

Traditional Owner acknowledgment

We acknowledge the Traditional Custodians of the land and waters where we work and live, and pay our respects to their Elders past, present and emerging.

We further acknowledge the enduring nature of Aboriginal culture in Australia and the generational lived experience of adapting to past climate shocks. We are committed to genuinely partner and engage with Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and broader aspirations in the 21st century and beyond.



Mirring represents the diverse Countries and landscapes across Victoria and the "scars that have been left within the landscape by our people" while at the same time reminding us of "our inherent responsibility to protect Country."

Mirring – Country, artwork by Tom Da

Photos provided by Ben Zeeman, unless otherwise stated.

© The State of Victoria Department of Environment, Land, Water and Planning 2021.

This work is licensed under a Creative Commons Attribution 4.0 International licence. You are free to re-use the work under that licence, on the condition that you credit the State of Victoria as author. The licence does not apply to any images, photographs or branding, including the Victorian Coat of Arms, the Victorian Government logo and the Department of Environment, Land, Water and Planning (DELWP) logo. To view a copy of this licence, visit www.creativecommons.org/licenses/ by/4.0/

Disclaime

This publication may be of assistance to you, but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

The development of the Barwon South West Regional Climate Change Adaptation Strategy was supported by the Victorian Government and funded through the Sustainability Fund – Supporting Our Regions to Adapt program.



Foreword

Victorian communities expect action on climate change and they want to contribute to climate action in their communities.

The Barwon South West Regional Adaptation Strategy clearly identifies what communities and industry want and what they see as priority areas for adaptation action.

Community wants to be recognised as important adaptation partners and change agents. They expect strong leadership from government and a willingness to actively involve and invest in community-based organisations. Community expects government to drive the dissemination of knowledge and share decision making power with those whose lives will be impacted by those decisions. The mindsets and approaches to decision-making which have been used in the past will not serve us into the future.

A new way of thinking about how we live and use resources is required. This new way of thinking recognises that the health of the natural resource base is the foundation for human and cultural health, wellbeing and prosperity. Protection and enhancement of biodiversity, ecosystems and the environmental services they provide must be front of mind when making decisions in the context of climate change adaptation.

On behalf of the Barwon South West region, I am pleased to introduce this strategy and to share the region's ambition. While many challenges are ahead, our region is committed to supporting each other to prepare and respond to climate change and embrace the future opportunities it presents. A collaborative and partnership approach is central to achieving this. Our region's organisations are leading by example and demonstrating strong commitment to working together, both now and into the future.

I would like to thank the organisations and individuals who have contributed to the development of this Regional Climate Adaptation Strategy. Your enthusiastic participation in the workshop series and the contributions made through the Engage Victoria consultation is greatly appreciated, and I look forward to working together to achieve our collective aspirations.

Ross Martin

Chair of the Project Control Group for the Regional Climate Adaptation Strategy

Department of Environment, Land, Water and Planning

Executive Summary

- This strategy tells a story of how the Barwon South West region has been preparing for climate change. It captures the opportunities to direct funding and support programs that will make a difference to communities and industry in the Barwon South West.
- Action learning has been central to the way this strategy has been developed. It has allowed the region to learn from previous climate change investments, incorporate different cross sector and community perspectives and work with the inherent complexity of climate change.
- The strategy was developed over an 18-month period, throughout 2020 to 2021 - it has been developed in partnership with over 60 representatives from 38 local and regional organisations, forming a Regional Champions group.
- A 7-part participatory cross-sector Climate Adaptation Workshop Series enabled the Regional Champions to build awareness about climate risks facing different sectors and developed shared skills in 'systems thinking'. This helped to identify various climate change impacts that will have cascading and cumulative implications across multiple sectors, and therefore whole of region effects. The Regional Champions formed a shared understanding that the more sectors and communities affected, the bigger the regional, or 'systems' shock – and the greater the need to collaborate across sectors, industry and communities.

- Best practice tools were developed to guide the cross-sector workshops, including a Climate Change Adaptation Guidance Tool and the Barwon South West Possible Futures Scenarios.
- Through the workshop series, a
 desired future for the Barwon
 South West emerged and 12 climate
 change adaptation focus areas
 became apparent. These focus areas
 connect current climate initiatives
 and community drivers, with our key
 regional scale climate risks.
- Through consultation with the broader community the focus areas received strong support. The feedback provided valuable insight about expectations, and suggestions about ways to prepare for climate change that would make a difference within their locality.
- The focus areas provide a business case for future climate action in Barwon South West - they have been informed by previous investments, developed by using best practice tools, identified through collaboration, and have strong support across the region.
- The next steps in the regions action learning approach are also identified within the strategy.

A desired future for Barwon South West

Through an action learning process facilitated by DELWP over an 18-month period, the community (including community based organisations, industry, peak bodies and government) developed their shared vision for a Region that has built its adaptive capacity to climate change, and the focus areas to achieve this.

- Our region and communities are working collaboratively.
- Our communities are empowered.
- Our region embraces continual learning to build skills and knowledge to support climate change planning.
- The health and wellbeing of our communities is supported.
- We plan for the longterm with equity at the centre (social, environmental and intergenerational equity).
- Our region and communities are enabled to act.

- Our region values the intrinsic connection between humans & nature in decisionmaking.
- Our community lives sustainably, utilising resources within sustainable limits and valuing waste as a resource.
- 'Prosperity' has been reframed to include a holistic understanding of value (environmental, social, cultural and economic value).
- Sectorspecific challenges are addressed.
- We are innovative.
- Our region has transitioned to renewable energy.
- Our region recognises our viability is linked to earth systems (planetary boundaries) and acts responsibly for the global context.
- Decision makers are transparent and monitor power imbalances supporting community trust.



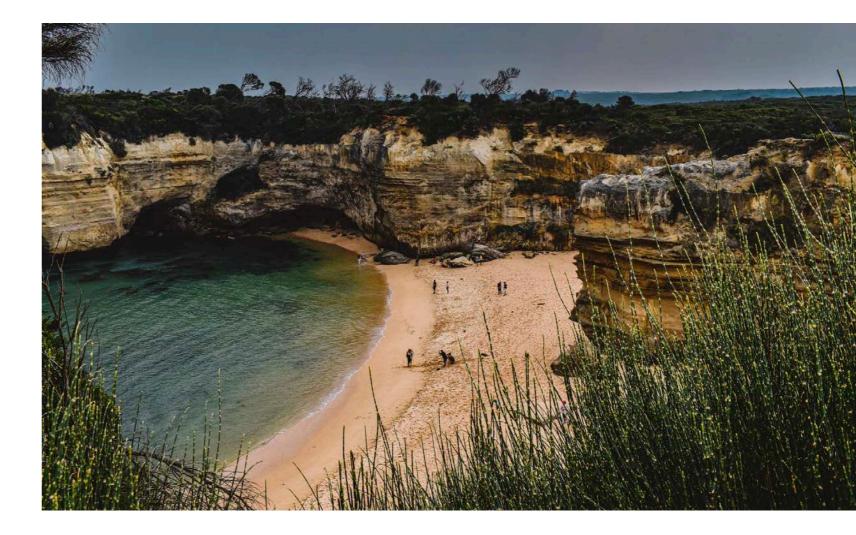
 $\mathbf{3}$

Department of Environment, Land, Water and Planning

Ensuring that those impacted by climate change and adaptation projects are included in the decision making, design and implementation of projects was identified as critically important by participants. This overarching strategy provides guidance and will be an essential consideration in the planning and development of all projects within the 12 key focus areas (A-L).

FOCUS AREAS AND OPPORTUNITIES

- A. Maintain functioning natural systems with our future climate in mind trial targeted interventions to support climate vulnerable species, ecosystems and ecological processes.
- B. Strengthen emergency preparedness build the capacity of primary healthcare, community service, tourism and agricultural organisations to contribute to emergency management planning.
- C. Expand regenerative agriculture build upon and expand regenerative agriculture opportunities to build diversity into agricultural systems and value-adding to produce.
- D. Communities and agencies working together on coastal planning and response place community and across-agencies' partnerships at the centre of coastal planning and response.
- E. Increased investment in community health and wellbeing across sectors cross-sector investment in community health and wellbeing as a preventative measure for people who are vulnerable and disadvantaged, for a resilient workforce, for industry viability and for regional liveability.
- F. Upgrade urban environments to ensure liveability under climate change upgrade our cities and towns to cope with heatwave and flash flooding and transition to a circular economy.
- **G.** Diversify water supply build understanding about the region's aquifers and explore new water supply options like reclaimed water and desalination for drought preparedness.
- H. Ongoing education, skill and capacity building for climate change planning and response - tailor education and capacity building support to needs. Targeted support for young people and low-capacity groups to contribute to regional climate change planning and response.
- I. Mainstream climate change across government agencies mainstream climate change planning and risk across all areas of government agencies and authorities.
- J. Empower local communities with focus on climate equity expand funding avenues by targeting local, place-based climate change initiatives, including extreme event recovery initiatives.
- K. Identify and monitor trade-offs which could drive maladaptation identify potential counterproductive actions which could undermine future capacity to prepare and respond to climate change e.g., monitor competing demands between agriculture, urban development, natural systems and water.
- L. Target emissions reduction support target support to our highest emitting sectors to transition to renewable energy and carbon neutrality standards.



STRENGTHEN & EXPAND COLLABORATION WITH:

Traditional Owners Communities Small business

Across sectors Young people Community groups NGOs Industry

Not for profit

GUIDING PRINCIPLES FOR HOW WE COLLABORATE ON CLIMATE CHANGE

Inclusive

Researchers

Actively seeking and valuing diverse views and perspectives – include the people who will be affected by decisions in the decision-making process.

Equity: Environmental, social & Intergenerational

Putting the people and places that are most vulnerable at the forefront of decision-making.

Use best available information & tools

Across boarders

Ensure decisions are driven by best available information and tools.

Deliberative learning

Using deliberative learning and reflection to drive action projects – connecting lessons with implementation.

Contents

Traditional Owner acknowledgment Foreword	1 2
	_
Section 1: About this stratgey	10
Introduction	10
State-wide and regional plans guiding the development of this stratgey	11
Taking an action learning approach	15
Our guiding principals	15
Method of working in partnership	18
Section 2: Regional Profile	19
Climate change projections	19
Lived experience of climate change in Barwon South West	20
Traditional Owners	23
Social trends	25
Economic trends	27
State of the environment	29
Section 3: How has the Barwon South West been preparing for climate change?	33
Previous investments	33
Acknowledging community driven climate action	33
Climate Change Adaptation Guidance Tool	39
Sector impacts at a glance	41
Interdependent and shared climate impacts	43
Exploring possible futures: Barwon South West scenario planning	45
Key trends driving change in Barwon South West	45
A desired future for Barwon South West	48

Secti	on 4: Focus areas and opportunities to work together	49
Buildi	ng a business case for action	49
Regio	nal focus areas and opportunities	51
What	was heard through engagement submissions	54
A.	Maintain functioning natural systems with our future climate in mind	54
B.	Strengthen emergency preparedness	56
C.	Expand regenerative agriculture	58
D.	Communities and agencies working together on coastal planning and response	58
E.	Increased investment in community health and wellbeing across sectors	60
F.	Upgrade urban environments to ensure liveability under climate change	61
G.	Diversify water supply	63
Н.	Ongoing education, skill and capacity building for climate change planning and response	63
I.	Mainstream climate change across government agencies	64
J.	Empower local communities with focus on climate justice	66
K.	Identify and monitor trade-offs which could drive maladaptation	66
L.	Target emissions reduction support	67
Secti	on 5: Implementing this strategy	69
Delive	ring climate adaptation projects	69
Guidir	ng principles essential for implementation	69
Next s	teps in our action learning approach	72
Ackn	owledgement	73



Section 1: About this strategy

Introduction

Climate change is one of the most significant challenges we face together as a community. Broad-scale urgent action is required to respond to current impacts and to prepare for emerging impacts as climate change intensifies. Our responses to climate change need to be fair, equitable and conducted in partnership - the Barwon South West community, industries and sectors are well placed to respond to issues together.

