to ensure climate ready regional transport infrastructure

**The frequency of extreme weather and emergency events will impact our existing road, rail and cycling networks over the coming years.**

Bushfires, floods, and strong winds could see road networks underwater, rail tracks buckling in hot weather, and trees down over major roads.

Dealing with these challenges will require much planning, upgrading of existing infrastructure, and consultations with the community about what services are most important to them.

Communities should work together to establish plans if an evacuation is required.

Considerations should also be made for those without access to a vehicle, such as young people and the elderly, and the transport solutions that can be provided for them.

### Priority actions

- Create more walking, cycling and electric vehicle transport infrastructure
- Upgrading affordable public transport between towns to include more sustainable and frequent bus and train services
- Investigate alternative methods of effective public transport that can be deployed during extreme weather and emergency events
- Encourage priority infrastructure projects in regional transport strategies to consider extreme weather events during the planning and design phases







## Upgrade our community spaces to ensure they are ongoing places of safety and connection

### Protecting the assets that promote social resilience for communities will be vital.

Like any town, public spaces are where residents connect with others in the community. That could be the local park, sport or recreation venues, event spaces, or cafes and pubs.

While some regional cities have a range of public spaces, many of our small rural towns don't. For those communities, a lack of access to those spaces can have a significant impact on health and wellbeing especially on young people and the elderly who often make the most use of free public spaces.

It will be critical for communities and business to work with local governments to identify these places and make them more resilient to extreme weather events and a warmer climate. For those communities with limited access, identifying opportunities for new public spaces will also be important.

### Priority actions

- Support regional councils to update, repurpose and retire outdated community infrastructure
- Create/upgrade community centres for refuge in extreme weather events and a regional register of safe places
- Support climate ready planting to provide urban cooling and connect residents with community spaces





## Increase landscape connectivity to support native flora and fauna populations within urban and rural environments

**Connectivity in the landscape is vital to improving the capacity of native plants and animals to adapt to the predicted higher temperatures and extreme weather events in our region.**

As the climate changes, many species will need to move to new habitats. However, landscape fragmentation and continued habitat loss will impede range shifts in the movement of flora and fauna.

Repairing and building on the existing biolinks will enable greater resilience and minimise the loss of biodiversity. Ecological connectivity also encourages wildlife movement improving genetic diversity in breeding populations to ensure long-term viability of isolated species. This resilience will be important as populations are impacted by natural disasters like flood and fire.

### Priority actions

- Undertake mapping of existing corridors that may be significant for protecting fauna from the impacts of climate change
- Establish programs that support the development and linking of native flora and fauna wildlife corridors and refugia on both public and private land
- Prioritise permanent protection of areas that serve as native wildlife corridors





# Healthy places

Our natural and built environments are healthy and sustainable



## Objectives



Develop new ways to manage water more effectively for local ecosystems



Support innovation in managing land and reintroduce Aboriginal land management practices



Support innovations in the built environment that improve biodiversity outcomes



Improve the resilience of infrastructure in towns and cities



Innovate built environments to support a decarbonised and circular economy



## Support new ways to manage water more effectively for local ecosystems

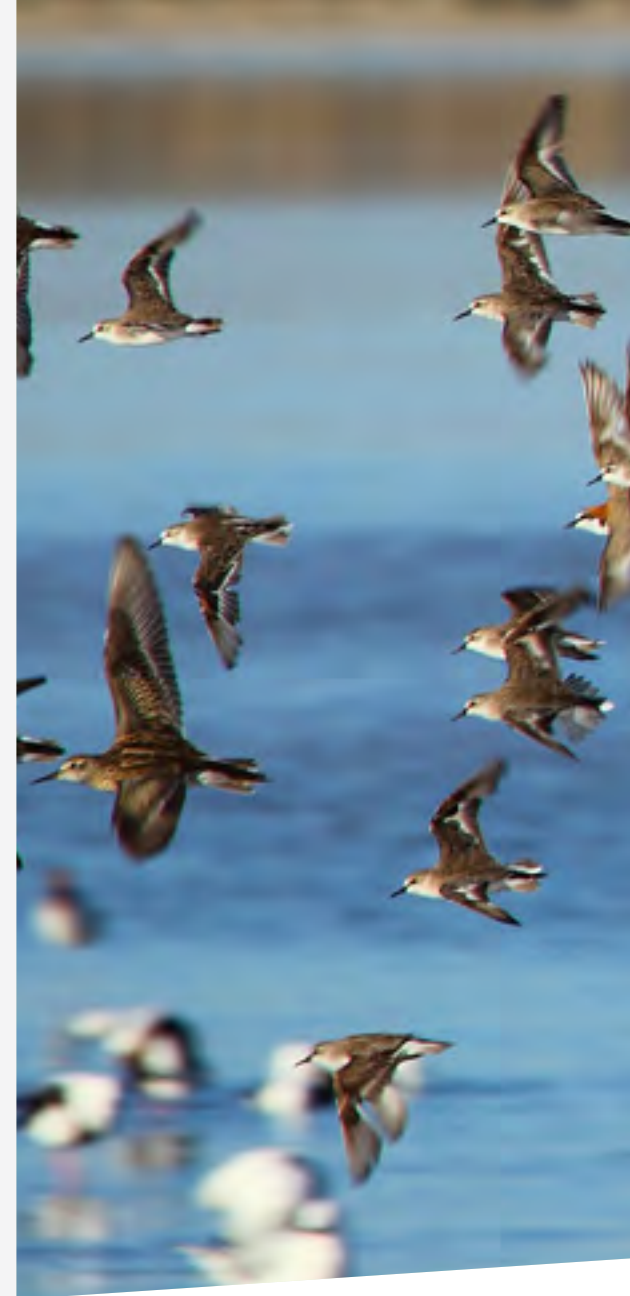
### **Climate change is one of the most pressing threats to water security for ecosystems services.**

The availability of renewable surface and groundwater resources is likely to decrease significantly in the Northern parts of our region. This will exacerbate competition for water between agriculture, ecosystems, industry and settlements.

Catchment management authorities, the Murray Darling Basin Authority, urban and rural water authorities and local communities need to work together to agree on priorities and pursue innovative water management interventions.

### Priority actions

- Build and support programs that aim to create permanent bio links around wetlands and along natural watercourses
- Develop interventions to enhance land management regimes on both public and private land. For example, water use efficiency on irrigated land, maintaining appropriate soil cover in dryland agriculture and improved management or protection regimes







## Support innovation in managing land and reintroduce Aboriginal land management practices

**We require more effective land management practices to heal environmental systems and reverse species' decline resulting from the changing climate.**

Private and public land managers will need to collaborate to look at ways to restore ecosystem functions across our landscape. A healthy landscape will provide carbon benefits in reducing emissions from vegetation clearing and continued carbon sequestration. Healthy landscapes will also offer greater resilience and better ecosystem services to people and the built environments.

Supporting Traditional Owners to manage their Country is critical. Traditional ways of caring for Country are deeply connected to land function and health.

### Priority actions

- Develop and support habitat restoration programs on farmland to enhance ecosystem function and conserve threatened species
- Enable Traditional Owners to lead healing Country practices on both private and public land





## Support innovations in the built environment that improve biodiversity outcomes

**Our cities, towns and suburbs depend on healthy ecosystems and their components to sustain the long-term wellbeing of our communities.**

Our growing population is becoming rapidly urbanised which places significant stress on our ecosystems. This growth can be both a threat and an opportunity for biodiversity.

Adopting concepts like urban ecology and increasing 'green' or 'blue' infrastructure in Loddon Mallee's cities, towns, suburbs will need to be a core strategy for protecting the health of our biodiversity.

### Priority actions

- Plan for and build more green-blue infrastructure in urban developments that support native flora and fauna populations
- Provide education and funding for private landowners to build capacity in protecting and enhancing soils, water and biodiversity values





## Improve the resilience of infrastructure in towns and cities

**Climate change will impact infrastructure essential to the functioning of our communities, both in routine and extreme emergency circumstances.**

Our infrastructure needs to be planned, designed, built and operated in a way that anticipates and prepares for our future changing climate conditions over their lifetimes. Building resilience into our infrastructure will be more cost-effective than the ongoing disaster recovery.

Climate-resilient infrastructure has the potential to improve the reliability of service provision, increase asset life and protect returns on investment.

### Priority actions

- Identify locations suitable for renewable Stand-Alone Power Systems to improve the grid's strength, reduce emissions and increase energy efficiency
- Develop guidance for local infrastructure initiatives and funding programs to incorporate climate change adaptation requirements





## Innovate built environments to support a decarbonised and circular economy

**For many existing buildings decarbonisation will mean retrofitting. Aged housing stock and heritage buildings makes this a challenge requiring creative solutions.**

Supporting innovation in this area is critical to driving the growth and adoption of decarbonised and circular practices by industries.

A built environment based on circular economy principles will also optimise land-use and development, as well as the uptake of recycled and biological construction materials.

The reduced consumption of power, water, and virgin materials will benefit both communities and the environment.

### Priority actions

- Establish more investment programs for local recycling and manufacturing
- Create more targeted innovation and entrepreneurship program for retrofitting solutions for existing and heritage building stock
- Create discounts or subsidies to incentivise the use of second-hand materials in construction and production





# Secure places

Our natural and built environments are protected from the impacts of climate change



## Objectives



Take steps to protect and build resilience of the diverse flora and fauna in our region



Work with First Nations' people living in the region to protect places of cultural significance and practice



Increase water security and drought management



Support existing housing and building stock in the region to meet current energy and thermal comfort standards



Take steps to protect our tourism assets



Improve ageing public assets to withstand an increase in extreme weather events





## Take steps to protect and build resilience of the diverse flora and fauna in our region

**Our flora and fauna are already experiencing multiple threatening processes from pests, land modification and fragmentation. These threats are likely to be even more damaging under the influence of a changing climate.**

We see signs that permanent headwaters and streams are becoming more intermittent and ephemeral in some parts of the regions. Sensitive environmental systems like the RAMSAR Wetlands, Redgum forests, and the Murray and grassy woodlands will be sensitive due to their water requirements.

A significant barrier to protecting our threatened species is a lack of a coordinated ecological communities recovery approach.

### Priority actions

- 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

6

Higher temperatures, decreasing rainfall and longer droughts associated with climate change are also threatening harrow wattle. These conditions are likely to lead to future population extinctions.

It's important to establish a new, genetically diverse, protected population.

