

# Victoria's Climate Change Adaptation Plan

2017 - 2020



## Aboriginal acknowledgment

The Victorian Government proudly acknowledges Victoria's Aboriginal community and their rich culture, and pays respect to their Elders past and present. We acknowledge Aboriginal people as Australia's first peoples and as the Traditional Owners and custodians of the land and water on which we rely. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life and how this enriches us. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

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# The Minister for Energy, Environment and Climate Change

## Minister's foreword



Over the past twelve months, the Andrews Labor Government has been talking to and working with communities around Victoria about what they need to do to plan for a changing climate, and how to safeguard our prosperity into the future.

Victoria's plan for a transition to clean energy will create a thriving, secure future for our communities.

We have a great track record for leading the nation in economic growth and creating new investment and employment opportunities.

At the same time we need to ensure our businesses and communities are supported in adapting to the impacts of climate change. Reducing our emissions will lessen the impact of climate change, but it will not prevent it. A certain amount of change is inevitable and we must prepare ourselves for what climate change will bring.

Victoria's Climate Change Adaptation Plan 2017-2020 is a key component of this.

The Plan is a blueprint to prepare our state to meet the challenges of climate change and take action to secure our future.

The Plan will:

- build a detailed understanding of Victoria's exposure to climate change risks and impacts
- catalyse partnerships for integrated and effective responses to climate change
- tackle immediate priorities to reduce climate change risks.

We will commission, and share, up-to-date climate change data to ensure the Government and the community can understand and manage the risks and impacts of climate change.

Local government and community organisations have already done great work to help Victoria adapt to a changing climate. It is time for the State Government to lead.

We will continue to support and collaborate with local government and other organisations to make our communities resilient to the impacts of climate change.

By focusing on emergency management, the natural environment, agriculture, the built environment, water and health, we will support communities to be healthy, connected and resilient.

I would like to thank the many representatives of councils, organisations and other Victorians whose consultations helped inform the development of Victoria's Climate Change Adaptation Plan.

Working together, we will ensure all Victorians and future generations can enjoy our wonderful state well into the future.

A handwritten signature in blue ink, appearing to read 'Lily D'Ambrosio', written in a cursive style.

The Hon. Lily D'Ambrosio MP

Minister for Energy, Environment and Climate Change  
Minister for Suburban Development



## Executive summary

Global momentum is building for national, sub-national and local governments to take ambitious action that helps communities adapt to the impacts of climate change. In Paris in 2015, 194 countries committed to enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change.<sup>1</sup>

The Andrews Labor Government is working to restore Victoria as a national and international leader on climate change action. The Government is committed to action to keep global warming below 2°C above pre-industrial levels. However, we also need to prepare for a range of possible futures resulting from climate change. Developing a robust approach to adaptation is the first step.

Victoria's Climate Change Adaptation Plan 2017-2020 (the Adaptation Plan) lays out a blueprint for action that will help our state meet the challenges and act on the opportunities of climate change. It will help us sustain a thriving natural environment and make sure Victoria is a healthy, prosperous, safe and vibrant place to live, work and play for all Victorians, and for the thousands of visitors we welcome each year.

The Adaptation Plan lays out the priorities for the next four years for the Victorian Government to better understand and manage current impacts, and to prepare for the long-term risks of climate change. It lays the groundwork for a new approach to adaptation from 2020, under the proposed new *Climate Change Act*.<sup>2</sup> It will clarify the role of the Government, and help all Victorians understand how they can take action.

Adapting to climate change is a complex and evolving challenge for the Government and the community, and we all have a role to play. Businesses and individuals are often best placed to manage risks to their own private assets and infrastructure. The Government provides up-to-date information and data to help them do this effectively.

However, the Government also recognises that sometimes it is not possible for communities, businesses and individuals to manage their risks alone. The Government's role is to lead and coordinate state-wide action, and help people and organisations work together to understand and address common challenges. The Government can also provide extra support to help people adapt, especially for vulnerable communities.

The Adaptation Plan will help us all to play our part and work together to achieve our vision. It explains how the Government will support adaptation and coordinate action on different scales (local, regional and sectoral) and how it will embed climate change considerations across Government.