It is important to acknowledge the significant amount of climate change planning and response that has already taken place in the region by communities, industry, and organisations. What has stood out from previous investments is the strength of the regional partnership approach to climate change in the Barwon South West region.

During the development of this strategy, our state faced unprecedented challenges with the bushfires and the global COIVID-19 pandemic. Despite these challenges, our region's determination and commitment to preparing for climate change remains unchanged. The strengths of the region's partnerships shone through during this time to continue with this important piece of work. It also demonstrated our region's ability to quickly adapt to widespread disruption to ensure best possible outcomes for our communities. This quality positions the region well as we continue to experience the impacts of climate change and embrace the new opportunities it presents.

This strategy captures the story of how the Barwon South West region is preparing for climate change. It highlights previous investments, our collective knowledge at this point in time, and follows the collaborative approach which has led to our climate adaptation focus areas – these focus areas highlight the opportunities to direct funding and support programs, that will make a difference to communities in the Barwon South West.

We hope that readers of this document will learn that our strategy to prepare for climate change is ongoing and action will be guided through a collaborative and inclusive partnership and by learning from implementation.

State-wide & regional plans guiding the development of this strategy

Policy context

This strategy is part of a broader program of work supporting climate change adaptation in Victoria. The development of this strategy delivers on a commitment under Victoria's Climate Change Adaptation Plan 2017-2020, to support regional scale adaptation planning. Victoria's Climate Change Strategy also includes a commitment to support place-based adaptation.

The content of this strategy identifies adaptation opportunities that are best addressed at both a state-wide policy level, as well as opportunities which can be implemented by the region. In doing so, this strategy helps to inform both state-wide policy action and regional or local scale action.

VICTORIA'S CLIMATE CHANGE STRATEGY

STATE



Development of state wide sector based Adaptation Action plans in seven key Sectors.

Natural Environment		Health and Hun	nan Services	Education and Training		
Built Environment	Prin	nary Production	Water Cy	cle	Transport	

Regional scale adaptation planning and action: Supporting our Regions to Adapt program.





Gippsland Regional	Hume Regional	Loddon Mallee Regional
Adaptation Strategy	Adaptation Strategy	Adaptation Strategy
Grampians Regional	Barwon South West Regional	Greater Melbourne
Adaptation Strategy	Adaptation Strategy	Adaptation Strategy

CLIMATE DATA & INFORMATION

Victoria's Climate Science Report 2019

Climate change communication resources

Vulnerability assessments

VCP19 5km downscaled climate projections

12

Supporting strategic action to build adaptive capacity of local government and enable local level adaptation action.



Community Climate Change Adaptation (3CA) Grants	
Training and Guidance Materials for Local Government	
Targeted support and collaboration with local government adaptation programs and projects	

Regional context

Many regional organisations have prepared climate change strategies to guide their response to climate change. While some actions outlined in these strategies are being implemented, limited funding is a common barrier to achieving broadscale implementation.

Regional Catchment Strategies & landscape climate change planning



- Corangamite CMA
- Glenelg Hopkins CMA

Integrated water management



- Barwon Water
- Wannon Water

Strategic action by local government



- Climate Change Adaptation Plans
- Climate Emergency Declarations
- Municipal Health and Wellbeing Plans

Preparing the agricultural sector for climate change

• Weather and climate forecasting



- Reducing emissions from agriculture
- Agriculture sector emissions reduction pledge

Regional emergency preparedness



- Regional Emergency Management Planning Committees
- Regional Emergency Management Plan

Health promotion



- Improving awareness of the link between climate change and health
- Active living and healthy eating promotion
- Heat and health resources

Renewable energy transition



- Renewable Energy Road Map
- Organisation-scale carbonneutral programs

Land and Sea Country Plans (while Traditional Owner Corporations are not a government agency, government must have regard for Traditional Owners aspirations)



- Wadawurrung Traditional Owners
- Eastern Maar Traditional Owners
- Gunditj Mirring Traditional Owners

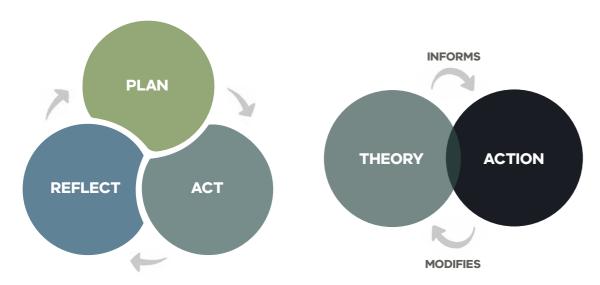


Taking an action learning approach

The way climate change impacts unfold is complex – and the connected nature of state-wide and regional drivers of climate change action can add to this complexity. Taking an action learning approach to the way we plan for and respond to climate change is an effective method for working with this complexity.

Action learning has been central to the way this strategy has been developed. It has allowed us to continually review what works well and areas to improve. By doing so, we are building upon what we learn over time and are able to combine resources and knowledge of different organisations in the region.

To support an action learning approach, supplementary material will be added alongside this document to capture new information and our continued learning.



Our guiding principals

To ensure a best practice approach was used to develop this strategy, the following principles have been central to our work.

Equity: Environmental, social & intergenerational

Putting the people and places that are most vulnerable at the forefront of decision-making.

Inclusive

Actively seek and value diverse views and perspectives – include the people who will be affected by decisions in the decision-making

Collaboration

the centre of our climate change planning and esponse – actively seek new and rengthen existing.

Deliberative learning

Use deliberative
learning and
reflection to drive
action projects –
onnecting lessons

Use best available information and tools

Ensure decisions are driven by best available information and tools.





Method of working in partnership

Over an 18-month period, DELWP facilitated an action learning process to support regional scale climate adaptation planning for the Barwon South West.

Informed by previous work

We know from previous climate change investments that collaboration is central to the success of regional-scale climate adaptation planning and response. In acknowledgment of this, representatives from 38 agencies (a group referred to as the Regional Champions) worked together to develop the content of this strategy. Refer to Section 3 for further information about the region's previous climate change investments.

Established a cross-sector group of 'Regional Champions'

A range of representatives from the region's key community, peak body, industry and government organisations worked together to share their knowledge and build their skills to undertake cross-sector climate adaptation planning. This group is referred to as the 'Regional Champions' and is referenced throughout this strategy. The outputs of the Regional Champions' work together has develop the content of this strategy.

Utilised best practice tools

The Regional Champions worked together during a 7-part Climate Change Adaptation Workshop Series. Best practice tools were developed to guide the cross-sector workshops, including a Climate Change Adaptation Guidance Tool and the Barwon South West Possible Futures Scenarios. These tools enabled representatives to build their awareness about climate risks facing different sectors and identify our regions shared and interdependent climate risks.

The use of these tools enabled us to identify some key climate adaptation focus areas for the region. These focus areas provide opportunities to collaborate across agencies to address the region's most interdependent or shared climate change risks.

Public contribution

An online Engage Victoria survey was prepared to ensure this strategy reflects broader community expectations. The survey asked the community to sense check the key focus areas and pitch their ideas about ways to prepare for climate change that will make a difference to their community. The survey was shared with networks of community groups, climate change grant recipients, industry as well as via social media. The survey received over 300 submissions to the 12 focus areas.

Guided by a Project Control Group of regional sector experts

A Project Control Group was established comprising of representatives leading climate change initiatives for their sector. This group has been instrumental in trialling new ways of working across sectors. The focus of this group is to collaboratively direct regional investments and guide strategy implementation.

Section 2: Regional Profile

The Barwon South West region stretches from Queenscliff Heads to the border of South Australia. This section introduces the region's key social, economic and environmental trends, and how climate change may impact these trends.

Climate change projections

The Barwon South West region has been getting warmer and drier, and in the future we can expect these trends to continue.



Barwon Climate Projections 2019



Great South Coast Climate Projections 2019



Maximum and minimum daily temperatures will continue to increase over this century (very high confidence).



Maximum and minimum daily temperatures will continue to increase over this century (very high confidence).



By the 2030s, increases in daily maximum temperature of 0.8 to 1.5°C (since the 1990s) are expected.



By the 2030s, increases in daily maximum temperature of 0.8 to 1.6°C (since the 1990s) are expected.



Rainfall will continue to be very variable over time, but over the long term it is expected to continue to decline in winter and spring (medium to high confidence) and autumn (low to medium confidence), but with some chance of little change.



Rainfall will continue to be very variable over time, but over the long term it is expected to continue to decline in winter and spring (medium to high confidence), and autumn (low to medium confidence), but with some chance of little change.



Extreme rainfall events are expected to become more intense on average through the century (high confidence) but remain very variable in space and time.



Extreme rainfall events are expected to become more intense on average through the century (high confidence) but remain very variable in space and time.



By the 2050s, the climate of Geelong could be more like the current climate of Shepparton, and Colac more like Wodonga.



By the 2050s, the climates of Hamilton and Warrnambool could be more like the current climate of Benalla.

Lived experience of climate change in Barwon South West

Residents in the Barwon South West region have observed the impacts of climate change – about two-thirds believe that more bushfires, storms/flooding, drought and coastal erosion have occurred in Victoria during the past 10 years. The majority know that climate change is influencing the occurrence of these events and are concerned about future impacts.



Over 76% concerned about crop failures or declines in agriculture



Over 60% concerned about heatwaves



Over 71% concerned about water shortages & drought



Over 77% concerned about severe bushfires



Over 75% concerned about severe storms & floods



Over 63% concerned about coastal erosion & changes to sea level



Over 46% concerned about air pollution

To find out more about the region's future climate visit:



Barwon Climate Projections
Great South Coast Climate Projections

To find out more about Victorian's perceptions of climate change, visit:



Sustainability Victoria - Victorian's Perceptions of Climate Change

Community concerns about the impacts of climate change Engage Victoria consultation 2021

"Increases in bushfire frequency and intensity and the impacts this will have on native vegetation and threatened species like the Red-tailed Black Cockatoo"

"Tree die-back caused by drought"

"Fruit bats dying of heat stress."