**Ecologist talking about Threatened Species Conservancy project in partnership with the Barkindji people and Department of Planning, Industry and Environment**

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## Work with First Nations' people living in the region to protect places of cultural significance and practice

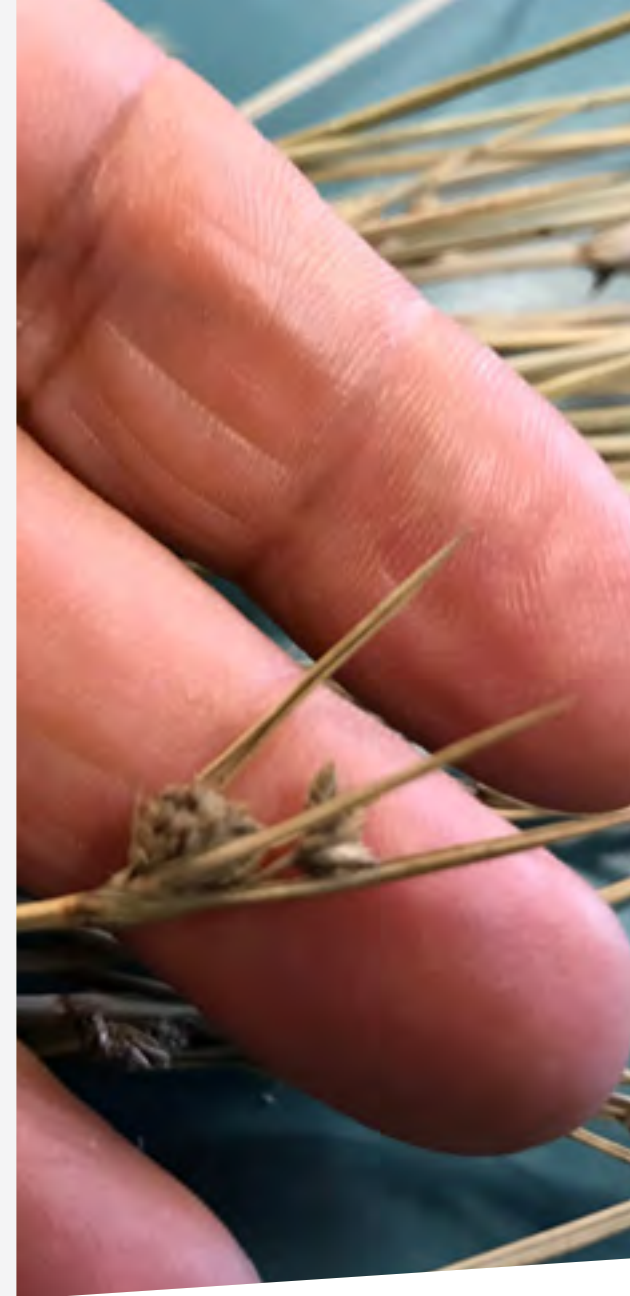
**Throughout the Loddon Mallee, the landscape holds the imprint of thousands of generations of First Nations' peoples.**

While not always physically evident in the landscape, there are many places where local Aboriginal communities continue to practice culture. These include places for spiritual or ceremonial practices, where traditional plants are located, or mineral resources occur.

Supporting First Nations' people to manage the impacts of climate change on culturally significant places is essential. Inaction will carry a spiritual and cultural toll by significantly hampering the ability to practice traditions passed down through countless generations.

### Priority actions

- Establish First Nations' operated seedbanks and nurseries for revegetation of Country
- Establish programs that enable First Nations' people to increase understanding of future climate change impacts on Country and identify culturally appropriate adaptation measures







## Increase water security and drought management

**Water is our greatest asset and is a vital resource for our communities. As a region that has experienced some of the worst drought conditions, water security is a key concern in a changing climate.**

We must manage water wisely to protect the social, environmental, and economic values it provides us. This includes ensuring access to affordable water to maintain liveability protect water quality during extreme weather events, including droughts.

While we have an innovative and resilient history of coping with highly variable rainfall, the past is no longer a predictor of the future. Therefore, a step-change in innovation and creative approaches is needed to providing a reliable supply of water and food to support an expanding population.

### Priority actions

- Create clear water security guidance to support drought resilience and responses to long-term increases in average temperature
- Create opportunities to partner with community groups and businesses to improve existing supply networks and investigate new water supplies
- Ensure adequate and equitable water rights that meet the social, cultural, spiritual, economic and environmental needs of First Nations' people







## Support existing housing and building stock in the region to meet current energy and thermal comfort standards

**Most of our existing housing and building stock in the region does not meet current energy or thermal comfort standards.**

We can already see the impacts on people's health and wellbeing, including rising energy poverty. This is because people increasingly rely on heating and cooling to maintain a level of comfort in their homes.

This challenge has become even more pressing with the socioeconomic stresses of the COVID-19 pandemic, leading to more and more residents struggling to pay their energy bills.

### Priority actions

- Create a program for free climate ready home awareness information and assessments targeted to low-income houses
- Create guidance material for homeowners and renters on making their homes climate ready, offering a range of solutions and costs





## Take steps to protect our tourism assets

**The tourism industry is a significant part of our regional economy. Climate defines the length and quality of tourism seasons and plays a substantial role in destination choice and tourist spending.**

Climate change will have far-reaching consequences for tourism businesses and destinations in the region. It will generate both negative and positive impacts. In our region, we have already seen the effects of blue-green algae on recreation activities in our rivers.

Tourism businesses need to adapt to minimise associated risks and capitalise upon new opportunities. It's also equally important that more is done to incorporate adaptation into future impact assessments on crucial assets and places of significance.

## Priority actions

- Develop a regional tourism climate ready program that assesses the vulnerabilities of tourism assets to both the physical and economic impacts and opportunities
  - Establish programs that invest in eco or nature-based tourism





## Improve ageing public assets to withstand an increase in extreme weather events

**We need to protect and renew our ageing public assets in our region.**

**Not retiring assets when their condition is compromised can lead to high financial and service costs in the longer term.**

While public assets have a functional value they can also characterise towns due to their heritage value. Public assets can include roads, bridges, footpaths, drains, libraries, town halls, parks, recreational centres, and other community facilities.

Most of these assets are managed by local, State governments and or volunteer community Committee of Management groups.

### Priority actions

- Conduct audits for ageing infrastructure for environmental performance
- Identify opportunities to replace damaged or end-of-life public assets with alternative technologies





# Climate Ready stories

## Protecting an iconic local species



The Mount Macedon region supports small but significant stands of Snow Gum (*Eucalyptus pauciflora*), which generally rely on cold conditions. As the climate warms, these Snow Gums are likely to decline, potentially leading to their local extinction.

To protect this iconic species, Macedon Ranges Shire Council is about to start mapping and monitoring Snow Gum populations with help from the local community, including three local Landcare groups, Parks Victoria and the Arthur Rylah Institute. Armed with baseline data, council can then make informed decisions about their ongoing management.

The project's citizen-science approach is a pragmatic one – with such a large area to map, council cannot do this work on its own – but it's also designed to raise community awareness of local climate impacts and actively involve private landholders. Almost 90% of the Macedon Ranges comprises private land, so landholders have a critical role to play in safeguarding the shire's natural environment.

**Macedon Ranges Shire's Snow Gums project – ADAPT funded**



# Climate Ready stories

Map it, plan it, green it – Cool It!



To stay cool in a hotter, drier future climate, we're going to need a lot more shade from trees that can take the heat. Right now, many towns in our region are vulnerable to increasing daytime heat due to low levels of tree-canopy cover in their streets, parks and gardens.

Luckily, the great greening has begun, thanks to the Cool It project, which has planted several hundred climate-resilient trees in the most heat-vulnerable streetscapes in towns throughout the Mallee, Central Highlands and Loddon-Campaspe. The project – delivered by Central Victorian Greenhouse Alliance in partnership with local councils – has also completed heat-vulnerability maps for Hepburn, Macedon and Mount Alexander shires to inform future tree-planting projects, and a recommended tree-planting guide featuring 100 climate-resilient species. Historically, streetscapes and parks have been designed largely based on aesthetics and amenity. This project has helped councils understand the critical link between climate change adaptation and their tree assets.

**Cool it (Phase 2) – 3CA funded**

# Climate Ready stories

Linking landscapes and communities



The Green Hill to Black Hill Alliance is a collaboration of concerned landholders aiming to restore and reconnect grassy woodlands and riparian forests along the Campaspe River. This has been driven by a “biodiversity crisis” in the region, and the need to boost land stewardship and green corridors to assist wildlife in the region.

Particular fauna considered include Koalas, Platypus, Tuans, Gliders, and Native Water Rats. Flora of interest include Kangaroo Grass and Yam Daisy’s.

The project will build the foundations for a scientifically based, long-term nature conservation project that is owned by the local community. It will bring together local businesses, the arts community, local government sectors, farmers, Land carers, and conservation scientists. It will provide landholders with advice and property plans to help everyone to be able to contribute - whether in their gardens, bush blocks, and paddocks. Guidance will also be provided to local government to manage local reserves and forests too.



# Climate Ready stories

Charging the transition to electric vehicles



A network of more than 20 electric vehicle (EV) chargers across 17 sites is being rolled out in 2021, linking towns throughout the Loddon Mallee region to benefit local communities, local economies, and the climate by reducing greenhouse emissions.

"The network will ensure that regional Victoria doesn't get left behind as more electric cars hit the road," says Rob Law, executive officer of the Central Victorian Greenhouse Alliance, which is driving the initiative in partnership with the Victorian Government and 12 local councils. "It will boost jobs, stimulate EV tourism and encourage people to think about 'going electric' on their next vehicle purchase."

It's a win for EV drivers, too, with the network promising a seamless connection experience. Each site will be capable of giving up to 50kW of charge – providing a 200km range in just 45 minutes – with no more than 50–100km between charging stations.



# Climate Ready stories

Solar has La Trobe Uni carpark covered for the future



La Trobe University is harnessing the solar potential of our region to achieve net zero carbon emissions by 2022 for all its regional campuses – including Bendigo and Mildura.

This involved building a 610kW solar carport at its Bendigo Campus, providing shade for 200 vehicles in warmer months, and equivalent energy for over 120 households. Innovations such as this also provide a visual cue to students, staff and the wider community of what's possible when we tap into the solar power around us.

The campus now has enough solar to produce a third of all electricity required onsite.

Director of La Trobe's Carbon Neutral Strategy, Andrew Jennings, said "these new solar carports will help to reduce carbon emissions across all of our regional campuses by more than 20%, and they'll also deliver financial savings over the next 25 years."

**Net Zero program**  
– La Trobe University



# Climate Ready stories

An investment in our future



In the small Mallee town of Birchip, they've planted trees – 170 at last count – to ramp up the shade and cool down the streets in readiness for a warmer, drier climate ahead.

Local not-for-profit Birchip Community Forum has led the project, selecting mature trees for their suitability to climate and location, but also with a respectful nod to Birchip's sporting heritage. The all-native species, including dwarf lemon scented gum and pin cushion hakea, also bear red and white flowers – the old Birchip Swan's colours.