Over the life of this Adaptation Plan, the Government will:

- **More effectively manage risks to the Government's own assets and services from climate change** by assessing the Government's current capabilities and practices and addressing whole-of-government risks and impacts in a more coordinated way.
- **Help the community to understand and manage the risks and impacts of climate change**
  - o Provide guidance and up-to-date information. As our understanding of potential climate change impacts becomes more sophisticated, we need to update the information and guidance that communities and decision-makers rely on to manage their risks.
  - o Work with local governments to support their close relationship with the community and their responsibilities to it. Local governments are primary partners in supporting the community to adapt, and the Government is committed to revitalising a strong and productive partnership with local government on climate change.
  - o Support adaptation in Victoria's regions to help rural and regional Victorians manage their unique challenges. Regional adaptation planning will complement Victoria's nine Regional Partnerships, strengthening connections within and between regional communities and building the resilience of our regions.
- **Encourage adaptation action across all policy areas and sectors of the economy** by strengthening the consideration of climate change in policy and regulation in health and human services, emergency management, the natural environment, agriculture, water and the built environment. The Government will also introduce a new sector-based approach to adaptation planning, in preparation for sectoral Adaptation Action Plans under the proposed new legislative framework.

The Adaptation Plan explains the Government's current and ongoing responses to the impacts of climate change, and outlines new initiatives that will build Victoria's capacity to adapt to climate change now and in the future. The Government is committed to delivering these actions, and will apply a best-practice monitoring and evaluation framework to measure our progress over the next four years.

Government action will evolve over time as our understanding of the risks and impacts of climate change improves. However, the Adaptation Plan is an agenda for action now to help all Victorians meet the challenges of climate change.

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## Key terms

### **Adaptation**

Changes in natural or human systems to prepare for actual or expected changes in the climate in order to minimise harm, act on opportunities or cope with the consequences.

### **Adaptation Action Plan (AAP)**

Under the proposed new *Climate Change Act*, nominated Ministers must prepare Adaptation Action Plans (AAPs) for key systems that are vulnerable to climate change impacts. AAPs will include an assessment of climate change-related vulnerability and risks to the system; an outline of roles and responsibilities for adaptation in the system; a list of actions to be implemented under the AAP; and a monitoring and evaluation plan to assess the effectiveness of the AAP.

### **Adaptive capacity**

The capability of a system, sector or social group to adjust to climate change, to minimise harm, to act on opportunities, or to cope with the consequences.

### **Climate change**

Changes in the state of the climate, including an increase in extreme weather events, long-term changes in weather patterns and sea level rise, attributed directly or indirectly to human activity.

### **Maladaptation**

Adaptation action that adversely affects other systems, sectors or social groups, increases their vulnerability or increases greenhouse gas emissions.

### **Paris Agreement**

A global, legally binding climate treaty that covers emissions reduction, adaptation and finance, and commits to limit global warming to well below 2°C above pre-industrial levels. The *Paris Agreement* was negotiated at the 21<sup>st</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change in December 2015, and has been signed by 194 countries. It entered into force on 4 November 2016.

### **Preparedness**

The knowledge and capacity of governments, emergency management organisations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely or actual hazard events.

### **Risk**

The chance of something happening that will have an impact on an objective, system, sector, asset, activity or community. A risk is often discussed in terms of the event (for example, a weather event or climatic change), the consequence of the event (positive or negative), and the likelihood it will happen. **Residual risk** is the remaining chance of something happening after action has been taken to reduce the risk.

### **Vulnerability**

The degree to which a system, sector or social group is susceptible to the adverse effects of climate change; vulnerability depends on the nature of the climate changes to which the system is exposed, its sensitivity to those changes and its adaptive capacity.

## Context for the Adaptation Plan

Climate change is a critical challenge for Victoria. We need to act now to reduce greenhouse gas emissions to keep global temperature rise well below 2°C. With our ready access to high quality and reliable infrastructure, resourceful leaders, and clever innovators, Victoria is well positioned to take advantage of the opportunities that come with this transition.

We also need to prepare for the climate change impacts that are already locked in, so that Victoria remains a healthy, prosperous, safe and vibrant place to work, live, and play and so it maintains a thriving natural environment.

Global momentum is building for national, sub-national and local governments to take ambitious action that helps communities adapt to climate change impacts. The *Paris Agreement* expresses an international commitment to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change.<sup>3</sup>

Victoria's Climate Change Framework outlines a vision for Victoria in 2050, as well as pathways and actions for achieving this vision. In 2017, the Government is committing to:

- immediate action (to 2020) to build resilience and start the transition to net zero emissions.
- long-term, transformative action (to 2050) to sustain our society, economy and environment, and support a positive, orderly and equitable transition for Victoria's communities, industries and the environment.

The Victorian Government is working to restore Victoria as a national and international leader on climate change action. Developing a robust approach to adaptation is the first step.

Victoria's Climate Change Adaptation Plan 2017-2020 (the Adaptation Plan) sets out the Government's strategic priorities, measures and responses for adaptation in Victoria over the next four years, as required by the current *Climate Change Act 2010*. While the Adaptation Plan recognises and builds on adaptation action already underway, it also lays the groundwork for a new, integrated approach to adaptation under the proposed new *Climate Change Act*.