"Need for zero-emissions industry will affect major employers in the region."

"Impacts of climate change on migratory birds as global decline in their food resources inhibits migration."

"Urban housing development continues down this coast - increases in polluted stormwater inflows into Hopkins River and ocean (Whale Sanctuary)."

"Southern Otways Sustainable (SOS) has a mission of the 3 towns (A/Bay, Marengo and Skenes Ck) being 100% renewable energy by 2030 - through improving household efficiency, increasing solar panels and hopefully a community battery."

"Increases in bushfires in the Grampians and the impacts this is having on small mammals."

"Increase in storm surge will erode dunes and cause old municipal tip material to enter ocean."

"With more intense rainfall events and increasing urbanisation of this catchment, the degradation of Russell's Creek will continue."

"Impacts of climate change (e.g. increases in heat waves, declines in rainfall amount/ seasonality) on already threatened ecosystems like native grasslands."

estuary due to the risk of rising water level

in the future and flooding, and potential

damage of developments to the natural

habitat and native species."

"Impacts of declining rainfall on the biodiversity of endangered seasonal herbaceous wetlands."

part of Bellarine peninsula RAMSAR wetlands protection sites... preserve the peace and natural significant status, as well as protect the lakes, from more urbanisation."

"Changes in native vegetation caused by climate change, e.g. decline of dominant

"Concern over Reedy lake...which forms

"Weather events are becoming more extreme leading to more landslip in winter with tree falls and volatile bush fuel loads in summer."

Eucalyptus trees in response to drought."

"Sea level rise and storm surge impacts safety of low-lying communities. Already homeowners cannot get insurance for 'action from sea!."

"St Leonards is losing its beach at an alarming rate as sea levels rise and storms intensify. Roads, houses and natural environment are threatened."

"Habitat loss through sea level rises on threatened shore birds like the hooded plover."

"The Barwon River aquifer is critically threatened already through over-pumping and is likely to dry even further."

"The Colac-Otway Climate Action Team is

drawn from across the Colac-Otway Shire

and meets regularly to plan and carry out

a wide range of actions to address climate

change."



Traditional Owners

The Barwon South West region covers the traditional lands of three Traditional Owner groups, representing the Wadawurrung, Eastern Maar and Gunditjmara people.

Traditional Owners have adapted their landscape management approaches over thousands of generations using fire, water and vegetation management for maintaining productive and healthy Country. Today, traditional and contemporary Indigenous knowledge about Country and society is contributing

to more culturally appropriate responses to climate change and provides alternative strategies for sustainable living.

To strengthen the partnership approach with Traditional Owners, we need to acknowledge the dispossession of Traditional Owners that occurred with colonisation and the potential for climate change to grow existing inequalities. As a region, our responses to climate change need to be fair, equitable and conducted in partnership, and the principles of Aboriginal self-determination are fundamental to this.

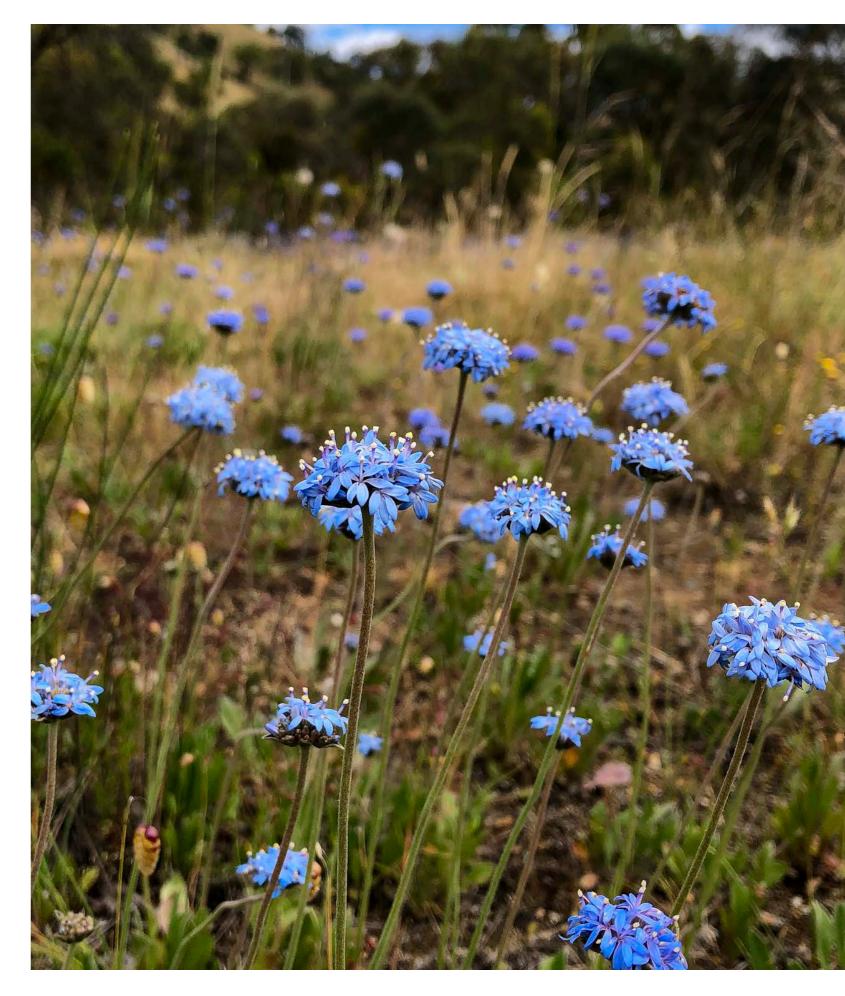


Gunditjmara Traditional Owners

To find out more about Gunditjmara Country and the Gunditjmara peoples' vision for Country and culture, visit Ngootyoong Gunditjmara South West Management Plan

Eastern Maar Traditional Owners

To find out more about Easter Maar Country and the Eastern Maar peoples' shared vision for Country and culture, visit Meerreengeyye ngakeepoorryeeyt - Eastern Maar Country Plan



Social trends

Climate change exacerbates disadvantage. Our responses need to be equitable and we need to ensure that solutions don't further entrench disadvantage. It is important to consider the region's key social trends to inform the way we prepare and target our responses. This will enable us to embed 'climate justice' into decision making.



To find out more about climate justice visit:

https://vcoss.org.au/climatefairness/







Great South Coast region Key trend Barwon region Large portion of the population Age - People dependent on Large portion of the population dependent on care: 24.1% aged care (children, older people) dependent on care: 24.6% aged between 0-19; 21.6% aged over between 0-19; 18.8% aged over can be more vulnerable to the 65. impacts of extreme weather. 65. Highly dispersed population Where we live - Small Population concentrated along - 34% of the region lives in agricultural communities at the coast – Gelong is home Warrnambool. risk of social isolation and to around 81% of the region's disconnection from support population. Beyond Warrnambool, there is services. almost the same proportion of A large portion of the remaining Coastal areas at risk of population live along the coast. people living in regional towns (Hamilton & Portland) and rural inundation, storm surge and areas, both inland and coastal saltwater intrusion. settlements. Population 2020 324,307 104,244





Great South Coast region	Key trend	Barwon region
107,635 (0.22% growth rate)	Population forecast 2036	431,181 (1.93% growth rate)
Uneven distribution of growth – by 2036 Moyne and Warrnambool will have grown by over 0.7%, compared to Corangamite, Southern Grampians and Glenelg which are expected to decrease by over -0.3%.	Considering our projected population when undertaking long-term planning will help avoid maladaptation. This is particularly important to achieve holistic urban planning.	Fast rates of population grow in some areas – by 2036, the population of Geelong and Surf Coast are predicated to increase by close to 2%. Colac-Otway and the Boroug of Queenscliffe are expected to experience slower rates of growth by around 0.2%.
Communities living with high levels of social disadvantage – Glenelg, Southern Grampians, Warrnambool and Corangamite are home to some of the most disadvantaged communities in the state. These council areas measure below the Victorian state average for socio-economic disadvantage.	Level of social disadvantage (SEIFA index) The impacts of climate change have the potential to grow and entrench inequalities. Low income and disadvantaged households have fewer financial resources to prepare for and recover from extreme events.	Communities living with high levels of social disadvantage – Colac-Otway and Geelong are home to some of the most disadvantaged communities the state. These council areas measure below the Victorian state average for socioeconomic disadvantage.
Areas of Warrnambool, Portland and Hamilton, and areas near Casterton.	Where do our most vulnerable residents live	Northern and southern suburbs of Geelong, Winchelsea and Colac.
Declining mental wellbeing – 26.1% of adults have been diagnosed with anxiety or depression.	Mental wellbeing - State average of adults having been diagnosed with anxiety or depression is 29.1%. Extreme weather can lead to distress due to trauma, illness, loss of loved ones, destruction of property, displacement, and disruption of communities and services. Climate change will also have broader impacts through increased unemployment, financial stress and food insecurity.	Declining mental wellbeing – 32.7% of adults have been diagnosed with anxiety or depression.
Increasing chronic health issues: 28% of adult population considered obese. 26.1% of adult population have asthma. 8% of adult population have heart disease.	Chronic health issues - Climate change, particularly extreme heat, can impact people living with chronic disease the most. State average for adult obesity 21.3%. State average of adults with asthma 20.2%. State average of adults	Increasing chronic health issues: 23% of adult population considered obese. 20.9% of adult population have asthma. 7.4% of adult population have heart disease.

sectors and industries prepare for climate change.

Economic trends

Great South Coast region

Key trend

Barwon region

Great South Coast farms produce the highest agricultural output of any region of Victoria

- 28.1% of Victoria's beef
- 31.0% of Victoria's dairy (worth \$1 billion annually)
- 33.8% of Victoria's sheep meat
- 17% of Australia's forest plantations
- Agricultural production: \$2.32 billion, the highest of any region of Victoria
- Food processing: \$1.10 billion
- \$1.5 billion annual value of trade through the Port of Portland

Agricultural output

Agriculture is a large driver of the region's economy, and climate change is presenting many challenges to the agricultural sector.

- 5.5% of Victoria's dairy
- 4.6% of Victoria's beef
- 9.0% of Victoria's poultry
- Agricultural production: \$478 million
- Food processing: \$1.1 billion
- The value of trade through the Port of Geelong is \$6 billion



Great South Coast region

Key trend

Highest employing sectors

While climate change presents many challenges for the region's economy, it also

opportunities to ensure regional liveability is maintained and improved as our key

provides new opportunities. It is important to consider both the challenges and

The impacts of climate change cascade through local economies. It is therefore important to consider how the major employing sectors of the region may be impacted by climate change and how this can flow on to impact livelihoods and regional liability.

Health Care and Social Assistance (18,595 people or

Barwon region

16.89%)

Retail Trade (14,927 people or 13.56%)

Education and Training (11,557 people or 10.50%)

• Energy – potential for wind, solar, geothermal, wave energy power and renewable hydrogen.