Birchip Community Forum's Brendan Beasley says the tree-planting drive has helped year 4 and 5 students from Birchip P-12 School learn about the changing climate, but also build their understanding on ways to respond: "The trees are an investment in our future and make the town a more inviting place to live and visit, showing that education and action can improve our capacity to adapt to climate change."

Cool it Birchip – 3CA funded



# Climate Ready stories

Traditional knowledge reimagining urban water design



A plan has been created combining the Dja Dja Wurrung's traditional ecological knowledge with contemporary water sensitive urban design to heal a heavily degraded creek. The plan sets the goals to heal the catchment, enhance cultural values along the water and build connections to the creek. By healing the catchment, the greater Bendigo community can proactively adapt to climate change and avoid local biodiversity loss. The catchment is to be progressively retrofitted with thousands of frog ponds and swathes of native grasses so that the catchment acts as a sponge. This sponge will hold water in the landscape longer and reduce flood risk while improving water quality. The urban waterways will progressively be returned to a chain of ponds and planted with appropriate native species, providing greater habitat for native fish and platypus to thrive. The Dja Dja Wurrung, City of Greater Bendigo, government agencies and the community are on a collective journey to heal country and restore the creek's biodiversity. Changing the community's hearts and minds about the creek is a first step to achieving this.

Reimagining Bendigo Creek project





# Climate Ready stories

## Protecting a cool climate relict



A 'cool climate relict' the threatened Black Gum (*Eucalyptus aggregata*) faces a dire future with climate change making its habitat hotter and drier. Black Gums have been pushed to the edge by climate change, introgressive hybridisation, habitat loss, and fragmentation over the last 200 years. Once widespread across Victoria and NSW, the Black Gum is now only found in small populations along creeks and in frost-hollows on private agricultural land and public reserves.

The Threatened Species Conservancy is working with a range of local partners, through the Black Gum Waterways project, to ensure this iconic species has a future. Since 2018 the project has worked closely with the Woodend community, in the Macedon Ranges Shire. The project aims to both raise awareness and protect Black Gum populations from extinction by restoring vitally important Black Gum habitat along the Five Mile and Slatey Creeks in Woodend.

**Black Gum Waterways Project**





# Section 3 – Climate Ready Sectors

Home to some of the most resilient businesses in Victoria





# What we value

As a region, we also have many valuable assets that enrich our economy. Businesses that are already acting on climate change are reaping benefits, including cost-savings enhanced reputation and increased investor confidence.



## Agriculture

Farming and farmers are really important to our region, we need to find ways to support their survival because of climate change



## Renewable energy

If all the planned solar farms are built, the region could become 500% renewable by mid-decade, renewables could deliver over \$1 billion in supply chain benefits to the region and create over 3,200 jobs during construction



## Rural working lifestyle

Central and northern Victoria provide a fantastic place to live. With dynamic urban centres and many thriving local towns, the lifestyle is great



## Visitor economy

At present, tourism is a healthy \$1 billion per annum industry, attracts 7.7 million visitors to the Loddon Mallee's fantastic waterways, beautiful walking tracks, local food, wine, culture and heritage



## Education, skills and training institutions

Universities in rural and regional communities facilitate more than just the provision of tertiary courses to students. Regional universities allow regional towns and cities to thrive... they link new ideas and investment [and] provide the foundation for collaboration and in partnerships



## Small business

They provide more jobs than people think. Our small towns rely on them not just for the locals but to attract tourists



# About our sectors

We have examined employment in our region, including our major industries and economic outputs. We have delved into what work we do, what sort of businesses we work in, how much we earn, where we work physically and how we get there.



Gross Regional Product  
\$21 billion



Highest employment  
industries: Health care,  
retail/trade, manufacturing



Number of jobs: 129,417



39% of people work  
over 40hrs per week



Economic imports  
of \$9 billion



97% of businesses  
are sole-traders and  
small businesses



Top occupations:  
Professionals, managers  
technicians/trade workers,  
labourers



70% of people drive  
to work, 6.5% work from  
home (pre-pandemic)



Top economic outputs:  
Manufacturing (\$8.2 billion)  
Construction (\$5.3 billion)  
Agriculture (\$3.8 billion)



16 businesses with  
200+ employees



4.50% of youth  
unemployment rate (2020)



Median income: 7% lower  
than state average  
(\$45,776 vs \$49,266)



Overall number of  
businesses approx. 31,287



60.94% of workers earn  
less than \$1000 a week



# What we want to achieve

We are focused on enabling local businesses and workers to be climate ready, leveraging the strengths of our businesses to drive sustainable community outcomes while growing our competitive advantages.

**To strengthen and support resilient climate ready businesses, we want to achieve four key goals based around the resilience planning themes of knowledge, connection, wellbeing and security.**



## Sectors



Businesses have the climate knowledge and resources they need to make confident decisions for operational continuity and competitive advantage



Local businesses feel connected, incentivised and rewarded to become climate ready



The health and safety of local workforces is protected



Local businesses have secure access to climate resilient markets, technologies, financing, and transport channels





# Knowledgeable sectors

Businesses have the climate knowledge and resources they need to make confident decisions for operational continuity and competitive advantage



## Objectives



Increase awareness of climate risks and responsibilities for businesses



Develop opportunities for business to understand specific climate risks to their assets and activities



Support the development and implementation of strategies and learning opportunities





## Increase awareness of climate risks and responsibilities for businesses

To support the different types of business in the region, a range of different approaches are required to communicate the risks of climate change in a way that empowers employees and employers to adapt.

Businesses must be informed of the potential risks or impacts of changing climate. They also need to be aware of the opportunities available to address the risk to a range of critical functions such as finance, marketing, procurement, logistics, and operations.

There is limited localised and trusted information for business owners, employees and employers that introduces the relevance of climate change risks, opportunities and dependencies.

## Priority actions

- Establish a climate risk and extreme weather information hub and support service for business to access locally relevant risk information
- Create a climate change risk screening and management tools for sole-trader, small and medium businesses

6

55% of business said they had a basic to no awareness of climate risks to their businesses.

**Climate Ready Plan  
Sectors survey**

We're not being engaged in, or made aware of, programs.

**Sector engagement  
participant**

33% business wanted more climate information.

**Climate Ready Plan  
Sectors survey**

Hold information events for businesses and other groups.

**Sector engagement  
participant**

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## Develop opportunities for business to understand specific climate risks to their assets and activities

**Loddon Mallee businesses operate in unique environments, making managing climate risk bespoke in most cases.**

It is important that climate risks are clearly identified and validated with local data, information, and local experiences of how risks present in 'in our own backyard'.

Considering vulnerability to extreme weather events or climate risks to different parts of their business can range and, in some cases, can be complex or expensive.

All types of business must have access to support and resources to help make adaptation decision around their staff, assets, markets, logistics, finance and or processes.

### Priority actions

- Establish support services that offer affordable vulnerability assessments for sole traders, small and medium businesses
- Support industry targeted tools, monitoring systems and modelling for short and long-term climate changes and impacts

6

25% of business said they did a formal risk assessment

**Climate Ready Plan  
Sectors survey**

Where we are located, we sit across two very different climate modelled zones, using the global model climate information doesn't give us the level of detail needed for decision making and invest in solutions

**Council officer**

As an emergency management practitioner linking climate change adaptation to emergency management planning/ community planning at local levels is critical.

**Council Officer**

9







## Support the development and implementation of strategies and learning opportunities

**Case studies and data from completed adaptation projects are needed to give businesses the confidence to act on solutions that will work for them.**

While there has been significant work undertaken around top-down theoretical approaches to climate adaptation, there is less information on implementing projects and solutions.

There is rich knowledge of climate adaptation solutions captured in the living history of First Nations' peoples. As we move towards more sustainable economic practices this knowledge will open many opportunities.

### Priority actions

- Provide more learning opportunities to improve the skills and capacity of practitioners, industry, community organisations and the public to understand and implement responses to climate change
- Develop partnership projects for First Nations' people to respectfully share knowledge and create opportunities for more sustainable businesses

“

Well, I want to keep our family farming here. That's probably the main goal. Also I want to be farming comfortably. I don't want to be struggling. I don't want to struggle through for the next 30 years or 40 years and say why did we do that? I want the family to remain here, but I want us to be very comfortable and successful, I suppose. That's the goal.

**Loddon Mallee farmer and resident**

”



# Connected sectors

Local businesses feel connected, incentivised and rewarded to become climate ready



## Objectives



Increase positive incentives for business to become climate ready



Remove or reduce disincentives preventing business enterprises acting on climate



Build opportunities to reward/recognise businesses adapting and acting on climate change





## Increase positive incentives for business to become climate ready

### Incentivising adaptation by businesses is essential for economic sustainability.

Businesses can and are positioning themselves to make the most of a changing climate and net-zero emission future. Adapting to climate change can offer opportunities to many businesses. These opportunities include identifying new markets or products through to cost savings from the efficient use of resources.

We also need creative incentives to cater to our region's diverse range of businesses and business structures. The majority of business (60%) in the Loddon Mallee are sole-traders. They often don't have the same competitive advantages to access incentives as large businesses.

### Priority actions

- Establish programs that assist business access to alternative low emission technologies
  - Establish local programs that assist sole-traders and start up enterprises in circular economy industries

### Offsetting to protect Central Victorian ecosystems

Bendigo and Adelaide Bank offset their carbon emissions from necessary travel by partnering with the not-for-profit carbon offset provider, Greenfleet. Since the partnership began in 2014, more than 113,500 trees have been planted across Australia and other parts of the world.

This includes a revegetation project at an innovative climate-ready site at Nardoo Hills Reserve in Central Victoria. Spanning 1,200 hectares, the project is designed to protect and restore temperate woodlands – the most threatened wooded ecosystem in Australia – and contribute to climate change resilience. In total, 9,000 native seedlings were planted in 2019 and a further 2,700 in 2020.

This is an effective way for businesses to reduce their carbon footprint and make a positive impact on the environment. We encourage more local businesses to consider carbon offsetting as part of their broader strategy.







## Remove or reduce disincentives preventing business enterprises acting on climate

**Even if options to adapt to climate risks are available, regulatory requirements or justifying high costs are significant barriers to their uptake.**

Disincentives can include higher insurance premiums on new technologies or outdated building regulations hindering new innovative building designs. There can also be a lack of clear policies from governments and private institutions. This type of disincentive may hinder investment in more sustainable and environmentally conscious businesses models such as First Nations', new migrant or circular economy businesses.