The proposed new *Climate Change Act* will be the cornerstone for action to 2050. In response to the 2015 *Independent Review of the Climate Change Act*

*2010*, the Victorian Government has developed a world-leading legislative framework for action on climate change. It includes a target of net zero emissions by 2050, with five-yearly interim targets to ensure we stay on track to meet the long-term target, and a pledge process to reduce emissions across our economy. It will also require climate change principles and objectives to be considered in all Government policies and programs.

Under the proposed new Act, from 2020 onwards, five-yearly climate change strategies will outline the Government's priorities for emissions reduction, adaptation and transition to ensure we keep making progress towards our 2050 vision. The Government will regularly and comprehensively analyse the risks of climate change to Victoria as part of developing these strategies. The strategies will include specific state-wide adaptation actions that will complement sector-based Adaptation Action Plans (AAPs).

This Adaptation Plan lays the foundations for transforming our approach to adaptation by developing sector-based planning, in preparation for sectoral AAPs under the proposed new legislative framework.

Sector-based planning addresses risks and challenges that are common to people, businesses and organisations in a particular sector. This coordinated approach addresses the risks and challenges more efficiently than if everyone acted independently.

From 2020, AAPs will be developed every five years for core systems, including health and human services, natural environment, built environment, water cycle, primary production and transport.

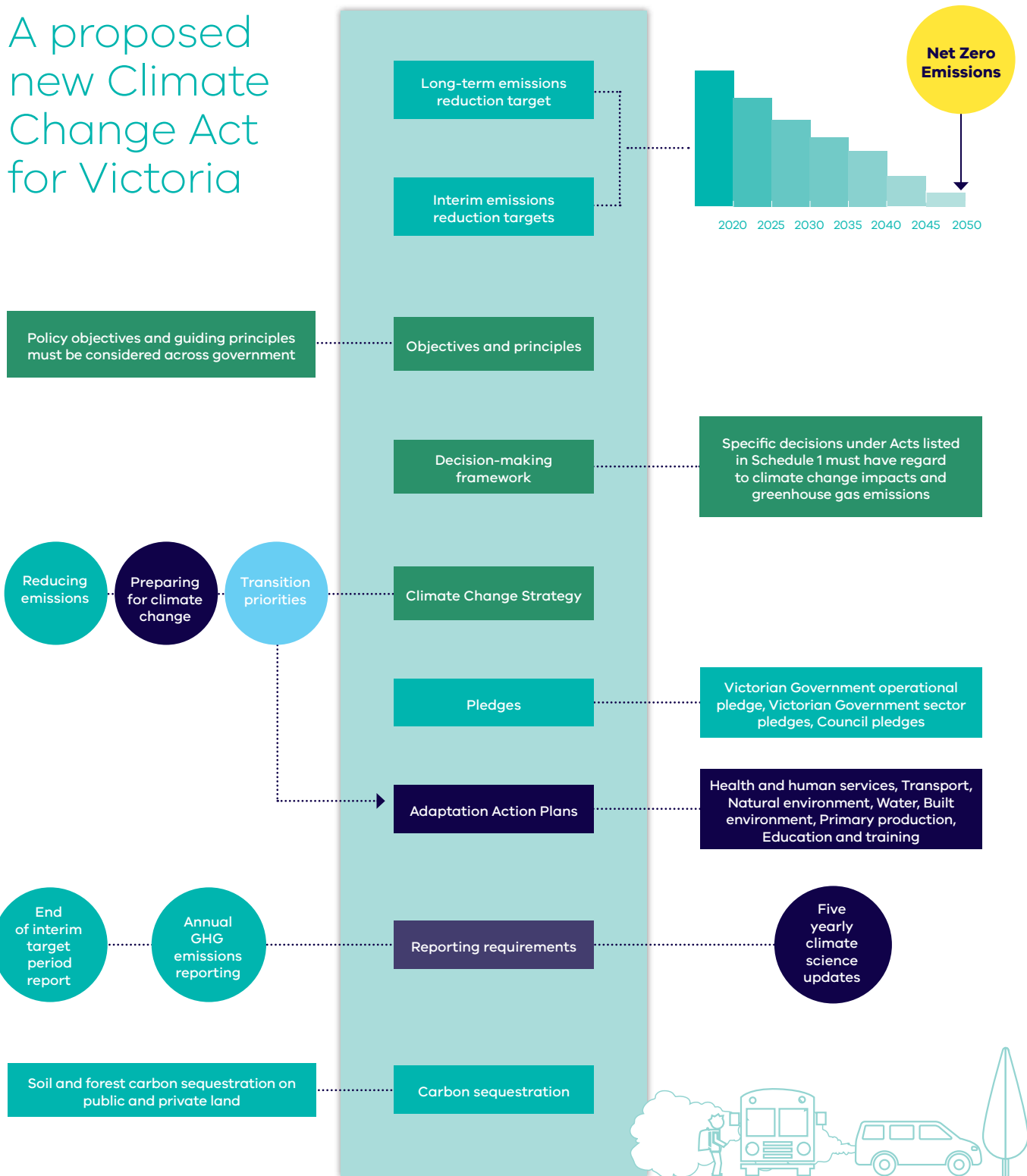
These systems, or sectors, are the areas of policy and economic activity that are most relevant to climate change adaptation. Climate change impacts will significantly affect these systems, and/or these systems are a crucial vehicle for ensuring the Victorian community can manage risks and adapt to a changing climate.