- Agriculture and forestry - healthy and productive soils, large groundwater
- supply and a relatively stable climate compared to surrounding regions.
- Fisheries and aquaculture closest mainland access to the nutrient-rich Southern Ocean Bonney Upwelling
- Transport and logistics - Port of Portland, a commercial deep water export port, several good quality regional airports and two major highways.
- Education and research local research and higher education opportunities with Deakin University, RMIT and South West TAFE.
- Tourism world-class natural beauty, the Great Ocean Road and indigenous heritage with Budj Bim World Heritage Area, Tower Hill and Victoria Valley (Grampians National Park).
- Cross-border various opportunities for crossborder partnerships through wind power, water, fisheries and aquaculture and localised education.

Economic opportunities

Climate change presents many opportunities and advantages.

- Transport expansion of Avalon Airport as an international passenger and freight facility development of a north-south transit corridor linking Armstrong Creek with Torquay and Geelong.
- Logistics development of the Port of Geelong and the Geelong Marine Industry Precinct.
- Technology new investment in biotechnology.
- Population growth development of affordable residential land at Torquay, Armstrong Creek and Bannockburn.
- Health care greater emphasis on primary care as the population ages.

28

Agriculture, Forestry and Fishing Jobs (7,054 people or 16.68%)

Health Care and Social Assistance (6,430 people or 15.20%)

Retail Trade (4,536 people or 10.72%)

Low industry diversity (highly

specified economy) - the region

is a major centre for traditional

industries including agriculture

(dairy, meat, wool and grain),

fishing, forestry, mining and

tourism, and is experiencing

growth in energy production.

Industry diversity

Lower industry diversity means less economic resilience to 'shock' impacts from extreme weather

- the region maintains a strong traditional manufacturing and food processing sector, and is experiencing growth in professional services, tourism, international education, healthcare, Information and Communication Technologies

and agribusiness sectors

A diverse and growing economy

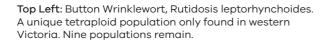
State of the environment

Unique natural systems under threat

The region is home to many unique plants, animals and ecosystems. The region's coastline, forests, grasslands and wetlands provide habitat for unique biodiversity and provide critical ecosystem services underpinning the viability of the region's liveability and industries. For example, our natural systems filter air and water, provide pollinators and act as natural buffers protecting our communities and farms from the impacts of extreme weather like intense storms, storm surge and heatwave. Our natural systems further embody the intangible values for Indigenous cultural heritage and provide opportunities for people to connect to nature – critical to human health and wellbeing.

While various parks and reserves support the region's biodiversity, a growing number of species and ecosystems are considered as threatened and require targeted intervention to reverse their decline. Many of the region's threatened species and ecosystems are due to the historic widespread land clearing from colonisation. However, many threatening processes still exist today. Land clearing, changes to natural processes (fire, flood regimes) and introduced pest species (predators, herbivorous and weeds) continue to drive the decline of our natural systems. The impacts of climate change can exacerbate these threats, particularly for species and ecosystems more susceptible to the impacts of drought (e.g., wetlands), increasing temperatures (e.g., some mammals) and increased fire frequency (e.g., rainforest).

The accumulating loss of our natural systems are driving regional scale environmental, economic and social vulnerability. It is important to monitor and understand what is driving the decline of natural systems to avoid making decisions now, which are maladapted for the future climate.

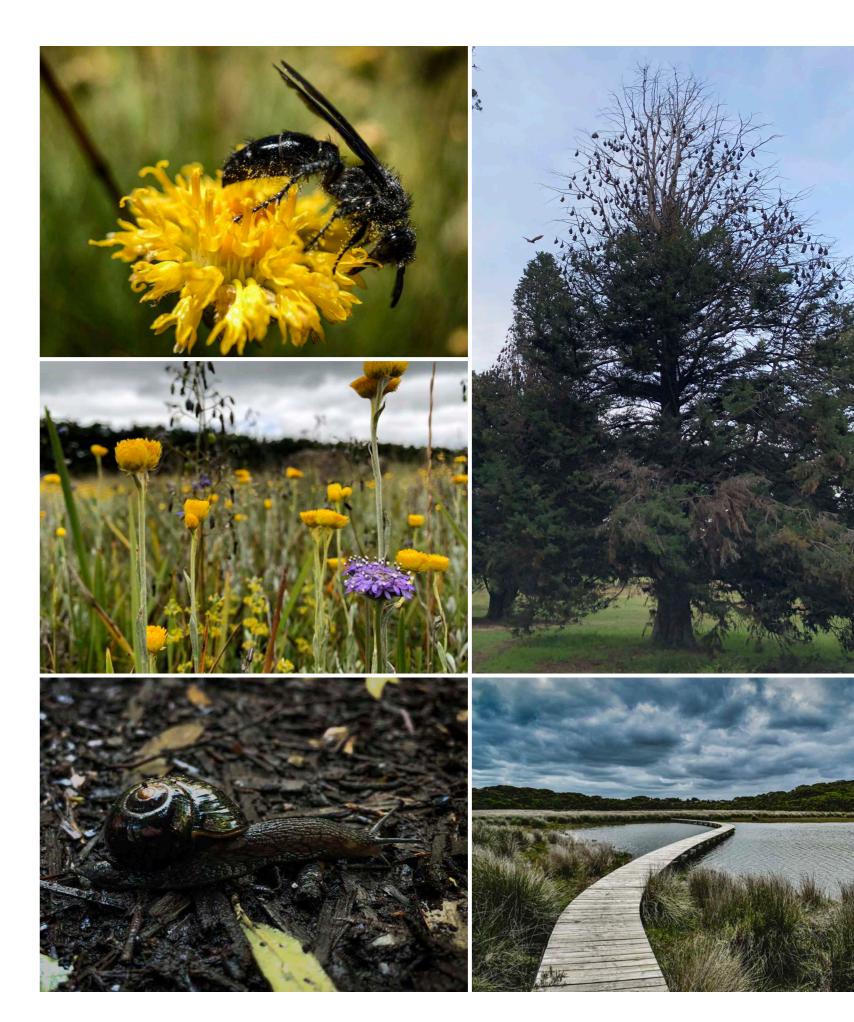


Middle Left: Temperate Grassland of the Victorian Volcanic Plain. Less than 1% of systems natural extent remains today.

Bottom Left: Otway Black Snail. A carnivorous snail found only in the Otways. These snails are very susceptible to damage to their habitat.

Top Right: Grey-headed flying fox. Vital pollinators susceptible to habitat loss and extreme heat.

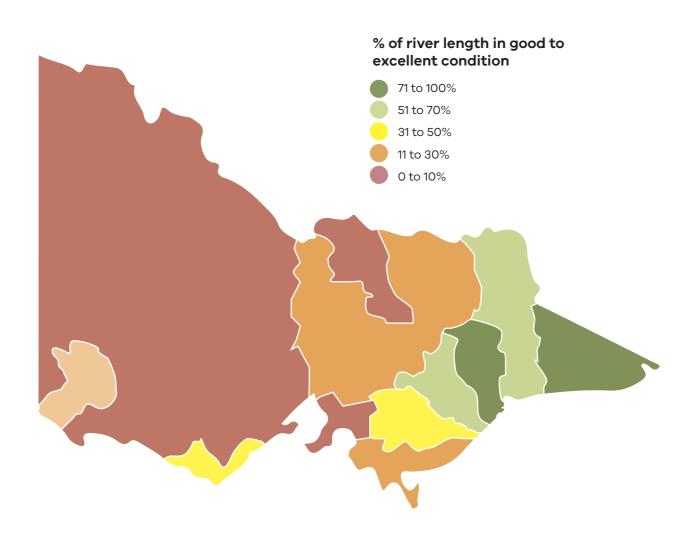
Bottom Right: Ramsar listed Glenelg Estuary and Discovery Bay wetlands.



Our waterways are in poor condition

Our region's natural waterways are degraded. This has been driven by historical European land use (predominantly land-clearing and agriculture), which has resulted in poor waterway quality relative to waterways in the east of Victoria.

Climate change may exacerbate the degradation of waterways, by contributing to reduced water quantity and quality. The reduced availability of good quality water will increase competition between the various community, cultural, environmental and industry uses for high quality and reliable water.



Competing uses for our natural systems

Our region's natural systems support many diverse values and uses - intrinsic values of biodiversity, intangible traditional and contemporary Indigenous cultural heritage, recreation opportunities and provision of ecosystems services. All these things underpin our agricultural and tourism industries and determine regional liveability.

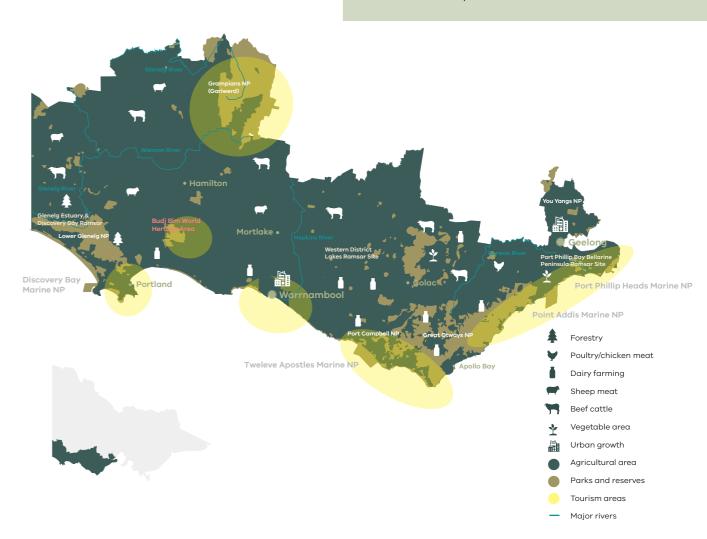
While many of these values and uses are compatible, there are some which have the potential to drive maladaptation. For example, if trade-off decisions about urban development, agricultural expansion and tourism are not monitored,

decisions that are made now can lead to reduced opportunities for future generations to adapt land-use in a future climate. Given the cross-sector nature of these competing uses, collaboration is essential. Collaboration will provide for more equitable decisions about use of natural resources and is essential to monitor trade-off decisions and to avoid maladaptation.

To find out more about our regions natural systems, visit:

Q

South West Climate Change Portal -Environmental Impacts



Section 3: How has the Barwon South West been preparing climate change?

Previous investments

The economic case for climate change adaptation is clear – every dollar spent now on adaptation can avoid future costs of up to six times as much (refer to Victoria's Climate Change Strategy, page 40).



Find out more:

https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0025/522169/Victorian-Climate-Change-Strategy-Accessible.pdf

Over the past decade, government agencies and peak bodies in the region have made significant investments to support their sector and organisation to adapt to climate change. Our water authorities, natural resource managers, local government and agricultural sector have demonstrated strong leadership, having prepared clear adaptation plans and are delivering various adaptation projects. Certain organisations within the community and health services sector are also demonstrating localised leadership to prepare communities for climate change.

These leading organisations have also invested in regional-scale adaptation initiatives. These regional-scale initiatives have strengthened collaboration and partnerships and have instilled an integrated approach into strategic climate change planning. This has shaped our regional research priorities, capacity and skill-building needs, the way we share knowledge and how we deliver on-ground climate change initiatives.