### Priority actions

- Promote new insurance products and planning policies to replace current ones that penalise circular economy approaches technologies and products
- Targeted funding mechanisms for First Nations' businesses to provide carbon offset and healing Country services such as revegetation, plant nurseries or other agribusiness ventures

“

The only way to get support funding for something is to go through the grant process... we were actually filling out a grant...and there was another guy there who was an older farmer, sitting beside me, and he was having trouble filling it out. It just struck me then and there that the grant process disadvantages a lot of people

**Local farmer**

We need more sustainable programs as opposed to out of the blue opportunities – put targets in

**Sector engagement participant**

”





## Build opportunities to reward/recognise businesses adapting and acting on climate change

**Demonstrating leadership in adapting to climate change takes a lot of investment yet creates significant value for other businesses.**

We must recognise those efforts, acts of leadership and intellectual contribution that will help others in our region adapt to a changing climate.

Bringing business together to acknowledge leadership and actions also promotes partnerships, innovation and collaboration. This will be important for the uptake of climate solutions and tackling some of the more significant challenges outside any one business's influence.

### Priority actions

- Fund a regional climate action business festival
- Collaborate with local innovation competition or recognition programs to incorporate climate action contributions

6

By simply incorporating environmental criteria in the application, businesses have made improvements to enhance their likelihood of winning.

**Business from the recreation and tourism sector**

It important we use existing local networks to form 'nodes' for connection and empowerment.

**Sector engagement participant**

9



# Safe and healthy sectors

The health and safety of local workforces is protected



## Objectives



Improved worker safety outcomes from direct impacts from extreme weather and climate impacts



Improved worker health outcomes from indirect environmental changes







## Improved worker safety outcomes from direct impacts from extreme weather and climate impacts

**Climate change will create a situation where workers will be increasingly exposed to heatwaves, storms, and bushfires.**

Extreme weather can have different effects and require specific planning for various parts of the workplace. This planning can be difficult for outdoor, remote or isolated workplaces.

Extreme weather response planning can also be complex if a business needs to cover a diversity of workers requirements, abilities and situations.

Like any emergency, workplaces need informative communication before and during events.

For extreme weather response, information needs to be coupled with appropriate emergency warning systems.

### Priority actions

- Establish local support programs to assist businesses in creating OH&S policies and emergency plans for extreme weather
- Support the development of technology that can inform and warn about impacts and their status in real time so business can manage the risks effectively





## Improved worker health outcomes from indirect environmental changes

**Climate change may affect workers health and wellbeing through the changes in the environment. These changes could include worsening air quality, dislocation from emergencies and changes in the spread of infectious diseases.**

The impact of increased risk of temporary or permanent dislocation with more extreme weather events will impact workers. The COVID pandemic and Black Summer fires have shown how challenging some health impacts can be to address.

Our region is well aware of the health impact of drought on workers in agriculture and the worker that the agriculture sector supports. With levels of drought projected to increase, risks of associated mental health impacts are likely to increase.

### Priority actions

- Establish business support services to assist in the planning and preparation of safe workplaces and flexible working for a future climate
- Develop better mental health programs to manage increased climate shocks such as droughts, fire, flood, loss of ecosystems and assets

6

We are currently developing a 12-month training program including webinars, digital mentoring and mental health. The program would be a great opportunity to include for climate risk assessment and planning.

#### **Sector engagement participant**

We assist our health care member organisations and local governments in the development of Health and Wellbeing Plans to consider climate risks. We now want to support businesses in the development of internal policies regarding climate change impacts on staff.

#### **Primary care sector engagement participant**

9



# Secure sectors

Local businesses have secure access to climate resilient markets, technologies, financing, and transport channels



## Objectives



Secure employment in existing and emerging markets



Support business adaptation to low emission and circular economy markets and supply chains



Support sustainable and secure financing for climate adaptation



Support business operations and processes during and recovering from direct extreme weather and climate impacts



Support business operations during indirect extreme weather and climate impacts







## Secure employment in existing and emerging markets

**As new industries and technologies emerge over the next decade in response to a low carbon future, the transition will impact those currently in the workforce and young people looking to enter.**

Having the skills and training to secure jobs for the future is critical. Employers, governments, and educational institutions will need to plan in a considered way rather than reacting to market failures, which can negatively impact a generation of workers. People in casualised work such as young people and workers from migrant communities are particularly vulnerable in the workforce especially in the extreme weather and emergency events.

## Priority actions

- Create joint training collaborations between business and education providers to respond to the diversification of employment patterns and demand for new skills
- Create targeted programs that support long-term local employment opportunities for those most disproportionately impacted by climate change
- Develop projects to increase Aboriginal employment opportunities and outcomes in new and emerging job markets





## Support business adaptation to low emission and circular economy markets and supply chains

**Many businesses in the region have complex networks of suppliers and customers. As a result, the increasing global action to reduce emission can create transitional and adoption risk.**

The interconnected risks from a global marketplace mean we must build resilience and secure more long-term sustainable markets.

A clear signal from all government levels is required to ensure that businesses invest and build a local innovation culture on climate impacts and transition to a low carbon future.

### Priority actions

- Establish support services for business to access alternative markets when existing ones are or may be disrupted by the impacts of a changing climate
- Deliver programs that assist business access to low emission opportunities. For example alternative fuels (including renewable energy farms, hydrogen and materials), recycling and a circular economy



A Circular Economy Project – Plastics Landfill Minimisation Macedon Ranges Shire Council have entered into a program with Victorian Regional Recyclers to establish collection containers at their transfer stations. Commercial and industrial plastics will be accepted, and plastics not accepted by REDcycle. This project aims to divert 75% of the plastics that are currently going to landfill in the Shire. The collected plastics that are clean will be processed into granules for the re-manufacture of plastic products.

Contaminated plastics such as agricultural plastics will be processed into building products providing a market alternative to materials like concrete. Other Shires have expressed an interest in this service becoming available to them.

**Geoff Murray**  
ADAPT leadership graduate





## Support sustainable and secure financing for climate adaptation

**Businesses need to have access to finances to support their effort to avoid, minimise and or offset the impact of climate change on their business.**

There are limited financial mechanisms for business. Most opportunities are usually complex grants, high-interest loans or unfair equity investing.

It can also be challenging to find out which of the many potential funding sources are relevant for a specific business adaptation project or activity.

### Priority actions

- Establish local financial and insurance policy support services for non-employee, small and medium businesses
- Create equitable funding or financing opportunities for businesses to uptake technology or building upgrades that assist with protecting premises/assets from extreme events

6

We certainly cannot claim that most farmers are thriving at the moment, considering the current price of grain, the several periods during the spring of extreme heat stress experienced and the below average growing season rainfall many had to cope with. Are they still surviving? We hope so.

**Local resident**

9







## Support business operations and processes during and recovering from direct extreme weather and climate impacts

**Extreme weather events are becoming more widespread, increasing the risk of disruption to business operations and processes.**

Emergency response strategies for supporting a range of business during severe weather conditions need to be addressed appropriately, as does the support to businesses and employers recovering from operational shutdowns and associated work loss.

### Priority actions

- Establish support services to assist businesses to maintain operational continuity during extreme weather or other climate related commercial disruptions
- Develop mechanisms to allow businesses to collaborate with government agencies and industry partners to identify opportunities that lead to faster restoration and recovery works and services critical to their business operations

6

We need to focus on business continuity during crisis (e.g. blue-green algae prevent some businesses from operating, so they implement fresh water washing stations or encourage the use of other businesses that are unaffected)

**Tourism sector  
engagement participant**

In a fifteen week period from 22 November 2011 to 6 March 2012, there were four natural disasters occurring almost concurrently, across four different States, with two in Victoria, involving insured losses of nearly \$1bn and 127,727 claims.

**Financial Service  
Royal Commission**

9





## Support business operations during indirect extreme weather and climate impacts

### Extreme weather events can cause disruption to utilities and supply chains.

Building resilience into our utility networks locally will be critical. It will require business and governments to collaborate on innovative solutions for advanced protection and recovery systems of all our utility services.

Supply chain disruption and discontinuity from climate impacts or extreme weather are also concerning. Disruptions can mean inconsistent or inadequate product quality, unpredictable delivery times, and substantial, unanticipated additional costs to businesses.

### Priority actions

- Establish a local business network to work with government, utility networks and industry to better coordinate Distributed Energy Resources regionally to strengthen and support the utility network resilience
- Develop regional planning assessment to identify parts of the transport system at high risk, vulnerable, or face the most significant exposure of being impacted by anticipated climate change. Plan to address any insurance gaps or inform the prioritisation of protecting those transport assets, infrastructure and services



# Climate Ready stories

Big hearted and climate smart



Welshman's Reef winemaker, Ron Snepp, has experienced first-hand how difficult adapting to a changing climate can be. Ron said climate change has altered the growing schedule of his fruit, resulting in shorter and earlier harvesting periods. To combat these changes, Ron invested in more refrigeration, storage, and manpower. Faced with a higher workload and operational costs during harvest, Ron knew he had to better understand the long-term climate change impacts he would be facing

Ron investigated the latest research on the impacts of climate change from Wine Australia and the Australian Wine Research Institute. This research was vital in Ron's decision to purchase land in a cooler climate zone in Smeaton, near Daylesford, about 40km south of his existing vineyard. While the vineyard will take approximately 10 years to start producing grapes it provides Ron with a safer, more reliable place to grow his fruit so that he has future harvests.

**Big Hearted Wines,  
Welshmen's Winery**





# Climate Ready stories

Adopting a collaborative approach to drought resilience



A new Victoria Drought Resilience Adoption and Innovation Hub has recently been created.

The Hub will give farmers and farming communities the tools to address the challenges and vulnerabilities to drought.

The Hub will play a critical role in supporting farming businesses to be better informed, more productive, and more profitable in the face of future droughts. This will involve connecting farmers to innovative technologies and practices. It will also translate research and knowledge into impactful outcomes and support take-up through on-farm testing, adoption, and scaling-up of new solutions and commercialisation.

The Hub will be led by the University of Melbourne in partnership with the Mallee Regional Innovation Centre and Birchip Cropping Group from the Loddon Mallee region. Other partners across the state include Food & Fibre Gippsland, Southern Farming Systems, Riverine Plains working together with Deakin University, Federation University, La Trobe University and Agriculture Victoria.





# Climate Ready stories

Matchmaking to Cultivate communities



Cultivate Farms, founded by Dingee Dairy farmer Sam Marwood, explores and helps to create new farm ownership opportunities for next gen farmers across Australia. The business is focused on empowering Next gen farmers to uncover their farm ownership pathway, by matching retiring farmers and new farmers to find a shared farm ownership solution.

Cultivate Farms wants to encourage communities to be their own match makers and have a free 'Cultivate Communities' program to empower community champions to work alongside potential partnerships to uncover farm ownership matches.