Victoria's new, sector-based approach to adaptation will reflect international best practice. AAPs will be developed and implemented in close consultation with the community, including local government, business and industry, non-government organisations, service providers, community groups and individuals.





# A proposed new Climate Change Act for Victoria



The Adaptation Plan will prepare the Government and the community for sector-based adaptation by introducing pilot AAPs in the health and human services, water cycle and agriculture sectors. Pilot AAPs will strengthen and drive adaptation planning and action in these sectors over the next four years, and lessons learned from the pilots will inform mandatory AAPs for all sectors from 2020.

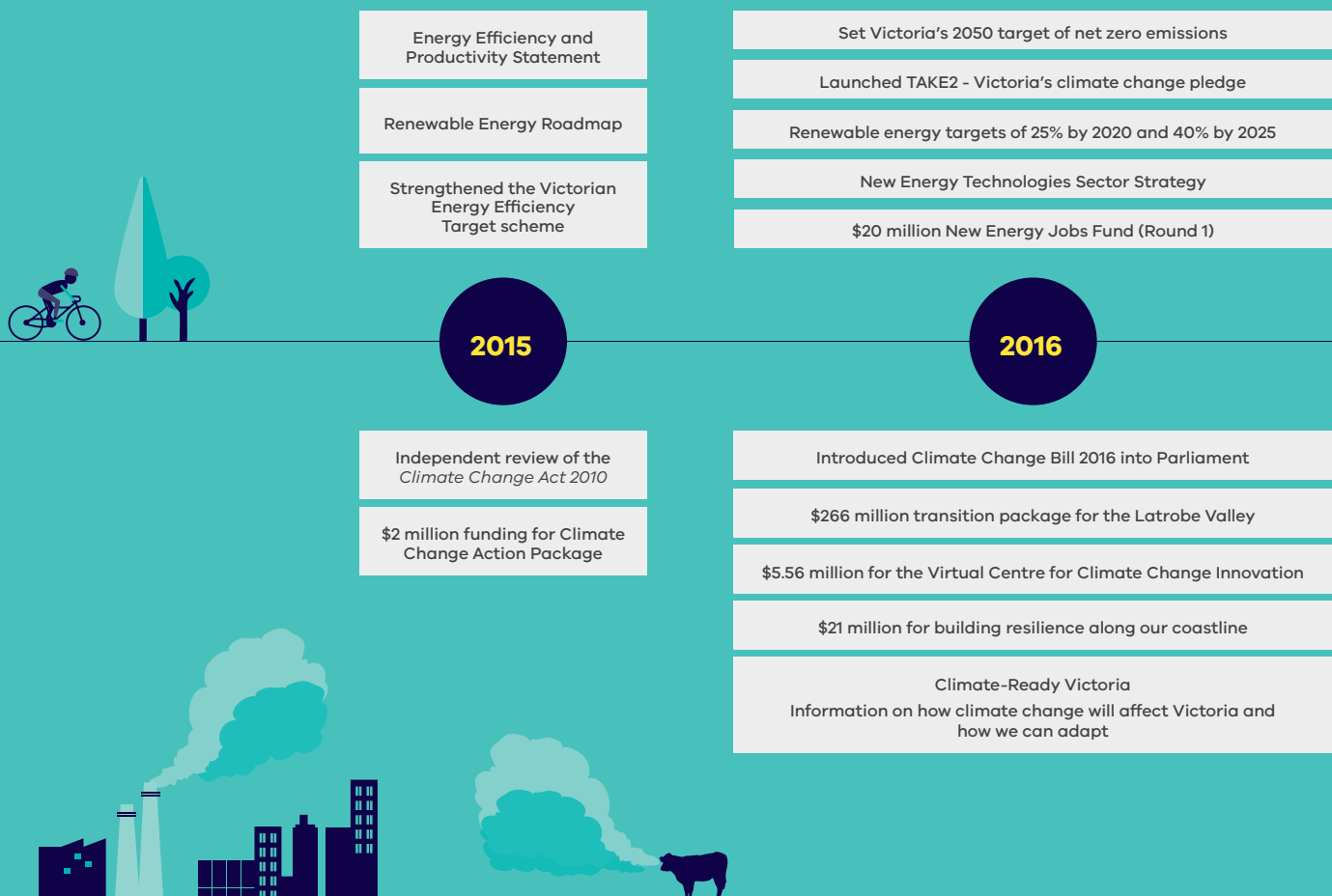
The Adaptation Plan is a core component of the Government's agenda for ambitious action and leadership on climate change. That agenda also includes:

- the 2020 emissions reduction target
- the TAKE2 pledging program
- ambitious renewable energy targets
- substantial energy efficiency policy commitments.

Together, these initiatives are the start of Victoria's transition to a net zero emissions, climate-resilient future.

## First steps on the journey to 2020

Our Government is taking strong action on climate change. We are putting in place a world-leading Climate Change Act to ensure our economy, environment and way of living is resilient and prosperous in the face of climate change. However, we are not waiting for the legislation to take action. We are starting the transition to a net zero emissions and climate-resilient Victoria now. The following diagram provides an overview of the actions we have already taken and the steps we will take between now and 2020.

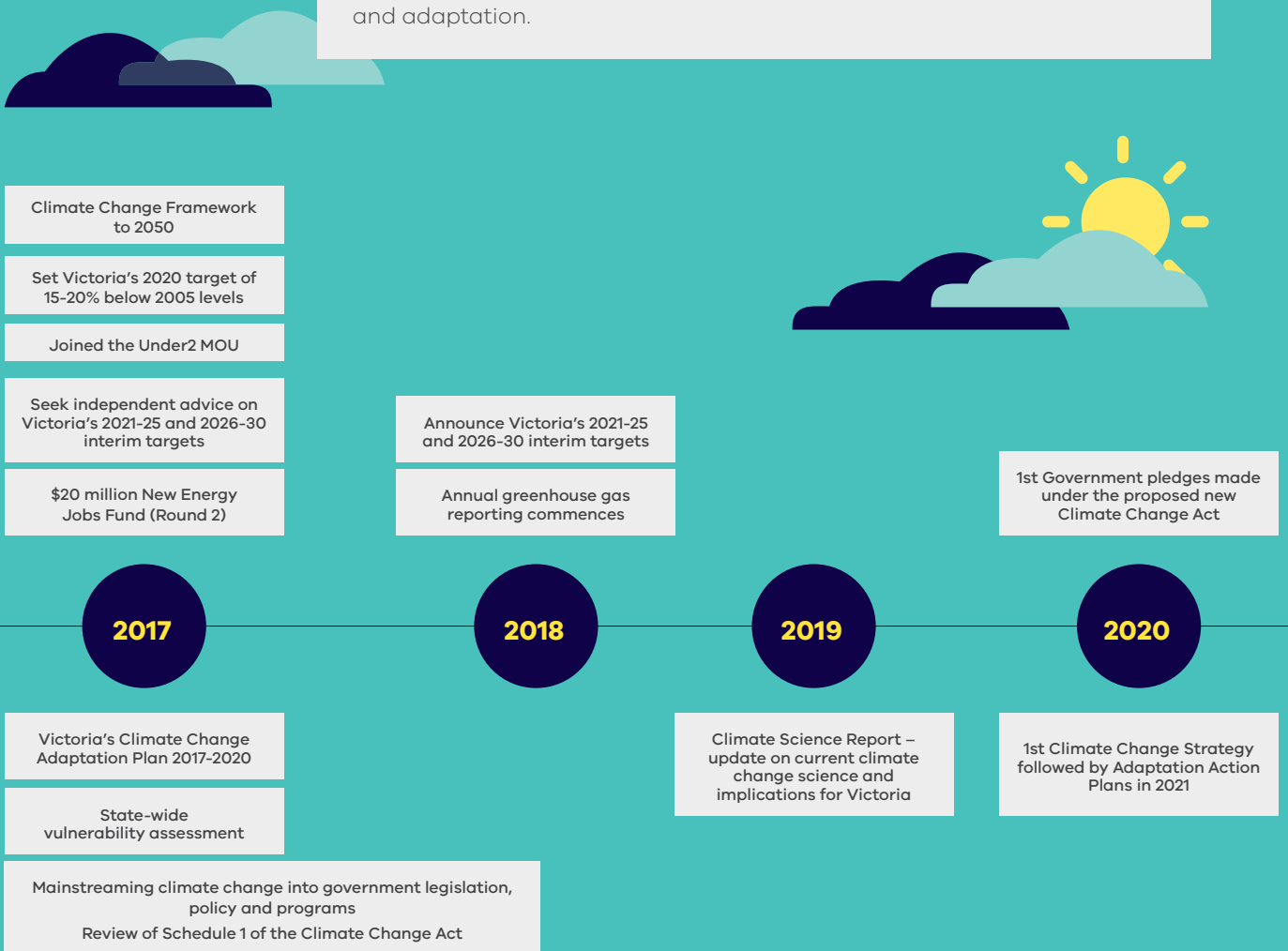




## Harnessing the co-benefits of emissions reduction and climate change adaptation

In 2016, the Victorian Government announced a long-term emissions reduction target of net zero greenhouse gas emissions by 2050. This is supported by a renewable energy target to provide 40 per cent of Victoria's electricity from renewable sources by 2025, and by the Victorian Energy Efficiency Target program established in 2009.

Victoria's Climate Change Framework recognises the co-benefits of adaptation responses that help reduce greenhouse gas emissions, such as green spaces and improved thermal performance of buildings. To make the most of the co-benefits and to avoid maladaptation, the Government will prioritise the coordination of our action on emissions reduction and adaptation.





## Overview of the Adaptation Plan

The Victorian Government is committed to action to keep global warming below 2°C. However, we also need to prepare for a range of possible futures resulting from climate change.

The foundation of this Adaptation Plan is a shared vision for Victoria to effectively manage the risks of climate change. A robust approach to adaptation, informed by the principles of the *Climate Change Act*, underpins the Government's priorities for action from 2017 to 2020. These priorities are also based on understanding the roles and responsibilities of the

State Government, and recognising that adaptation is a responsibility shared by many different people and organisations.