The accumulative impact of these investments is clear – as a region, we understand our key climate risks, we understand what is needed to address these risks and we understand that collaboration is central to supporting our communities' plan for and respond to climate change.

Acknowledging community-driven climate action

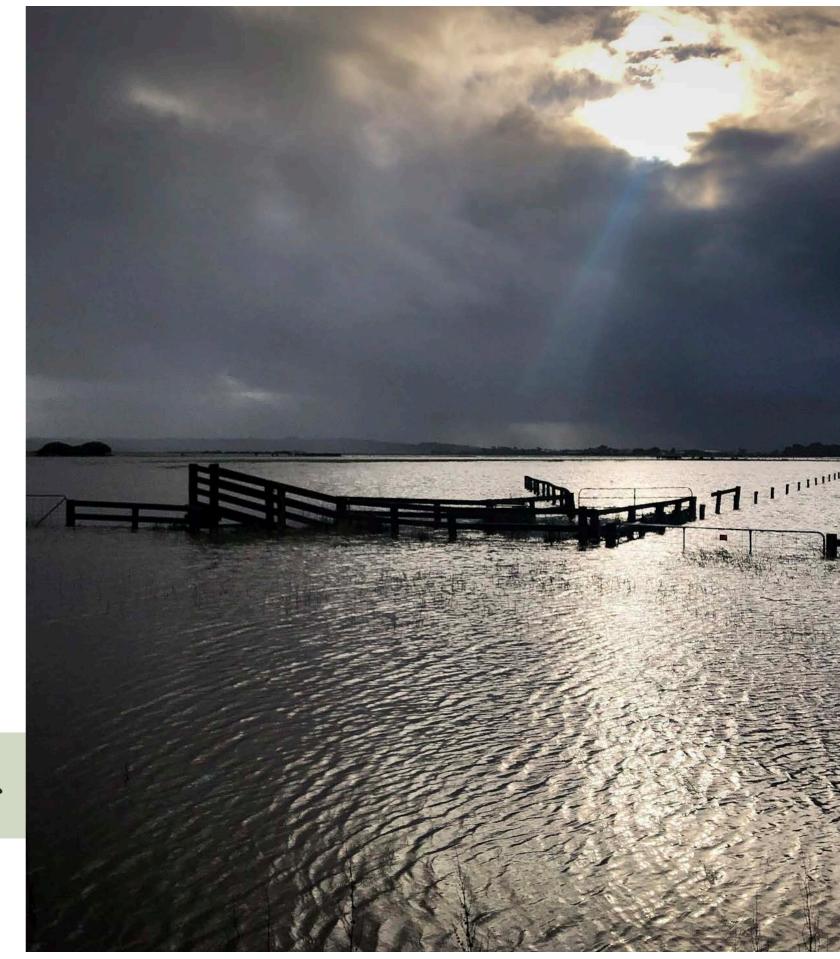
Many community-driven climate action initiatives are taking place across the region. This action is led by community groups and passionate individuals who are determined to support their communities to prepare and respond to climate impacts. For example, local community energy groups are supporting communities to reduce emissions through local initiatives and advocacy, our Neighbourhood Houses are driving circular economy initiatives and our dedicated coastal volunteers are contributing to important data about the way our coastline is changing.

Read more about the broad range of actions communities are taking to tackle climate change through the 'Inquiry into Tackling Climate Change in Victorian Communities.'

Find out more:

https://www.parliament.vic.gov.au/967-epc-la/inquiry-into-tackling-climate-change-in-victorian-communities







Snapshot: previous regional scale investments

2015

Climate Resilient Communities of the Barwon South West

Our Coast project

Barwon South West Local Coastal Hazard Assessments

Victorian Coastal Monitoring Program – establishing citizen science programs

South West Climate Change Portal

Land Capability Assessment - Understanding and adapting
Land Use Capability under a changing climate

Planning for South West's Natural Assets

Barwon South West Climate Change Gap Analysis Snapshot

Community Climate Change Adaptation (3CA) Grants

Virtual Centre for Climate Change Innovation (VCCCI) Grants

Renewable Energy Roadmap

Coastal Infrastructure Project Barwon Regional Partnership project

Preparing Local Government for Climate Change in Emergency Management Barwon Regional Partnership project

2021

FUTURE OPPORTUNITIES

Opportunities to value add upor

Every climate adaptation project that was

Refer to the strategy supplementary may

appportunities that have emerged from a

Opportunities to value add upon previous investments

Every climate adaptation project that we implement, leads to new opportunitie

opportunities that have emerged from our previous investments.

CASE STUDY: Coastal Infrastructure Project.

A project funded by the Barwon Regional Partnership.

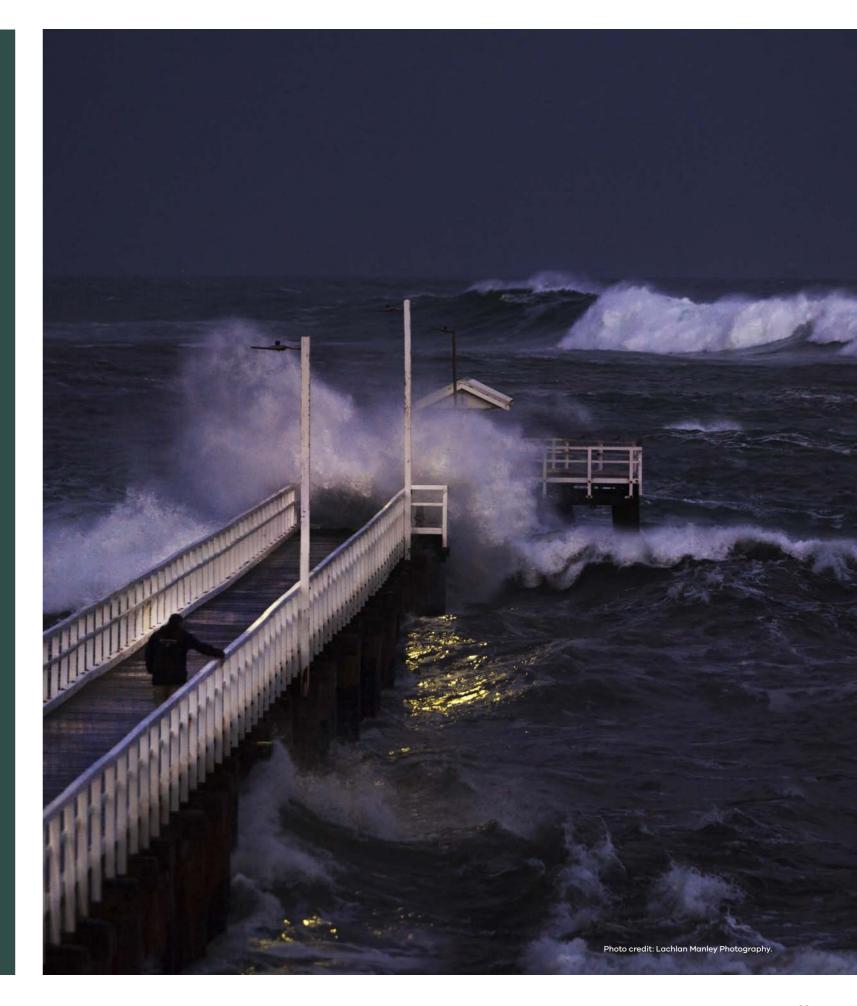
Coastal recreation assets are important to the liveability and economic viability of communities they serve. However, many of these assets are vulnerable to climate change impacts including increased storm events, sea level rise, erosion and population growth.

This project has increased coastal land mangers' capacity to improve asset management practices, better understand coastal hazard risk and develop science-based decision-making processes for future investment.

There are thousands of recreation assets located within 200 metres of marine and coastal Crown land in the Barwon South West Partnership area (Avalon – Marengo). Through this project, they have been GIS-referenced and photographed to reflect the current condition of each asset, categorised into asset classes and uploaded to a regional shared data platform.

The Shared Platform data, once overlayed with up-to-date hazard mapping, will be used to better understand risk, asset service levels, maintenance scheduling and thresholds to determine investment priorities. Coastal land managers have been provided with an asset management system and managed service for continued best practice.

The project includes the development of an investment framework to provide a science-based decision-making process that prioritises strategic future investment. The framework will be piloted within the region with a view to greater use along the Victorian coastline.



Collaborating to understand regional-scale climate impacts

We have learnt from previous investments that a partnership approach to preparing for climate change is essential – it increases impact, better utilises regional resources and builds climate action momentum. To guide cross-sector collaboration, best practice tools were developed including a Climate Change Adaptation Guidance Tool and the Barwon South West Possible Futures Scenarios.

Climate Change Adaptation Guidance Tool

A learning-based approach is critical for effective cross-sector collaboration. To support this, a Climate Change Adaptation Guidance Tool was developed. The tool outlines one approach to guide collaborative climate adaptation planning and build systems thinking about climate change impacts and response.

The tool is a series of engaging workshop activities. The activities enable better appreciation of key regional sectors from multiple perspectives and draws out sector strengths, challenges and important relationships both within and between sectors. In doing so, the tool helps to identify common climate risks and cross-sector interdependencies. This sets the context for cross-sector discussions about ways to address regional-scale climate risks and to identify new opportunities presented by a changing climate.



Sector impacts at a glance

Guided by the Climate Change Adaptation Guidance Tool, the Regional Champions identified a range of sector-specific climate impacts. While many of these impacts are well known within sectors, benefit is gained from sharing sector-specific knowledge across a broader group. Doing so has enabled the Regional Champions to build awareness of regional climate vulnerabilities and to consider their sector within a regional context. This developed the regions skills in systems thinking.

The listed impacts concentrate on biophysical, infrastructure/ service and adaptive capacity climate risks. There are other impacts like regulatory risks (net zero emissions), geopolitical risks (loss of markets), social/ cultural risks (climate justice), governance risks (policy and legislation) and economic risks (local, state and national economic stability), which will affect sectors but are not listed here.