The vision of Cultivate Farms is to rejuvenate regional communities by attracting and keeping many who return to regional communities and proving that farm ownership is possible for the next generation.

**Cultivate farms**  
– social enterprise





# Climate Ready stories

## Victorian Bioenergy Plant in Castlemaine



Mount Alexander Bio-energy Group has been working with government departments and local businesses in the Castlemaine area to scope the potential for a bio-energy facility. The facility will use anaerobic digestion and biomass thermal technology to divert approx. 36,000 tonnes of organic waste. The proposed facility will include a biodigester that acts like a stomach, able to break down wet organic waste. The digester produces both methane to generate electricity, and digestate for agricultural use. It also will also burn dry wood chips to generate steam, capable of producing biochar for agricultural use.

The clean energy created will go back to the local community and support local business such as Don KR to reduce their carbon footprint by 40% by 2025.

The facility will also benefit the agricultural community, as it will produce carbon neutral soils products, replacing emissions intensive synthetic fertilisers.





# Climate Ready stories

Tracking towards a secure future



Integrated Recycling is laying tracks towards a circular economy with their innovative Duratrack railway sleepers. Made from waste plastics sourced from Mildura farmers, they have become an exemplar product for the rail industry as a long-term sustainable alternative to existing track products.

Stephen Webster, General Manager of Integrated Recycling, said that trials of Duratrack sleepers across Australia are turning heads in the industry. There are trials currently underway with Queensland Rail and the Australian Rail Track Corporation. In addition, V/Line and Metro Trains have approved their use for stabling yards. They are now even being considered for use in Victoria's Big Build rail projects.

The Institute of Railway Technology at Monash University is undertaking a research project (funded by Sustainability Victoria) to analyse the Duratrack sleepers. The research aims to inform rail engineers to understand how to use this innovative product and support the industries transition to a low carbon future.

**Duratrack Rail Sleepers**  
– Integrated recycling



# Climate Ready stories

Renewable's protect local meat production



Hardwick's has been operating in Kyneton for over forty years. In 2019, Hardwick's installed a microgrid system using 2.5 megawatts of field-mounted solar panels and a 2-megawatt battery. The system cuts their power costs by 60 per cent and their greenhouse gas emissions by over 30 per cent.

The system also allows Hardwick's to be less reliant on the energy grid, giving them more control of their power supply. The company is already averaging at least one power outage every year, and in a changing climate, this is expected to increase.

The microgrid system aims to keep Hardwick's refrigerators going during these power disruptions, protecting millions of dollars of meat products.

Hardwick's microgrid investment secures their business against current and future climate risk of increasing extreme weather events and moves their business towards a net-zero emissions future.

**Hardwick microgrid system**









# Appendices





# Caring for Country in a changing climate – objectives and priority action summary

To enable self-determination around climate change action, the following objectives are built into the Climate Ready Plan:



| Page  | Objectives   | Actions  |
|---|--|--|
| 21     | Aboriginal communities, culture and cultural practices are respected and valued (more detail page 21)                            | <ul style="list-style-type: none"> <li>Consider traditional knowledge at all levels of decision making</li> <li>Consider and appropriately incorporate all climate policies developed by Traditional Owners into the Climate Ready Plan as they are developed and become available</li> <li>Support learning opportunities for young people and new migrant communities with First Nations' peoples</li> </ul> |
| 40     | Build resilience of local food systems   | <ul style="list-style-type: none"> <li>Support First Nations' led bush food projects</li> </ul>  |
| 51     | Recognise and value the collectively held knowledge of First Nations' peoples as a foundation for caring for and healing Country | <ul style="list-style-type: none"> <li>Engage First Nations' peoples in climate dialogues and decision-making forums</li> <li>Support Traditional Owners to plan for Climate Change through country plans</li> </ul>   |
| 65     | Support innovation in land management and reintroduce Aboriginal land management practices                                       | <ul style="list-style-type: none"> <li>Enable Traditional Owners to lead healing Country practices on both private and public land</li> </ul>  |
| 73     | Work with First Nations' people living in the region to protect places of cultural significance and practice                     | <ul style="list-style-type: none"> <li>Establish First Nations' operated seedbanks and nurseries for revegetation of Country</li> <li>Establish programs that enable First Nations' people to increase understanding of future climate change impacts on Country and identify culturally appropriate adaptation measures</li> </ul>  |
| 74   | Increase water security and drought management   | <ul style="list-style-type: none"> <li>Ensure adequate and equitable water rights that meet the social, cultural, spiritual, economic and environmental needs of First Nations' people</li> </ul>  |
| 87   | Support the development and implementation of strategies and learning opportunities  | <ul style="list-style-type: none"> <li>Develop partnership projects for First Nations' people to respectfully share knowledge and create opportunities for more sustainable businesses</li> </ul>  |
| 92   | Remove or reduce disincentives preventing business enterprises acting on climate   | <ul style="list-style-type: none"> <li>Targeted funding mechanisms for First Nations' businesses to provide carbon offset and healing Country services such as revegetation, plant nurseries or other agribusiness ventures</li> </ul>   |
| 100  | Secure employment in existing and emerging markets   | <ul style="list-style-type: none"> <li>Develop projects to increase Aboriginal employment opportunities and outcomes in new and emerging job markets</li> </ul>  |

# Summary of goals, objectives and actions

## People (theme)

| Goals  | Objectives  | Actions  |
|--|---|--|
| <p>Individuals and communities have the knowledge and tools they need to become climate ready</p>           | <p>Increase climate knowledge through accessible and inclusive resources</p>  | <ul style="list-style-type: none"> <li>• Funding for community-led initiatives and enterprises</li> <li>• Organise a regional climate action festival</li> </ul>   |
|  | <p>Aboriginal communities, culture and cultural practices are respected and valued</p>  | <ul style="list-style-type: none"> <li>• Consider traditional knowledge at all levels of decision making</li> <li>• Consider and appropriately incorporate all climate policies developed by Traditional Owners into the Climate Ready Plan as they are developed and become available</li> <li>• Support learning opportunities for young people and new migrant communities with First Nations' peoples</li> </ul> |
|  | <p>Increase local knowledge sharing about local climate impacts and adaptation solutions</p>                                      | <ul style="list-style-type: none"> <li>• Create Climate Living Lab Educational Hubs partnering with local education providers, First Nations' groups, locals and the farming community</li> <li>• Deliver education forums or climate clinics between communities</li> <li>• Harness social media and other platforms to share local stories</li> </ul>  |
|  | <p>Prepare for emergency events by strengthening community awareness and knowledge</p>  | <ul style="list-style-type: none"> <li>• Co-design emergency response education targeting people disproportionately impacted</li> </ul>  |
| <p>People in Loddon Mallee feel connected to their communities and supported to become climate ready</p>  | <p>Continue to strengthen strong local networks and support communities to leverage off existing ties in their neighbourhoods</p> | <ul style="list-style-type: none"> <li>• Provide support and resources not-for-profit and non-government organisations and local community leaders to embed climate ready planning when working in community</li> <li>• Provide short-term opportunities for young people to volunteer in ways that work for them</li> </ul>   |
|  | <p>Enable continued involvement in community activities to strengthen social cohesion</p>   | <ul style="list-style-type: none"> <li>• Peer to peer knowledge sharing opportunities and forums</li> <li>• Community conversation sessions that focus on strengths and protecting what people value</li> </ul>  |
|  | <p>Continue to strengthen local leadership capacity and opportunities</p>   | <ul style="list-style-type: none"> <li>• Establish leadership networks for multicultural communities</li> <li>• Establish a climate adaptation for youth councils project that encourages each local youth council to develop their own adaptation plan.</li> <li>• Continue to support climate leadership capacity building programs</li> </ul>   |

## People (theme)

| Goals   | Objectives  | Actions  |
|---|---|--|
| <p>People in Loddon Mallee feel connected to their communities and supported to become climate ready</p>               | <p>Connect communities to external support</p>  | <ul style="list-style-type: none"> <li>• Create a local register of climate funding opportunities and grant writing support</li> <li>• Provide greater access to non-competitive funding for grassroots projects</li> <li>• Create an adaptation advisor/ambassador program to promote adaptation planning and skills</li> <li>• Create an information hub that links individuals and communities to organisations that encourage, enable and support people to take action</li> </ul> |
| <p>Individuals and communities are happy and healthy</p>   | <p>Recognise and address the physical health impacts of climate change</p>                | <ul style="list-style-type: none"> <li>• Invest in targeted support for people living with disabilities, health issues and the elderly in emergency events</li> <li>• Create mobile climate wellness clinics targeting the most disproportionately impacted</li> </ul>   |
|   | <p>Recognise and support the mental health and wellbeing impacts of climate change</p>    | <ul style="list-style-type: none"> <li>• Co-design support projects with youth that address climate anxiety</li> <li>• Support community-led green spaces</li> </ul>   |
| <p>Individuals and communities have the housing, food, financial security and access to the services they require</p>  | <p>Provide climate ready housing and shelter for the most disproportionately impacted</p> | <ul style="list-style-type: none"> <li>• Provide free energy and water assessments for low-income households</li> <li>• Encourage alternative housing models</li> <li>• Deliver workshops for low cost retrofitting of houses for liveability</li> </ul>   |
|   | <p>Build resilience of local food systems</p>   | <ul style="list-style-type: none"> <li>• Support First Nations' led bush food projects</li> <li>• Connect multicultural growers with landholders to scale up food production</li> <li>• Invest in community garden spaces particularly in communities with low food security</li> </ul>  |
|   | <p>Increase regional education and employment opportunities</p>                           | <ul style="list-style-type: none"> <li>• Explore scholarship opportunities for regional youth in climate ready careers</li> <li>• Develop strategies for regional retraining in new industries</li> </ul>  |
|   | <p>Increase reliable access to services</p>   | <ul style="list-style-type: none"> <li>• Resource community-based transport alternatives</li> <li>• Deliver mobile support service programs</li> </ul>   |
|   | <p>Support the most vulnerable in our communities in emergency events</p>                 | <ul style="list-style-type: none"> <li>• Provide essential emergency equipment for households</li> <li>• Set up community heatwave shelters able to accommodate overnight stays, particularly in remote communities</li> </ul>   |