This Adaptation Plan lays out the priorities for the next four years for the Victorian Government to manage current impacts and to prepare for the long-term risks of climate change. It will help all Victorians understand how they can take action, and clarify the role of the Government. It will help us all to play our part and work together towards achieving our vision.

Victoria is already experiencing the impacts of climate change:



**INCREASED**  
temperature  
across state  
since **1950**



**South West**  
**VICTORIA**  
up to **1.6 °C**  
**WARMER**



**Average rainfall**  
**DECREASED IN ALL**  
**parts of VICTORIA**

In the future Victoria can expect:



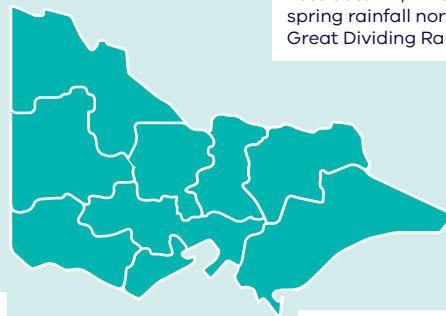
More hot days.  
Mildura will have  
up to 30 more  
days above 35°C  
per year by 2070



Harsher fire weather,  
longer fire seasons



Temperatures  
to increase  
11-13.3°C year  
round by 2070



Less autumn, winter and  
spring rainfall north of the  
Great Dividing Range



More frequent  
& more intense  
downpours



Fewer frosts



Less winter and spring  
rainfall south of the  
Great Dividing Range



Increased frequency  
and height of storm  
surge and high tides



Rising sea level



Warmer & more  
acidic oceans

To help Victorians understand the likely scale of change and what they can do to adapt, the Victorian Government produced *Climate-Ready Victoria* (2015), a series of regional fact sheets that outline the projected climate change impacts across Victoria and ([www.climatechange.vic.gov.au/understand](http://www.climatechange.vic.gov.au/understand)). Providing information to help the community better understand and manage climate change impacts is a key responsibility and an ongoing commitment of the Victorian Government (*Helping Victorian communities adapt to climate change*, p. 27).



## 2.1 A shared vision

**Victoria will meet the challenges and act on the opportunities of climate change. Our state will sustain a thriving natural environment, and will be a healthy, prosperous, safe and vibrant place to work and live for all Victorians.**

To achieve this vision, we need to understand and manage the impacts we are already experiencing and make sure we are prepared for future risks. To best respond to climate change impacts, we must build better-connected and more resilient communities, healthier ecosystems and a stronger economy.

Victoria is already experiencing the impacts of climate change. Temperatures are increasing as rainfall decreases across the state. We are all affected by the bushfires in the lengthening fire season, floods that cut off towns and storms that lash our homes.