42

	Primary production	Built/ urban environment	Tourism	Health & community	Natural systems	Water Supply	Transport	Emergency management
Key climate risk	 rainfall temperature hot days fire weather √ frosts 	↑ sea level ↑ fire weather ↑ heatwaves ↑ storm surges ↑ flash flooding ↑ extreme storm/hail events	↑ temperature ↑ sea level ↑ fire weather	 ↑ heatwaves ↑ fire weather ↑ solar radiation ↓ rainfall ↑ intense storms/flooding 	 ↓ rainfall ↑ sea level ↑ fire weather ↑ temperature ↑ ocean acidification 	↑ temperature and evaporation ↓ rainfall ↑ sea level ↑ intense storms/ flooding ↑ fire weather ↑ storm surges	↑ heatwaves ↑ intense storms/ flooding ↑ fire weather ↑ storm surges	↑ heatwaves ↑ intense storms/ flooding ↑ fire weather ↑ storm surges
Potential impacts	Changed fodder or pasture production pattern Changed production zones in general Reduction in primary produce volumes Potential change from low-value high-value low-value high-value low-volume produce Changes in production demand Changed distribution of pests and diseases Heat stress on livestock and crops Farm business affected by bushfire Reduced water security Reduced area suitable for forestry Supply chain disruptions Infrastructure damage Power outages impacting operations	Erosion and infrastructure damage along the coastline Increased maintenance cost Increased disruption to services Costs associated with retrofitting assets i.e. storm water piping Increased use of facilities during extreme heat	 Increased threats to tourism infrastructure Damage to popular environmental sites Risks to tourists unfamiliar with conditions Visitor safety and preparedness Impacts to tourism business continuity, may lead to loss of local jobs Over-tourism in some areas (ineffective dispersal of visitors) Cancelled events Seasonality of tourism may change to manage bushfire risk 	More stress on health and emergency services More heat-related deaths, particularly among the elderly and disadvantaged Mental health effects on young people Changes in disease occurrence Increased costs of service delivery Increase demand on services Health impacts of frontline workers Increased domestic violence Deteriorating physical and mental health of communities Reduced social connectedness Increased morbidity	Amplification of existing threats to flora and fauna Changes to habitat Altered disturbance regimes Changing dynamics of invasive species RAMSAR sites particularly vulnerable Contamination of resources Species extinction Drier landscapes Reduced water quality	Damage to water infrastructure drought, fire or flood Increased pressure on water supply Decreased river flow Impacts to water quality (saline intrusion to the water table and blue green algae Increased toxic algal blooms Reduced stream flow volume Reduction in shallow aquifer levels	 Increased maintenance and retrofit costs Supply chain disruption; transport routes via ports, roads, rail or air travel Blocked tourist access to holiday destinations, particularly along the Great Ocean Road Isolation of remote and rural communities Increased service disruption and congestion Reduced access for emergency service Increased operations, maintenance and repair costs Construction interruptions and delays Changes in demand (freight and passenger) Fuel shortages 	 Loss of life Increased work injuries Insufficient preparedness and training of personnel Shortage of equipment and resources High recovery costs Mental health of staff and community High community expectations Reduced accessibility Fatigue of community and staff

Interdependent and shared climate impacts

Having identified a range of sector specific climate impacts, the Climate Change Adaptation Guidance Tool supported the Regional Champions to explore what these impacts mean across sectors i.e., how they might be shared or interdependent.

Discussions identified various climate change impacts (both direct and indirect) that will have cascading and cumulative implications across multiple sectors, and therefore whole-of-system effects. The more sectors affected, the bigger the system's shock – and the greater the need to collaborate across sectors.

The following table provides some examples of the interdependent or shared climate impacts discussed by the Regional Champions. By no means is this an exhaustive list of the region's interdependencies. Our understanding of shared and interdependent climate impacts is constantly evolving as new information, experiences and collaborations expand.

What do you notice?

Many of the region's key climate impacts are shared across sectors. This is indicated by the high number of red and orange dots. This means the more sectors that are affected, the bigger the system's shock – and the greater the need to collaborate across sectors. Therefore, to effectively prepare the region for climate change, it is essential to pool resources and knowledge to work together to address our key climate impacts.

Significant impact Moderate impact Low impact **SECTOR** SHARED CLIMATE **IMPACTS** Health & community Primary production Built/urban environment Tourism Natural systems Water supply Transport Emergency management services DIRECT IMPACT Declining quality of natural systems and ecological processes Increased frequency and severity of extreme weather Coastal erosion and inundation Declining water quantity and quality **INDIRECT IMPACT** Changes to agricultural production zones Damage to critical infrastructure which support communities and services Deteriorating social and emotional health of communities Overwhelmed and exhausted emergency response and recovery support services. Disruption to business continuity

Exploring possible futures: Barwon South West scenario planning

Planning for and responding to climate change requires a long-term holistic approach. Actively envisioning the future, however, is not easy. Various 'megatrends' drive change across our region's key industries and sectors. These trends include patterns of land use, changing demographics, biodiversity loss, the regional economy and technology advancements. How these trends may unfold is unknown, and how they do unfold can have different implications for present-day decision-making. Therefore, to support 'futures thinking,' scenario planning is a useful tool to support longterm climate adaptation planning.

Building upon the previously identified sector-specific and interdependent climate risks, the Regional Champions worked together to explore possible futures for the Barwon South West. The group first identified five key trends considered most important for driving change in the region. The range of trajectories these key trends may take were then threaded together into four different scenarios exploring possible futures for the region. These scenarios help us consider how the region's climate risks may unfold alongside other trends driving change.

Key trends driving change in Barwon South West

The five key trends (aside from climate change) considered most important for shaping the Barwon South West in the coming decades.

Regional collaboration – Level of collaboration and coordination across sectors in the region regarding planning and investment.

Regional migration – Permanent and temporary movement of people from Melbourne and other parts of Australia, including farmers, to Barwon South West.

Economic system change (growth, circular, steady-state) – The economic system drives the characteristics of the local economy.

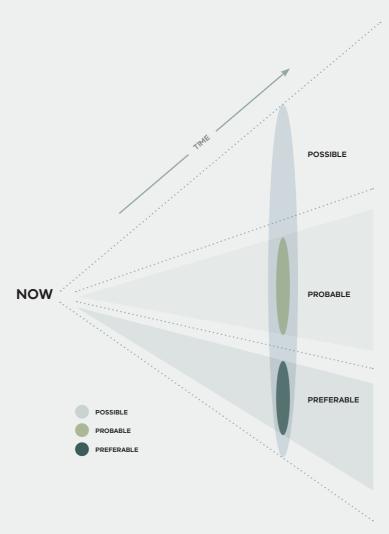
Quality of natural ecosystems (habitat conservation, species diversity, functioning natural processes) – The quality of natural ecosystems is driven by the level of habitat conservation, species diversity and functioning natural processes.

Competition for resources (water, land, materials) – The availability of key resources including water, land and material directly affects the level of competition and price.

The Barwon South West possible futures scenarios

The Barwon South West scenarios provide alternative futures about what is probable, possible and preferable. The scenarios tell a story about how our future could unfold based on different trajectories of the region's key trends. Refer to the strategy's supplementary material for a copy of the scenarios.

The scenarios are presented here on a 'future's cone'. The future cone is a tool designed to help structure thinking about different possible futures. It helps to visualise that the actions we take now set the course for the future. This helps to plan for a desired future.



Fragile & failing

Key factors driving this possible future

- High regional migration and turnover of population
- High competition for resources
- Low regional collaboration

Surviving not thriving

Key factors driving this possible future

- Steady-state economic system
- High competition for resources
- Low regional collaboration

Transforming together

Key factors driving this possible future

- Circular economy
- High quality natural ecosystems
- Inclusive and collaborative

Ecocentric & ambitious

Key factors driving this possible future

- High quality natural ecosystems
- Decoupled GDP and prosperity
- Inclusive and collaborative



A desired future for Barwon South West

Exploring these possible futures enable the Regional Champions to articulate their collectively desired future for the Barwon South West.

- Our region and communities are working collaboratively.
- Our communities are empowered.
- Our region embraces continual learning to build skills and knowledge to support climate change planning.
- The health and wellbeing of our communities is supported.
- We plan for the longterm with equity at the centre (social, environmental and intergenerational equity).
- Our region and communities are enabled to act.
- Our region values the intrinsic connection between humans & nature in decisionmaking.
- Our community lives sustainably, utilising resources within sustainable limits and valuing waste as a resource.

- 'Prosperity' has been reframed to include a holistic understanding of value (environmental, social, cultural and economic value).
- Sectorspecific challenges are addressed.
- We are innovative.
- Our region has transitioned to renewable energy.
- Our region recognises our viability is linked to earth systems (planetary boundaries) and acts responsibly for the global context.
- Decision makers are transparent and monitor power imbalances supporting community trust.

Section 4: Focus areas and opportunities to work together

The following focus areas identified by the Regional Champions provide a signpost to our opportunities to work together as we continue to plan for and respond to climate change in the Barwon South West. They connect current climate initiatives and community drivers with our key regional-scale climate risks – those risks that will have cascading and cumulative implications across multiple sectors, and therefore whole-of-system effects.

The Regional Champions identified that any climate change adaptation project needs to be carried out inclusively, with all affected by a decision to be part of the decision-making process. This overarching strategy needs to be a consideration in the planning and development of all projects and programs developed through any or all of the 12 key focus areas identified.

Building a business case for action

The focus areas and opportunities provide a business case for climate action in the region. The preceding sections of this strategy capture the reasoning behind our need to plan, support and lead climate change action and outlines the collaborative process the region is taking to work together to achieve this. Whether it be through funding projects or capacity building programs, this strategy provides the business case to direct resources and effort in the coming years.



Regional focus areas and opportunities

	ADDRESS FOCUS AREAS WITH COLLABORATION BETWEEN							
Primary production	Built-urban environment	Tourism	Health & community services	Natural systems	Water supply	Transport	Emergency Services	
Traditional Owners	Young people	State & Local Government	Industry	Community based organisations	Researchers	Buisness	Community	

FOCUS AREAS AND OPPORTUNITIES

A. Maintain functioning natural systems with our future climate in mind

Opportunity: Trial targeted interventions to support climate vulnerable species, ecosystems and ecological processes.

B. Strengthen emergency preparedness

Opportunity: Build the capacity of primary healthcare, community service, tourism and agricultural organisations to contribute to emergency management planning.

C. Expand regenerative agriculture

Opportunity: Build upon and expand regenerative agriculture opportunities to build diversity into agricultural systems and value-add to produce.

D. Communities and agencies working together on coastal planning and response

Opportunity: Place community and cross-agency partnerships at the centre of coastal planning and response.

E. Increased investment in community health and wellbeing across sectors

Opportunity: Cross-sector investment in community health and wellbeing as a preventative measure for people who are vulnerable and disadvantaged, for a resilient workforce, for industry viability and for regional liveability.

F. Upgrade urban environments to ensure liveability under climate change

Opportunity: Upgrade our cities and towns to cope with heatwave and flash flooding, and transition to a circular economy.

G. Diversify water supply

Opportunity: Build understanding about the region's aquifers and explore new water supply options like reclaimed water and desalination for drought preparedness.

H. Ongoing education, skill and capacity building for climate change planning and response

Opportunity: Tailor education and capacity building support to needs. Targeted support for young people and low-capacity groups to contribute to regional climate change planning and response.

I. Mainstream climate change across government agencies

Opportunity: Mainstream climate change planning and risk management across all areas of government agencies and authorities.

J. Empower local communities with focus on climate equity

Opportunity: Expand funding avenues by targeting local, place-based climate change initiatives, including extreme event recovery initiatives.

K. Identify and monitor trade-offs which could drive maladaptation

Opportunity: Identify potential counterproductive actions which could undermine future capacity to prepare and respond to climate change e.g., monitor competing demands between agriculture, urban development, natural systems and water.

L. Target emissions-reduction support

Opportunity: Target support to our highest emitting sectors to transition to renewable energy and carbon neutrality standards.