## Places (theme)

| Goals  | Objectives  | Actions   |
|--|---|---|
| <p>Our region is continuously learning about the effects of climate change on our natural and built environments</p>  | <p>Recognise the collectively held knowledge of First Nations' peoples as a foundation for caring for and healing Country</p> | <ul style="list-style-type: none"> <li>• Engage First Nations' peoples in climate dialogues and decision-making forums</li> <li>• Support Traditional Owners to plan for Climate Change through country plans</li> </ul>  |
|  | <p>Increase our knowledge of the impacts of climate change on the natural environment to build future resilience</p>          | <ul style="list-style-type: none"> <li>• Create guidelines that capture existing knowledge for undertaking climate ready and site appropriate habitat restoration</li> <li>• Create awareness information products for land and water practices that build resilience for current and future climate</li> <li>• Create a social media education series on the importance of ecosystem services, function and species in a changing climate</li> <li>• Support citizen science initiatives</li> </ul>  |
|  | <p>Understand the opportunities for innovation to design better homes, neighbourhoods, and cities</p>                         | <ul style="list-style-type: none"> <li>• Create climate ready guidelines for developers and incentives for new builds to be more climate resilient</li> <li>• Subsidise education and training opportunities for builders and tradespeople to embrace innovation</li> <li>• Encourage green space such as green roofs and walls in our cities and towns</li> <li>• Utilise youth councils and groups to ensure they are included in future planning and projects</li> <li>• Investigate innovative water systems such as rainwater harvest through porous surfaces</li> </ul> |
| <p>Places in our region are connected by resilient infrastructure and environmental corridors</p>                    | <p>Keep our communities connected during extreme weather and natural disasters</p>  | <ul style="list-style-type: none"> <li>• Develop opportunities for communities to access deployable or movable information and communications or energy generation technologies in times of emergencies</li> <li>• Enable communities to work collaboratively with electricity and telecommunication networks to be prepared for extreme weather events</li> <li>• Increase community resilience to disaster through microgrids with energy storage</li> </ul>  |
|  | <p>Take steps to ensure climate ready regional transport infrastructure</p>   | <ul style="list-style-type: none"> <li>• Create more walking, cycling and electric vehicle transport infrastructure</li> <li>• Upgrading affordable public transport between towns to include more sustainable and frequent bus and train services</li> <li>• Investigate alternative methods of effective public transport that can be deployed during extreme weather and emergency events</li> <li>• Encourage priority infrastructure projects in regional transport strategies to consider extreme weather events during the planning and design phases</li> </ul>       |

## Places (theme)

| Goals   | Objectives  | Actions   |
|---|---|---|
| <p>Places in our region are connected by resilient infrastructure and environmental corridors</p>  | Upgrade our community spaces to ensure they are ongoing place of safety and connection                            | <ul style="list-style-type: none"> <li>• Support regional councils to update, repurpose and retire outdated community infrastructure</li> <li>• Create/upgrade community centres for refuge in extreme weather events and a regional register of safe places</li> <li>• Support climate ready planting to provide urban cooling and connect residents with community spaces</li> </ul>  |
|   | Increase landscape connectivity to support native flora and fauna populations within urban and rural environments | <ul style="list-style-type: none"> <li>• Undertake mapping of existing corridors that may be significant for protecting fauna from the impacts of climate change</li> <li>• Establish programs that support the development and linking of native flora and fauna wildlife corridors and refugia on both public and private land</li> <li>• Prioritise permanent protection of areas that serve as native wildlife corridors</li> </ul> |
| <p>Our natural and built environments are healthy and sustainable</p>                              | Support new ways to manage water more effectively for local ecosystems  | <ul style="list-style-type: none"> <li>• Build and support programs that aim to create permanent bio links around wetlands and along natural watercourses</li> <li>• Develop interventions to enhance land management regimes on both public and private land. For example, water use efficiency on irrigated land, maintaining appropriate soil cover in dryland agriculture and improved management or protection regimes</li> </ul>  |
|   | Support innovation in managing land and reintroduce Aboriginal land management practices                          | <ul style="list-style-type: none"> <li>• Develop and support habitat restoration programs on farmland to enhance ecosystem function and conserve threatened species</li> <li>• Enable Traditional Owners to lead healing Country practices on both private and public land</li> </ul>   |
|   | Support innovations in the built environment that improve biodiversity outcomes                                   | <ul style="list-style-type: none"> <li>• Plan for and build more green-blue infrastructure in urban developments that support native flora and fauna populations</li> <li>• Provide education and funding for private landowners to build capacity in protecting and enhancing soils, water and biodiversity values</li> </ul>  |
|   | Improve the resilience of infrastructure in towns and cities  | <ul style="list-style-type: none"> <li>• Identify locations suitable for renewable Stand-Alone Power Systems to improve the grid's strength, reduce emissions and increase energy efficiency</li> <li>• Develop guidance for local infrastructure initiatives and funding programs to incorporate climate change adaptation requirements</li> </ul>   |

## Places (theme)

| Goals  | Objectives  | Actions  |
|--|---|--|
| <p>Our natural and built environments are healthy and sustainable</p>                       | <p>Innovate built environments to support a decarbonised and circular economy</p>                                     | <ul style="list-style-type: none"> <li>• Establish more investment programs for local recycling and manufacturing</li> <li>• Create more targeted innovation and entrepreneurship program for retrofitting solutions for existing and heritage building stock</li> <li>• Create discounts or subsidies to incentivise the use of second-hand materials in construction and production</li> </ul>   |
| <p>Our natural and built environments are protected from the impacts of climate change</p>  | <p>Take steps to protect and built the resilience of the diverse flora and fauna in our region</p>                    | <ul style="list-style-type: none"> <li>• Establish a program that supports the coordination of scientific-based recovery programs, community engagement and citizen science programs</li> <li>• Establish funding opportunities to improve the ecological structure, function, and composition of ecological communities across the region</li> </ul>  |
|  | <p>Work with First Nations' people living in the region to protect places of cultural significance and practice</p>   | <ul style="list-style-type: none"> <li>• Establish First Nations' operated seedbanks and nurseries for revegetation of Country</li> <li>• Establish programs that enable First Nations' people to increase understanding of future climate change impacts on Country and identify culturally appropriate adaptation measures</li> </ul>  |
|  | <p>Increase water security and drought management</p>   | <ul style="list-style-type: none"> <li>• Create clear water security guidance to support drought resilience and responses to long-term increases in average temperature</li> <li>• Create opportunities to partner with community groups and businesses to improve existing supply networks and investigate new water supplies</li> <li>• Ensure adequate and equitable water rights that meet the social, cultural, spiritual, economic and environmental needs of First Nations' people</li> </ul> |
|  | <p>Support existing housing and building stock in the region to meet current energy and thermal comfort standards</p> | <ul style="list-style-type: none"> <li>• Create a program for free climate ready home awareness information and assessments targeted to low-income houses</li> <li>• Create guidance material for homeowners and renters on making their homes climate ready, offering a range of solutions and costs</li> </ul>   |
|  | <p>Take steps to protect our tourism assets</p>   | <ul style="list-style-type: none"> <li>• Develop a regional tourism climate ready program that assesses the vulnerabilities of tourism assets to both the physical and economic impacts and opportunities</li> <li>• Establish programs that invest in eco or nature-based tourism</li> </ul>  |
|  | <p>Improve ageing public assets to withstand an increase in extreme weather events</p>                                | <ul style="list-style-type: none"> <li>• Conduct audits for ageing infrastructure for environmental performance</li> <li>• Identify opportunities to replace damaged or end-of-life public assets with alternative technologies</li> </ul>   |



## Sectors (theme)

| Goals   | Objectives  | Actions  |
|---|---|--|
| <p>Businesses have the climate knowledge and resources they need to make confident decisions for operational continuity and competitive advantage</p>  | <p>Increase awareness of climate risks and responsibilities for businesses</p>                                | <ul style="list-style-type: none"> <li>Establish a climate risk and extreme weather information hub and support service for business to access locally relevant risk information</li> <li>Create a climate change risk screening and management tools for sole-trader, small and medium businesses</li> </ul>  |
|   | <p>Develop opportunities for business to understand specific climate risks to their assets and activities</p> | <ul style="list-style-type: none"> <li>Establish support services that offer affordable vulnerability assessments for sole traders, small and medium businesses</li> <li>Support industry targeted tools, monitoring systems and modelling for short- and long-term climate changes and impacts</li> </ul>   |
|   | <p>Support the development and implementation of strategies and learning opportunities</p>                    | <ul style="list-style-type: none"> <li>Provide more learning opportunities to improve the skills and capacity of practitioners, industry, community organisations and the public to understand and implement responses to climate change</li> <li>Develop partnership projects for First Nations' people to respectfully share knowledge and create opportunities for more sustainable businesses</li> </ul> |
| <p>Local businesses feel connected, incentivised and rewarded to become climate ready</p>    | <p>Increase positive incentives for business to become climate ready</p>                                      | <ul style="list-style-type: none"> <li>Establish programs that assist business access to alternative low emission technologies</li> <li>Establish local programs that assist sole-traders and start up enterprises in circular economy</li> </ul>  |
|   | <p>Remove or reduce disincentives preventing business enterprises acting on climate</p>                       | <ul style="list-style-type: none"> <li>Promote new insurance products and planning policies to replace current ones that penalise circular economy approaches technologies and products</li> <li>Targeted funding mechanisms for First Nations' businesses to provide carbon offset and healing Country services such as revegetation, plant nurseries or other agribusiness ventures</li> </ul>             |
|   | <p>Build opportunities to reward/ recognise businesses adapting and acting on climate change</p>              | <ul style="list-style-type: none"> <li>Fund a regional climate action business festival</li> <li>Collaborate with local innovation competition or recognition programs to incorporate climate action contributions</li> </ul>  |
| <p>The health and safety of local workforces is protected</p>    | <p>Improved worker safety outcomes from direct impacts from extreme weather and climate impacts</p>           | <ul style="list-style-type: none"> <li>Establish local support programs to assist businesses in creating OH&amp;S policies and emergency plans for extreme weather</li> <li>Support the development of technology that can inform and warn about impacts and their status in real time so business can manage the risks effectively</li> </ul>   |
|   | <p>Improved worker health outcomes from indirect environmental changes</p>                                    | <ul style="list-style-type: none"> <li>Establish business support services to assist in the planning and preparation of safe workplaces and flexible working for a future climate</li> <li>Develop better mental health programs to manage increased climate shocks such as droughts, fire, flood, loss of ecosystems and assets</li> </ul>  |