The impacts on our communities, environment and economy will become more severe unless we take decisive action to prepare for change. Acting now is essential to make sure we can adapt to a changed climate, and to reduce the future costs to Victorian communities, industries and the natural environment.

### Economic impacts of climate change in Victoria

Climatic changes create significant risks that could be extremely costly for Government, the private sector and individuals. The total cost of disasters in Australia is projected to rise to an average of \$33 billion per year unless steps are taken to increase resilience.<sup>4</sup>

Victorians are already bearing the costs of damage caused by extreme weather events, and will continue to do so as impacts worsen. The Department of Treasury and Finance estimated that the Victorian Government spent over \$4 billion over 10 years (2003–2013) on response to and recovery from climate-related events such as bushfire, flood and drought.<sup>5</sup> The total economic costs from bushfires are projected to rise from to an average of \$172 million per year in 2014 to \$378 million per year by 2050.<sup>6</sup>

The impacts of climate change on human health, public safety, infrastructure, primary production, settlements and the natural environment will be

felt across the economy. Extreme weather, drought and changes in climatic conditions over time may reduce Victoria's primary productivity. This may in turn reduce the productivity of Victoria's manufacturing and services sector.

Damage to transport and other infrastructure causes disruptions that may have short-term and long-term consequences for productivity and cause significant financial losses to Government, private owners and insurers. The health impacts of climate change, increasing pressure on the natural environment and the flow-on consequences for community wellbeing may increase the strain on services.

By acting now, the Victorian Government can substantially lessen future cost burdens on Government, taxpayers, businesses and the community, as well as creating new economic opportunities and jobs.

## Victorian Aboriginal cultural heritage is under threat from climate change

Aboriginal people have been the custodians of the land and water now known as Victoria for at least 40,000 years. Victorian landscapes are imbued with the history and cultural heritage of Aboriginal Victorians, who have sustained the environment and the world's oldest continuous culture for countless generations, through a deep connection with the land.

Victoria is home to many sites of cultural and spiritual importance to Aboriginal people. Climate change threatens to destroy these places through hotter temperatures, flooding, erosion and drought.

A hotter and drier climate will alter the hydrological regime of Australia's earliest aquaculture system, the Australian Heritage-listed Budj Bim National Heritage Landscape –

Tyrendarra Area, in south-west Victoria. Scientists are exploring evidence at the nearby site of Point Ritchie-Moyjil to determine if Aboriginal people occupied the area 60,000 years ago. Located at the mouth of the Hopkins River in Warrnambool, the area is currently being undermined by severe coastal erosion and sea level change.

In the north-west of the state, heat, erosion and winds are exposing hundreds of traditional Aboriginal burial places each day. To ensure Aboriginal ancestral remains are given the utmost respect they deserve, these places need protection and management that deals with climate change impacts.

The loss of Aboriginal places and the resulting loss of history, culture and heritage would be detrimental to all Victorians.

## Insuring your home in the context of climate change

Insurance companies consider climate risks when pricing and approving house insurance.

In some states of Australia, an influx of claims from more frequent and intense weather events is alerting the insurance industry to their exposure when issuing home insurance. They are becoming wary of insuring properties that are at high risk from rising sea levels, floods or bushfires.

Following serious flooding in Victoria in 2010 and 2011, homeowners living in flood zones experienced insurance premium increases of up to 300 per cent.<sup>7</sup>

These trends are consistent with other parts of Australia that experience natural disasters. For example, after consecutive floods in Roma, Charleville and Emerald (Qld), Suncorp announced

in 2012 that it would no longer issue flood insurance in those areas. Parts of Kingston Beach in Tasmania are already experiencing high insurance rates and potential un-insurability due to low-lying flood plain exposed to inundation. The more these areas experience flooding, the higher insurance premiums become.

Climate change will lead to an increase in extreme weather events in Victoria, which will put households at a greater risk with higher insurance premiums, if we do not adapt. Local governments may also find insurance for their assets becomes increasingly expensive or in some cases unattainable. The Government can help by using planning policy to manage land-use risks, and by working with insurance companies to ensure insurance premiums accurately reflect climate change risks.



### Habitats under threat from climate change

The mountain pygmy-possum is a critically endangered species that is found only in the boulder fields of the Victorian and New South Wales Alps. It needs snow cover to breed and for protection during hibernation.

Climate change is reducing snow cover and increasing minimum temperatures, which threaten the possum's existence.

### Climate change and small business

Extreme weather events can cause significant losses for small to medium enterprises. The impacts of climate change, including increased extreme weather events, can mean that:

- employees can't get to work
- supplies of goods and energy are interrupted
- buildings and infrastructure get damaged
- people are unsafe in a work environment (for example, working in conditions of extreme heat)
- employees are less productive
- fewer people are out and about using services and buying from businesses in extreme heat.