What was heard though engagement submissions

Consultation with the broader community provided strong support for the 12 focus areas from A-L. The following pages provide direct quotes of community views heard through the Engage Victoria consultation.

A. Maintain functioning natural systems with our future climate in mind.

"You know the stats, and we are in deep trouble here. Not only does all our health and wealth in the end derive from the natural world - and I'm not talking about resource extraction here, but our fresh good food, our clean water... and the opportunity to walk in or connect with real (not virtual) beautiful unspoilt places. Not only do we have a biodiversity and extinction crisis, but seriously high and growing levels of depression and anxiety in people, especially children and young people."

"The Otways is an absolutely critical set of ecosystems for climate change and biodiversity. At all costs, we need to manage this carefully."

"Work with Traditional Owners to co-manage the land, including more emphasis on cultural burning and understanding of species and seasons."

"Support the ecosystems that sequester carbon best, we get the double benefit of ecosystem resilience and mitigating climate change."

CASE STUDY: Preparing Local Government for Climate Change in Emergency Management.

A project funded by the Barwon Regional Partnership.

The Barwon Regional Partnership area has prepare for and respond to potential recently experienced a number of extreme weather events which triggered wildfires, flooding and landslides. This has resulted in significant financial and social costs to local and regional communities. Climate scientists advise that extreme weather events are likely to increase in frequency and intensity under future climate change scenarios. Under a business-as-usual approach, emergency response and recovery costs will increase dramatically, and communities will experience significant disruptions to their life.

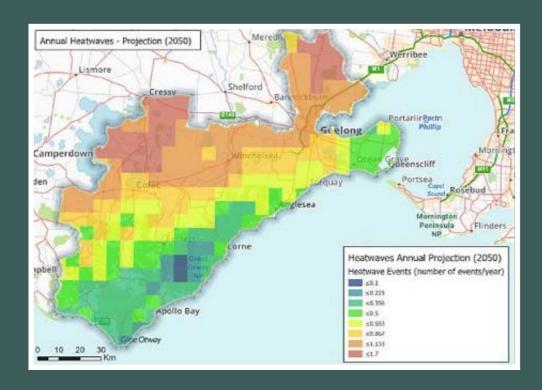
This project provided the Barwon Regional Councils with an improved understanding of where future extreme weather events

are likely to have the greatest impact to communities, services and infrastructure, and helped build councils' capacity to emergency events.

Delivery of this project highlighted that

- Many investments are still project based and do not translate into systems / operational changes or changes to business as usual.
- Climate projections will have large ramifications for all aspects of Council business.

This project provided Councils and DELWP with a detailed understanding of the potential impacts of climate change, and where funding needs to be prioritised to help mitigate these potential impacts.



B. Strengthen emergency preparedness.

"More stress testing and scenario planning of different emergencies expected in our region. Better communication and collaboration between agencies, it would be good for everyone to be operating under the same process and framework instead of in isolation."

"Link community programming and organisations to CFA and other state emergency related agencies. In Forrest, we hope to develop a community hub with the Neighbourhood House, the CFA, a bushfire place of last resort, co-working spaces, and education facilities which enable visitors and schools to engage with the environment of the Otways and learn more about climate change, biodiversity, sustainability, etc."

"The community sector could be invited to participate in local emergency planning processes. Organisations could also be involved in codesigning communication targeted at residents most at risk during emergencies, such as low-income households or people who have recently arrived in Australia."

"...Preparedness MUST MEAN designing and implementing emergency-resilient infrastructure systems (information/telephony; roads and other systems of egress); fire retardation and protection/shelters; distributed (localised and connected) water, energy and food systems".

CASE STUDY: Keeping Carbon on the Farm.

A project funded through the Virtual Centre for Climate Change Innovation (VCCCI) Grants.

Project lead: Heytesbury District Landcare Network and partner organisations.

A pilot project to support dairy farmers and primary producers to improve soil and animal health while also reducing their greenhouse gas emissions. The project established a demonstration farm site to showcase a series of activities that farmers can use to prepare for climate change. The demonstrations included revegetation activities, carbon-sequestering, soil-amelioration and energy-reduction strategies.

The outcomes of the project saw an increase in carbon-sequestration in soil profiles, a reduction in energy usage and better understanding of how climate change will impact dairy farmers. It is also expected that soil health, animal health and general productivity will improve on the project farm.

Heytesbury District Landcare Network are expanding their work through a follow up project, Increasing Soil Carbon. This major new project will show how increasing soil carbon on 20 Heytesbury district farms can lead to food production and climate change benefits. This project is funded by the Lord Mayor's Charitable Foundation.



C. Expand regenerative agriculture.

"We have many farms in our area who have been doing this for over 50 years and are great examples of the benefits."

"Ensure that food products that come from expanded regenerative agriculture are promoted. This may work in the same way that grocers/supermarkets promote organic vegetable products. It may result as an added incentive to producers to engage in the process if it results in greater sales."

"Workshops, field days, grants, council incentives would all help increase awareness of how to introduce and improve regenerative agriculture in local areas. Councils should be encouraged to use local regenerative farms to offset their own emissions, rather than outsourcing offsets."

"Protection of biodiversity amongst productive agricultural systems should be prioritised."

D. Communities and agencies working together on coastal planning and response.

"Communities must be engaged in the process of coastal planning and response. We must challenge the notion that it is all too big to tackle and engender an 'act local' approach to preserving and restoring coastal degradation."

"Communities must be engaged in the process of coastal planning and response. We must challenge the notion that it is all too big to tackle and engender an 'act local' approach to preserving and restoring coastal degradation."

"Community should be at the heart of all planning - as recent Victorian laws make clear. The reason is you get better ownership, more ideas addressing more issues, which leads to better outcomes. What is also always needed here is public awareness, so people make informed responses"

"Of course this should be a focus, it should have been for the past 50 years but unfortunately these are just words and will not be acted on. Our example in Princetown has seen agencies ignore hundreds of objections and information from the local community, about inappropriate development on a dynamic flooding coastal wetland system that is already being impacted by climate change/sea level rise. The agencies have ignored the community with flood risk to life as well."

Find out more:

Visit https://www.pfcg.org.au/ to find out how the Port Fairy Coastal Group contribute to coastal management decisions.





E. Increased investment in community health and wellbeing across sectors.

"We have to learn from the pandemic - the best investment and solutions for community health and well-being arise from decentralised systems. Need to support communities to respond to a regional focus for factors affecting health and well-being with localised solutions."

"Decrease the gap between the haves and have nots. Poverty traps people into a vicious circle, where they cannot make good sustainability choices."

"Ensure a strong level of underlying resilience - address lack of housing and financial vulnerability issues."

"Ensure that preventative measures are put in place: increasing municipal/ neighbourhood tree canopy targets; ensure that pre-season risk information and advice is distributed by the local council e.g., extreme heat, fire, wind and rain; ensure that recovery measures are couched in terms of dealing with the effects of climate change thereby raising awareness of the latter."

Find out more:

Visit http://sggpcp.com/projects/ to find out more about how Southern Grampians and Glenelg Primary Care Partnership are developing capacity and leadership around climate change and health.



F. Upgrade urban environments to ensure liveability under climate change.

"The energy efficiency of housing should be improved to help residents cope during heatwaves, with support targeted at low-income households, renters and public housing tenants. Public buildings could also be upgraded to be resilient during emergencies and act as shelters from flooding, bushfire smoke and extreme heat."

"Current planning and design approaches only take an incremental approach to improvement. We MUST be planning, designing (and retrofitting) for the best predictions of climate related change in 50-100 years. We design and build currently with an expected life of 50 or more years - although retrofitting will be a significant activity (and employment) to deal with the past design/build/plan decisions we cannot continue to reply on."

"My town in the Otways is under enormous risk from bushfire, yet planning to protect its people has been very limited to date. A bushfire refuge or at least a 'safer place' is badly needed as simply telling people to leave town on extreme and code red days is not a well thought-through strategy."

"Water Sensitive Cities approach by Prof Tony Wong and his centre for excellence Monash University provides a fabulous model for retrofitting cities to cope with water shortages, heatwaves, flash flooding, etc."

CASE STUDY: Climate Safe Rooms.

A project funded through the Virtual Centre for Climate Change Innovation (VCCCI) Grants.

Project lead: Geelong Sustainability Group.

A 'climate safe room' is a room in a home that has been retrofitted to ensure residents are safe during extreme temperatures (heat and cold). The project involved household energy and thermal comfort upgrades to 16 eligible households across the Geelong area. The project upgraded a room to be more energy efficient (e.g., draught proofing) and then installed a highly-efficient reverse cycle air-conditioner (for heating and cooling), along with a small solar system to generate the electricity needed to operate the air-conditioner and offset its running costs.

The participants are now enjoying reduced power bills and a safer home during extreme temperatures.





G. Diversify water supply.

"Evaluate existing diversion/removal of water from rivers and streams for commercial and private use - too much water is being taken from the system, contributing to the problems in estuaries."

"There needs to be a careful tracking and cross-location/sectoral allocation - so that households in Geelong are balanced with food producers in the region in which the rain falls and are balanced against keeping aquifers and river systems healthy."

"Country people are well aware of the importance of being drought-ready, it's the new sea change people who need to be prepared and made aware."

"Improve stormwater management, capture a high percentage of stormwater to be used at a number of sites, including irrigation for ovals, agriculture and gardens. Expand the recycled water network so that all houses have access to recycled water for the garden and other household uses. Keep potable water ONLY for drinking. Make water-sensitive urban design mandatory in all new developments."

"We need to have multiple solutions such as efficient water harvesting, recycled water, efficient household devices to prepare for drought. This should extend from the individual household through to Barwon Water."

H. Ongoing education, skill and capacity building for climate change planning and response.

"Allow community to form committees that work with local and state government as advisors... Those in power need to work with the community more - don't shut us out. Involve us in the solutions. Citizen juries."

"People need to have clear, normalised direction and opportunity to use their own agency to be part of the solution. The political atmosphere has paralysed many so organisations such as DELWP - public servants - and partners need to urgently step up the awareness-raising and engagement, with all groups especially those most vulnerable, most disadvantaged for they will most likely be the hardest hit."

"Regional, township or LGA based community reference groups who can help be spokespeople for their community but also relay info back into community. Work with existing clubs and groups so that planning and response is captured in mainstream society. Identify low-capacity groups and meet with them to discuss what could support them."

"It is important to target low-capacity groups and 'leave no one behind,' but we actually need to target the source of irresponsible decisions that authorise inappropriate developments against the public interest."

I. Mainstream climate change across government agencies

"Government Department Dep Secs are designated Resilience Managers for their group and tasked with risk analysis, monitoring and regular reporting so that they build a top-down culture, take ownership, showcase their work and educate staff on changes needed in decision-making, e.g., Ambulance Victoria, SE Water, Transport Sector Resilience Networks."