## Sectors (theme)

| Goals  | Objectives  | Actions  |
|--|---|--|
| <p>Local businesses have secure access to climate resilient markets, technologies, financing, and transport channels</p>  | Secure employment in existing and emerging markets  | <ul style="list-style-type: none"> <li>• Create joint training collaborations between business and education providers to respond to the diversification of employment patterns and demand for new skills</li> <li>• Create targeted programs that support long-term local employment opportunities for those most disproportionately impacted by climate change</li> <li>• Develop projects to increase Aboriginal employment opportunities and outcomes in new and emerging job markets</li> </ul>   |
|  | Support business adaptation to low emission and circular economy markets and supply chains                      | <ul style="list-style-type: none"> <li>• Establish support services for business to access alternative markets when existing ones are or may be disrupted by the impacts of a changing climate</li> <li>• Deliver programs that assist business access to low emission opportunities. For example alternative fuels (including renewable energy farms, hydrogen and materials), recycling and a circular economy</li> </ul>  |
|  | Support sustainable and secure financing for climate adaptation   | <ul style="list-style-type: none"> <li>• Establish local financial and insurance policy support services for non-employee, small and medium businesses</li> <li>• Create equitable funding or financing opportunities for businesses to uptake technology or building upgrades that assist with protecting premises/assets from extreme events</li> </ul>  |
|  | Support business operations and processes during and recovering from direct extreme weather and climate impacts | <ul style="list-style-type: none"> <li>• Establish support services to assist businesses to maintain operational continuity during extreme weather or other climate related commercial disruptions</li> <li>• Develop mechanisms to allow businesses to collaborate with government agencies and industry partners to identify opportunities that lead to faster restoration and recovery works and services critical to their business operations</li> </ul>  |
|  | Support business operations during indirect extreme weather and climate impacts                                 | <ul style="list-style-type: none"> <li>• Establish a local business network to work with government, utility networks and industry to better coordinate Distributed Energy Resources regionally to strengthen and support the utility network resilience</li> <li>• Develop regional planning assessment to identify parts of the transport system at high risk, vulnerable, or face the most significant exposure of being impacted by anticipated climate change. Plan to address any insurance gaps or inform the prioritisation of protecting those transport assets, infrastructure and services</li> </ul> |

# ADAPT Loddon Mallee sponsored/supported projects

- ADAPT Loddon Mallee Website
- ADAPT Regional Climate Leadership Program
- Climate Ready Communities – Conversation Toolkit Project
- Climate Change Activity Book – for kid's
- Climate Adaptation Innovation Toolkit
- Youth Climate Network
- Climate Youth Retreat
- Youth Climate Advisory Board
- Sustainable leadership in school
- Climate Ready Maldon
- Climate Ready young growers project
- Youth on Country Climate Project
- Mildura Community Water Bank
- Cool-It Birchip
- Barapa Making Steps Towards Climate Change Project
- Cool It Phase 2
- Climate Ready Local Governments Project
- Community Advisory Boards (3)
- Rochester Community Climate Garden Project
- Climate Resilience is – Art exhibition
- End Game Podcast
- Snow Gums Citizen Science Project
- Elphinstone Bushfood garden project
- Rushworth native gardens project
- Engaging CALD Communities Project
- Climate Ready Stories Project
- Climate Ready Businesses Project
- Djaara Climate Policy Project
- Food Next-Door and FPMM – Planting the seed project
- Power to the People Leadership Program (Part sponsor)
- Ramp Up Resilience Program (Part sponsor)



# Leadership groups and Community Advisory Boards

| Regional Climate Leaders   | Youth Climate Advisory Board (Y-CAB) and Youth Climate Network  | Climate Ready People  | Climate Ready Places   |
|--|---|---|--|
| <ul style="list-style-type: none"> <li>• Darren Berry</li> <li>• Luke Bolt</li> <li>• Kyla Brettle</li> <li>• Troy Butler</li> <li>• Daniel Cocking</li> <li>• Louise Costa</li> <li>• Samantha Downing</li> <li>• James Goldsmith</li> <li>• Raelene Gooch</li> <li>• Aaron Grinter</li> <li>• Rachel Kendringan</li> <li>• Amanda Logie</li> <li>• Liesbeth Long</li> <li>• James Mack</li> <li>• Michelle McGoldrick</li> <li>• Barry McKenzie</li> <li>• Jemille McKenzie</li> <li>• Geoffrey Murray</li> <li>• Tim Read</li> <li>• Melanie Scarife</li> <li>• Jay Smith</li> <li>• Gabrielle Turner-Eylander</li> </ul> | <ul style="list-style-type: none"> <li>• Jecinta Arulsuthan</li> <li>• Dotty Carigg</li> <li>• Tessa Cockle</li> <li>• Mhairi Cornford</li> <li>• Emilia Gready</li> <li>• James Ison</li> <li>• Emma Johnson</li> <li>• Esther Johnston</li> <li>• Ethan Jolley</li> <li>• Alyssa Lai</li> <li>• Jemima Lokita</li> <li>• Kelsey Macdonald</li> <li>• Jemille McKenzie</li> <li>• Jake Murphy</li> <li>• Emma Pyper</li> <li>• Ruby Rovere</li> <li>• Tess Ryan</li> <li>• Tiana Sixsmith</li> <li>• Meg Walker</li> </ul> | <ul style="list-style-type: none"> <li>• Kristy Gunn</li> <li>• Kristin Lemura</li> <li>• Geoffrey Murray</li> <li>• Dianna Bowles</li> <li>• Genine Hook</li> <li>• Lucy Williams</li> <li>• Debbie Rovere</li> <li>• Merryn Davies</li> <li>• Andrea Wolf</li> <li>• Nicky Chudleigh</li> </ul> | <ul style="list-style-type: none"> <li>• Asha Bannon</li> <li>• Shannon Burdeu</li> <li>• Ashley Fletcher</li> <li>• Colin Lambie</li> <li>• Tania MacLeod</li> <li>• Anna Murphy</li> <li>• Silvana Predebon</li> <li>• Cassie Read</li> <li>• Tim Read</li> <li>• Bron Willis</li> </ul> |

# Glossary

**ADAPT Loddon Mallee**

A program to increase community resilience by building climate knowledge, grassroots leadership skills and supporting place-based adaptation action. Funded by the Department of Environment Land Water and Planning.

**Advanced manufacturing**

The use of innovative technology to improve products or processes, with the relevant technology being described as 'advanced,' 'innovative,' or 'cutting edge'.

**Average maximum temperature**

The average daily maximum air temperature, for each month and as an annual statistic, calculated over yearly records.

**Biodiversity**

The biological variety plant and animal species in an environment. This occurs at a genetic, species and ecosystem level.

**Biolinks or environmental corridors**

Allow the unimpeded movement of species and the flow of natural processes that sustain life on Earth.

**Blue infrastructure**

Refers to water elements like rivers, canals, ponds, wetlands, floodplains and water treatment facilities.

**Circular economy**

A model of production and consumption that aims to eliminate waste by maintaining the value of raw materials, components and products across their lifecycle.

**Citizen science**

The practice of public participation and collaboration in scientific research to advance observation.

**Climate adaptation**

The process of adjusting to current or expected climate change and its direct and indirect effects.

**Climate change**

Long-term changes in climate patterns, including temperature, rainfall, or wind patterns, that exceed natural climate variability as the direct or indirect result of human activity.

**Climate justice**

An acknowledgement of the social, political, and ethical implications of climate change, and the disproportionate impacts that some individuals or communities may experience as the result of existing systemic inequities.

**Climate ready**

Interventions that prepare individuals and communities for climate risks, including building an awareness and understanding of climate projections, and identifying key actions.

**Country**

Refers to First Nations' peoples' ongoing relationship with everything within the landscape including landforms, water, air, trees, rocks, plants, animals, medicines, minerals, stories and special places. Country also includes cultural practices such as knowledge, songs, stories, and art.

**Culturally and linguistically diverse (CALD)**

Used to refer to ethnic groups in Australia who were born or raised outside of the English-speaking Anglo-Saxon culture.

**Distributed Energy Resources**

A small-scale unit of power generation that operates locally and is connected to a larger power grid at the distribution level.

**Ecosystem services**

The productive and non-productive benefits that society obtains from the environment including provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits.

**Elder**

A respected member of a community who has gained recognition as a custodian of knowledge and lore, and who has permission to disclose knowledge and beliefs.

**Extreme weather event**

When a weather event is significantly different from the average or usual weather pattern.

**First Nations' people**

A name that recognises Aboriginal and Torres Strait Islander people as the first peoples of Australia.

**Flora and fauna**

Flora refers to all plant life, and fauna refers to all animal life on earth.

**Global marketplace**

The exchange of goods, services and labour across the world.

**Green Infrastructure**

A planned network of high quality natural and semi-natural areas with environmental features, designed and managed to deliver a wide range of ecosystem services and protect biodiversity.

**Gross Regional Product**

A value of all final goods and services produced in a region over a period of time (generally quarterly or yearly).

### **Healing Country**

Providing greater management, involvement, and empowerment of First Nations' people over country. Healing Country also means embracing First Nations' cultural knowledge and understanding of Country as part of Australia's national heritage.

### **Landscape fragmentation**

The breaking up of a habitat or vegetation type into smaller, disconnected sections. It is generally a consequence of land use such as agriculture, roads, and housing.

### **Low carbon economy or decarbonised economy**

An economy that is based on low-carbon energy sources so that there is a reduced output of greenhouse gas (GHG) emissions when generating power.

### **Microgrids**

A subset of the broader electricity network including all the necessary components to operate independently. They are generally used to allow a neighbourhood or business estate to produce and consume energy locally.

### **Mitigation**

Actions to reduce and prevent the emission of greenhouse gases to alleviate the effects of further climate change.

### **Natural disaster**

A sudden and terrible event in nature (such as a bushfire, storm or flood) that usually results in serious damage to property and/or loss of life.

### **New and emerging communities**

People from migrant and refugee backgrounds who have been settled in a country for less than five years, and may lack established family networks, support systems, community structures and resources.

### **Occupational Health and Safety (OH&S)**

OH&S refers to the health, safety and welfare of people at their workplace.

### **Operational continuity**

The ability for a system to continue working despite damages, losses or critical events.

### **Ramsar Wetlands**

A wetland included in the *List of Wetlands* of International Importance, also known as the Ramsar Convention.

### **Regenerative model**

A model that uses whole systems thinking to create resilient and equitable systems that integrate the needs of society with the integrity of nature.

### **Registered Aboriginal Party (RAP)**

RAPs are responsible for managing Aboriginal cultural heritage within an appointed area. Parties are registered by the Victorian Heritage Council, established under the *Aboriginal Heritage Act 2006*.

### **Resilience**

The ability of individuals and communities to recover quickly from difficulties, particularly in the context of increasing climate change risk.

### **Socio-Economic Indexes for Areas (SEIFA)**

Developed by the Australian Bureau of Statistics that ranks areas in Australia according to relative socio-economic advantage and disadvantage.

### **Self-determination**

Used in the context of First Nations' people being able to make their own choices and live according to their values and beliefs.

### **Skilled migration**

Movement of a worker or workforce for the purpose of assuming a new role with similar skill sets.

### **Supply chain**

A supply chain is a network between a business and its suppliers to produce and distribute a specific product to the final buyer.

### **Supporting Our Regions to Adapt**

The Department of Environment Land Water and Planning's state-wide framework to support Victoria's regions to adapt to climate change. The initiative commenced in 2017.

### **Traditional Owners**

First Nations' people who hold traditional rights and interests over a particular Country.

### **Transformative adaptation**

aims to reduce the root causes of climate injustice, and ecological destruction. In the context of place-based adaptation it focuses on the decentralisation of climate leadership and adaptation actions enabling the experiences, skills, and knowledge of people who are disproportionately impacted by climate change to be centred in regional planning and decision-making forums.

### **Utility services**

A utility is an important service such as water, electricity, or gas that is provided for everyone, and that everyone pays for.

### **Vulnerability**

The degree to which an individual, group or system is at risk of harm from the effects of climate change, including climate variability, socioeconomic stressors, and access to information.

### **Zero emission vehicle**

A vehicle that does not directly produce atmospheric pollutants, or 'tailpipe emissions.' This includes both electric and hydrogen fuel cell vehicles.



# Reviewed documents

AECOM Loddon Mallee Regional  
Climate Change Adaptation Gap  
Analysis

ABC Insurance Forecasting Tool

Aboriginal Heritage and Culture  
(Murray Darling Basin Authority)

Aboriginal Population Health and  
Wellbeing Profile 2020, Campaspe  
Primary Care Partnership

Aboriginal Population Health and  
Wellbeing Profile 2020, Southern  
Mallee Primary Care Partnership

Adaptation Community of Practice

Adaptation Finance: Emerging  
approaches to solve the climate  
adaptation finance gap

Adaptation Tipping Points  
for Fruit Trees

Adaptive Capacity in Victoria (DEDJR)

AFAC Climate Change and Disasters

Aither Loddon Campaspe  
Regional Profile

Aither Mallee Regional Profile

Australian Bureau of Statistics

Australian Bushfire and Climate Plan

Bendigo Bank Annual Review 2020

Bendigo Loddon Community Health  
and Wellbeing Profile

Biodiversity Response Planning

Biosecurity Economics (Ag Vic)

BOM Annual Climate Statement

BOM Record Making La Nina events

Building Climate Resilience (Birchip  
Cropping Group)

Buloke Loddon Gannawarra: Health  
Needs Implementation Plan

Campaspe Environment Strategy

Central Goldfields Sustainability  
Action Plan

Central Murray Regional Transport  
Strategy

Central Victoria Primary  
Care Partnership

Central Victorian Greenhouse  
Alliance Annual Report 2019/20

Central Victorian Greenhouse  
Alliance Cool It

Central Victorian Greenhouse  
Alliance Strategic Plan

City of Greater Bendigo  
Environment Strategy

Climate Change Adaptation  
Audit (Mosaic Lab)

Climate Change adaptation  
resources (DELWP)

Climate Change Adaptation  
in Agriculture (Ag Vic)

Climate Change and the  
Victoria Bushfire Threat

Climate Change Data and Information  
for Local Government Factsheet

Climate Change Risk Management  
Tool for Small Businesses

Climate Council Air Quality Report

Climate Projections Loddon Mallee

Climate Ready Loddon Mallee

Climate Science report 2019

Coliban Water Annual Report 2020

Coliban Water Outlook 2019

Coliban Water Strategy 2030

Community Health and Wellbeing  
Profile - Campaspe Mallee PcP

Community Health and Wellbeing  
Profile - Northern Mallee PcP

Community Health and Wellbeing  
Profile - Southern Mallee PcP

Community Profiles Tool (ABS)

Cool community spaces (Infrastructure  
Victoria)

Cooling Communities (Moreland Zero  
Carbon)

Cost of Climate Report

Dhelkunya Dja Annual Report

Dja Dja Wurrung Country Plan

Drought and Food Report (DJPR)

Ecological Vegetation Classes

Ecosystem Services from forests in  
Victoria (DELWP)

Emergency Management - Buloke

Emergency Management - Mildura

Emergency Management Plan - Swan  
Hill Rural City Council

Emergency Management Plans  
- Macedon

Every Suburb Every Town Poverty  
in Victoria

Extreme heat driven by climate  
emergency: Impacts on the health  
and wellbeing of

Feeling the Heat (VCOSS)

Feeling the Heat VCOSS

First People of the Millewa-Mallee  
Action Plan

Gannawarra Economic  
Development Strategy

Goulburn Murray Water Annual Report

Grampian Wimmera Mallee Outlooks

Greening Greater Bendigo 2020-2070

Guidance Note 1:  
Place-based Adaptation

Guidance Note 2:  
Establishing

Guidance Note 3:  
Developing the Regional Adaptation  
Strategy (RAS) vision, goals

Guidance Note 4:  
Understanding the Region

Guidance Note 5:  
Exploring Multiple Futures

Guidance Note 6:  
Identifying & Prioritising Actions

GWMWater Annual report

Health and Human Services  
climate change adaptation  
action plan 2019-21

|  |   |  |  |
|--|---|--|--|
| Heatwave in Victoria:<br>an Assessment of Health                                     | Loddon Mallee North Regional<br>Growth Plan Summary           | NCCMA Soil Health Action Plan  | Regional Priorities Infrastructure<br>Victoria Loddon Campaspe   |
| Heatwave Management:<br>Reducing the Risk  | Loddon Mallee South Regional<br>Growth Plan Summary           | North Central Climate Change<br>Adaptation and Mitigation Plan   | Regional Sustainable<br>Agriculture Strategy   |
| Heatwave Vulnerability<br>Assessment (DELWP)   | Loddon Mallee Regional<br>Strategic Fire Plan                 | North Central CMA Climate<br>Change Plan   | Safer Together - reducing bushfire risk  |
| Heatwaves in Victoria:<br>A vulnerability assessment                                 | Lowe Murray Water Outlook 2019                                | North Central Regional Floodplain<br>Management Strategy   | Smart Gardens for a Dry Climate<br>(Coliban Water)   |
| Icons at Risk: Climate Change<br>Threatening Australian Tourism                      | Lower Murray Water Annual Report                              | North Central Waterway Strategy  | Soil Health Action Plan  |
| Imaging Greater Bendigo  | Macedon Climate Change Action Plan                            | Northern Victorian Integrated<br>Municipal Emergency<br>Management Plan  | State Water Outlook  |
| Impacts of climate change across<br>southern Australia (CSIRO)                       | Macedon Ranges Environment<br>Strategy                        | On The Frontline: Climate Change &<br>Rural Communities (Climate Council)  | Strengthening Resilience<br>in Regional Victoria   |
| Indigenous Population Health and<br>Wellbeing Profile                                | Macedon Ranges Environment<br>Strategy Annual Report 2019/20  | Parliamentary Inquiry<br>2010 & 2011 Floods  | Swan Hill Sustainable Living<br>Strategy 2017-2027   |
| Infrastructure Priorities for the Regions  | Making Home Climate Ready<br>(City of Greater Bendigo)        | Pilot Water Adaptation Plan  | Temperature thresholds<br>associated with increased mortality<br>in ten major population centres<br>in rural Victoria, Australia |
| Land and Waste Management Plan   | Mallee Catchment Management<br>Authority Plan                 | Pilot Water Sector Climate Change<br>Adaptation Action Plan  | The economic impact<br>of heatwaves in Victoria  |
| Learning from experience Historical<br>case studies and climate change<br>adaptation | Mallee Murray Goulburn and<br>West Central – Bushfire Risk    | Pilot Water Sector Climate Change<br>Adaptation Action Plan  | The Loddon Campaspe Integrated<br>Transport Strategy   |
| Local Government Engagement on<br>Victoria's Climate Change                          | Mallee Natural Resource Management<br>Plan for Climate Change | Place-based Climate Change<br>Adaptation Guidance Notes: Overview  | Understanding weather,<br>climate and forecasting (Ag Vic)   |
| Local Government Roles and<br>Responsibilities for Adaptation<br>under Victorian     | Mildura Environmental Education<br>Plan 2020-24               | Policy Brief 1 - Barriers to the<br>implementation of climate change<br>adaptation plans and action                        | Valuing Victoria's Parks<br>(Environmental Services)   |
| Loddon Campaspe Regional Profile   | Mildura Environmental Sustainability<br>Report 2019 - 2020    | Policy Brief 2 - Determinants of<br>adaptive capacity for climate change<br>adaptation                                     | Vic Sport Heat Guidelines  |
| Loddon Environmental Sustainability<br>Strategy Action Plan                          | Millennium Drought Report                                     | Policy Brief 3 - Social And<br>cultural barriers to the<br>implementation of climate change<br>adaptation plans and action | Victoria Biodiversity 2037   |
| Loddon Mallee Biodiversity<br>Response Planning                                      | Mount Alexander Climate Change<br>Action Plan                 | RDV Regional Data Links  | Victoria's Climate Change Strategy   |
| Loddon Mallee Bushfire<br>Management Strategy  | Mount Alexander Environment<br>Strategy 2015-2025             | Regen Melbourne<br>- Activating the Donut  | Victorian Climate Initiative   |
| Loddon Mallee Climate Change<br>Adaptation Snapshot                                  | Mount Alexander Shire Council<br>Roadmap to Carbon Neutrality | Regional Catchment Strategies (CMA)  | Victorian Climate Projections 2019   |
| Loddon Mallee Environmental Scan   | NatureKit   | Regional Priorities Infrastructure<br>Vic Mallee   | Victorian Fire Risk Register   |
|  | NCCMA Regional Catchment Strategy                             |  | Victorian Peoples Climate Strategy   |
|  |   |  | Victorian Trades Hall Council's OHS  |
|  |   |  | Where should all the trees go?   |
|  |   |  | Yorta Yorta Annual report  |

# Photo credits

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| P. 38 – Barapa Land and Water                | P. 70 – Studio MelSky                       |
| P. 39 – Contributed by<br>Bendigo Advertiser | P. 76 – La Trobe University                 |
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| P. 42 – Rushworth Community                  | P. 78 – Artist impression,<br>Samira Wakhlu |
| P. 43 – Carmen Bunting Photography           | P. 79 – Michelle Wyatt                      |
| P. 44 – Carmen Bunting Photography           | P. 80 – Regional Development Victoria       |
| P. 46 – Adrian Martins                       | P. 88 – Unsplash.com                        |
| P. 50 – Studio MelSky                        | P. 95 – Visit Victoria, Robert Blackburn    |
| P. 53 – Peter Clarke                         | P. 96 – Regional Development Victoria       |
| P. 54 – Adrian Martin                        | P. 101 – Agriculture Victoria               |
| P. 56 – Vline                                | P. 103 – Cultivate Farms                    |
| P. 57 – Old Church on the Hill               | P. 105 – Integrated Recycling               |
| P. 58 – Adrian Martin                        | P. 106 – Agriculture Victoria               |
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A regional approach to climate change adaptation