"A simple idea is that responsible authorities could listen to the climate science data around planning and risk management already available to them, instead of listening to developers or self-interested tourism bodies. It seems climate change science and planning are already included into the government agencies and authorities, but they can just 'choose' to ignore it, like in Princetown wetlands case, when large-scale tourism development on a coastal floodplain is preferred."

"Country people are well aware of the importance of being drought-ready, it's the new sea change people who need to be prepared and made aware."

"Really need leadership from federal government and then state, local gov and other agencies can all take streamlined action. Advocacy to fed govt on a uniform approach and more action. Continue and strengthen regular opportunities for agencies and local govt to come together to learn and share. Encourage this issue to not be led and owned by environment and sustainability areas of the organisation but from all departments and leadership."

"I couldn't agree more... Climate change and climate change action need to be normalised, people need to be informed of the URGENCY involved in the task to transition to a low-carbon economy with all the opportunities for new renewable industries as well. The more the issue of climate change and the need for action on it becomes mainstream, the sooner people will get it - we need to ACT. Now."





J. Empower local communities with focus on climate equity.

"Local knowledge is invaluable Citizen Science works!"

"There needs to be a careful tracking and cross-location/sectoral allocation - so that households in Geelong are balanced with food producers in the region in which the rain falls and are balanced against keeping aquifers and river systems healthy."

"I completely agree. The Forrest Gateway to the Otways project aims to be exactly that. However, this doesn't mean that massive, coordinated government initiatives aren't super critical. We need both."

"Encourage collaborations... Too many organisations are doing their own thing because it is easier. Consequently, there is duplication of effort and projects. This could be a role for government agencies to investigate who is doing what, where."

"This pits local communities against each other and encourages survival of the fittest. It's important to empower local communities but not exclude those who are not already well organised or who have larger populations on which to draw resources."

Find out more visit:

https://www.forrestvictoria.com/directory/listing/forrest-gateway-to-the-otways



K. Identify and monitor trade-offs which could drive maladaptation.

"Ensuring that climate change is included as part of a social and economic impact assessment for all key projects; and ensure that Councils have the necessary expertise/resources to assess each application."

"A difficult but important question. Bottom line - it requires promoting conversations between citizens at every opportunity. Work with the willing. Provide safe spaces for those with different ideas and perspectives to express themselves/hear others. The online environment has huge potential, Let's build on that!"

"The main focus here should always be care of a flourishing environment. Without this, all the other goals of human health and endeavour are undermined. Literally. DELWP is clearly seeking to mainstream new, urgently needed thinking (well done), which also means challenging the old thinking - not easy but necessary."

"Again, begin by working with schools to educate children about the primacy of a healthy environment for their own future health and wealth. Expand this education into the parent and carers community. The role of local councils is to prioritise environmental protection and climate change mitigation above economic/business considerations. Without a healthy environment, no community will thrive."

L. Target emissions-reduction support.

"Electrify all rail. Electrify all buses. Trial electric / hydrogen freight trucks. Shift freight to rail as far as possible. Trial electric shuttle buses from transport hubs to key infrastructure. Methane gas trials, e.g., seaweed diet, trap for energy use. Subsidies to farmers to electrify their tractors, etc."

"What of Carbon Farming for carbon credits? A federal scheme could be operationalised in the BSW region. And what of the idea (evident in some urban council's climate strategies - e.g., Maribrynong) of urban councils sourcing carbon credits from rural councils? Rather than get 'cheap' and possibly not credible credits from overseas, why not a carefully regulated and promoted scheme to enable urban councils to source their credits more locally, nearby regions, within the state. There is an opportunity for considerable co-benefits here too."

"Infrastructure Victoria have developed a comprehensive set of recommendations to promote faster uptake of electric vehicles after a deliberative consultation process involving 200 participants. The State Govt has adopted 8 of these already but there are many more that deserve implementation. Promotion of carbon-sequestering agriculture techniques should be made a high priority for all rural shires, possibly with partnerships between city and country councils by which city councils can offset their emissions through agreements with particular country councils as an incentive."

"Withdraw the diesel fuel subsidy from trucking companies and farmers. Instead, subsidise purchase of electric vehicles and install battery-swap facilities along major highways for trucks."



Find out more visit:

Visit https://www.geelongsustainability.org.au/ to read about how the Geelong Sustainability Group are collaborating with people and organisations for action on climate change.



Section 5: The strategy

The strategy: Climate change adaptation projects will be carried out in partnership with all affected by a decision to be part of the decision-making process. Climate equity will be central to achieving an inclusive and just process. This overarching strategy needs to be a consideration in the planning and development of all projects and programs developed through all the 12 focus areas.

Why is climate equity so important for the region?



We are an aging population.



We have high levels of chronic disease.



We have communities living with high levels of entrenched social disadvantage.



We are a highly dispersed population.



Our natural systems are fragmented, reducing natural resilience.



Many of our unique plants and animals are in decline.

Delivering climate adaptation projects

The Project Control Group comprising of cross-sector representatives are trialling new ways of working together to prioritise regional adaptation investments. The focus of this group is to collaboratively direct regional investments to guide the implementation of this strategy. This group is guided by our key principles both in the way they work together and the way they prioritise funding.

Next steps in our action learning approach

This document captures the region's current focus areas for collaborative climate change adaptation. The thought behind the focus areas is continually evolving making an action learning approach to implementation essential. There is no end point, just continued action learning cycle – Plan. Act. Reflect.

Guiding principles essential for implementation

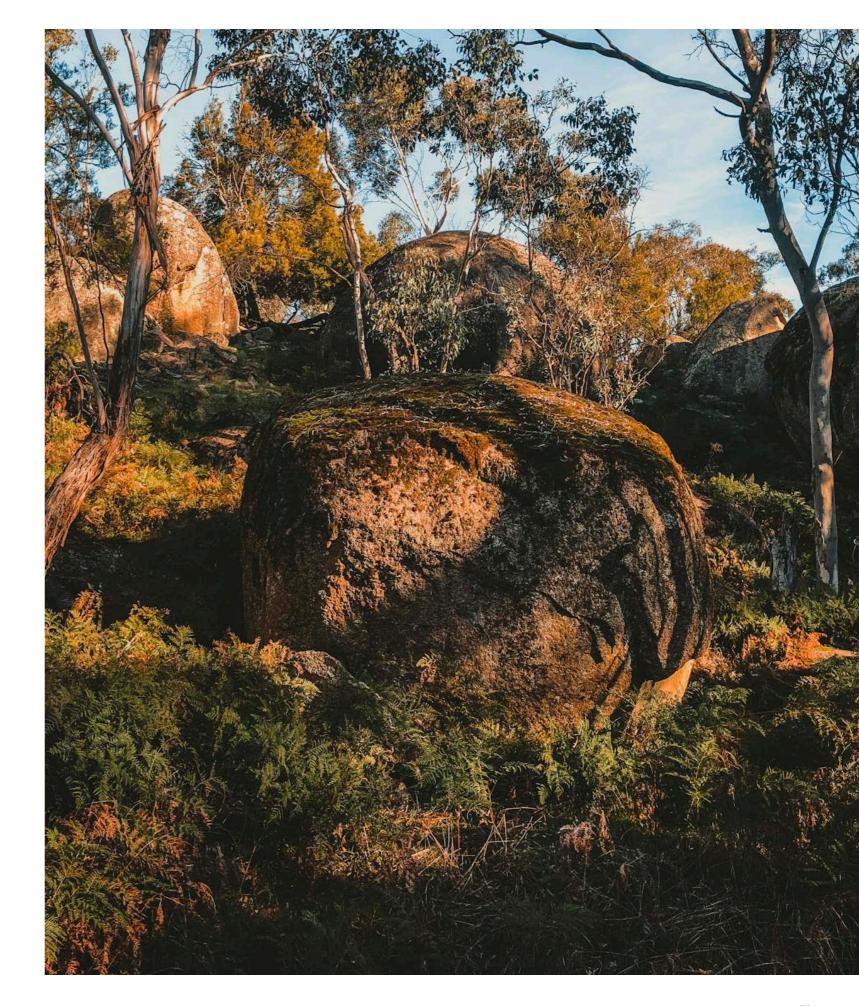
Equity – Environmental, social & inter-generational. Putting the people and places that are most vulnerable at the forefront of decision-making.

Inclusive - Actively seek and value diverse views and perspectives - include the people who will be affected by decisions in the decision-making process.

Collaboration - Place partnerships at the centre of our climate change planning and response – actively seek new partnerships and strengthen existing ones.

Deliberative learning - Use deliberative learning and reflection to drive action projects - connecting what we've learnt with implementation.

Use best available information and tools - Ensure decisions are driven by best available information and tools.



 $_{9}$

Release of the Barwon South West Climate Adaptation Strategy

WE ARE HERE

Hearing from young people

Implementing the Barwon South West Climate Change Youth grants program Green Futures Now project, Warrnambool City Council

Surf Coast Youth for Climate project, Surf Coast Shire Council

Listening to Traditional Owners

Implementing engagement with Traditional Owners and Aboriginal corporations.

Developing a discussion paper 'Climate Change: Impacts to Country and Community' to guide yarns on Country.

Deep dive into Engage Victoria survey findings

Sense making of community contributions into this stratgey with regional agencies and policy makers.

Delivering climate adaptation projects

The cross-sector Project Control Group collectively guiding regional investment:

Developing a Climate Resilient Water Network: Assessing the risk of drinking water contamination from thermal degradation of plastics and heavy metals during wildfire, Barwon Water and partners.

Collective Learning for Climate Action, Southern Grampians Glenelg Primary Care Partnership and partners.

Adaptation Pathways for Biodiversity of the Barwon South West, Corangamite Catchment Management Authority, and partners.

Establishing a Barwon South West Climate Alliance, Warrnambool City Council and partners.

Developing a 'Human Life Loss Probability Framework for Bushfire CSIRO/Data61 and partners.

Establishing a Climate Refuge and seedbank for unique flora threatened by climate change: Victorian Volcanic Plain and Grassy Woodland restoration, Wannon Water and partners.

Engaging with 'hard to reach' sectors and organisation

Tailoring engagement to support community-based organisation prepare.

Build understanding of climate equity

Build a regional understanding of climate equity and ways to incorporate this concept into planning and response.

Working with policy makers

Share information collected through the development of this with policy makers.

Value adding to previous investments

Adding value to previous adaptation investments delivered through other funding programs outside of the Supporting our Regions to Adapt Program.

Value adding to this strategy using supplementary information

To support an action learning approach, supplementary information will be developed to accompany the implementation of this strategy. This information will be found on the South West Climate Change Portal http://www.swclimatechange.com.au

Supplementary information to the strategy available at this point in time:

- Climate Adaptation Guidance Tool
- Barwon South West Possible Future Scenarios
- Prospectus Value adding to previous climate adaptation investments
- Climate Change: Impacts to Country and Community discussion paper
- What We Heard: A summary of community contributions into the Barwon South West Regional Climate Adaptation Strategy
- 2020 Climate Adaptation Workshop Series with the Regional Champions – workshop reports



Acknowledgement

Thank you to all the organisations and individuals who have contributed to the development of this Regional Climate Adaptation Strategy.











































































