Research has found that on average, there is a 14.2 per cent decrease in daily non-commuter pedestrian traffic near the Melbourne Town Hall in extreme heat.<sup>8</sup>

All of these consequences affect the productivity and profitability of businesses, and disrupt the community and the local economy.



## 2.2 Principles for successful adaptation

Adaptation is a complex challenge for the Government and the community. The impacts of climate change are unlike anything we have experienced before, and what we know about the scale and timing of impacts is constantly evolving. As such, we need flexible and robust policies, plans and actions that will equip us to successfully adapt to a range of possible futures.

In that context, the Government's approach to adaptation is informed by the following principles:<sup>9</sup>

### Informed decision-making

Adaptation responses should:

- o be based on the best available evidence in the context of uncertainty
- o be flexible and iterative, allowing for adjustments as circumstances change and new information is made available.

### Integrated decision-making

Decision-makers should:

- o give priority to responses that are most likely to provide the greatest net social, economic and environmental benefit for Victoria
- o consider the costs of climate change, including externalities and long-term costs.

### Risk management

Adaptation responses should:

- o ensure that risks are addressed by those who are best-placed to manage them
- o avoid unintended consequences (*maladaptation*)
- o not undermine our ability to adapt to climate change over the long-term
- o consider trade-offs, and understand and recognise the costs of and limits to adaptation.

### Complementarity

Adaptation responses should:

- o build on the experience of regions, sectors, communities and industry in adaptation
- o complement existing and planned adaptation work
- o contribute to and be compatible with efforts to reduce greenhouse gas emissions.

### Equity

Adaptation responses should:

- o be equitable and fair
- o consider both the present and the short, medium and long-term future
- o adhere to principles of intra- and intergenerational equity.

### Community engagement

Adaptation responses should:

- o actively involve the community in setting policy directions and priorities
- o value and respect the knowledge and perspectives of Traditional Owner groups and Aboriginal Victorians.

In line with these principles, it will be essential to continue working with many different people, community groups, businesses, local governments and others over the life of the Adaptation Plan.

Close collaboration with the community will help the Government meet the needs of the community and build on the broad range of adaptation work already underway. It will also help to clarify roles and responsibilities, recognising that adapting to climate change is a shared responsibility.

### Investing in climate change adaptation

The Government's commitment to action on climate change is backed by investment in strategic and targeted initiatives to support adaptation by Government and in the community. Since November 2014, the Government has committed to funding a range of projects that help Victorians manage the impacts of climate change.

New funding of **\$4.4 million** will support immediate action, with further commitments to be made over the life of the Adaptation Plan. Investment in climate change adaptation is also integrated into business-as-usual for Government departments through risk management.

## 2.3 We all have roles to play in managing climate change risks

Climate change risks are most effectively addressed by those who are directly affected. In practice this means that businesses and individuals are often best placed to manage risks to private assets and infrastructure. Private owners can put tailored and cost-effective solutions in place based on their own needs and preferences. Government can help these individuals, businesses and communities understand and manage their own risks by providing them with up-to-date and detailed information and guidance.

However, the Government also recognises that sometimes it is not possible for communities, businesses and individuals to manage their risks alone.

The Government can help by leading and coordinating state-wide action and helping different people and organisations work together to understand and address common challenges. The Government can also provide extra support to help people adapt, especially for vulnerable communities.

All levels of government, businesses, non-government organisations, community groups and individuals have a role to play in adapting to climate change. The actions laid out here for 2017 to 2020 are based on the following understanding of roles and responsibilities, which will continue to evolve over the life of the Adaptation Plan (Table 1, pp. 20-21).



### CASE STUDY: Building resilience in rural communities

*The Rural People: Resilient Futures Project*, funded through the Victorian Adaptation and Sustainability Partnership grant program, looked at how climate change impacts such as heatwaves, fires and drought, may affect the health and wellbeing of vulnerable people in the Southern Grampians Shire. The council is using this information to help the community to build their capacity to deal with these impacts, and to strengthen connections across the community. Led by the Southern Grampians Shire Council, as a member of the Southern Grampians and Glenelg Primary Care Partnership, the project also helped vulnerable people to identify organisations in the shire that can help them to manage climate change impacts.



### CASE STUDY: Landcare – the power of individuals and communities to effect positive change

Landcare is a joint effort between the community, government and business to protect and repair our environment, and to more sustainably manage land and natural resources across the diverse Victorian landscape. It is a volunteer movement that involves thousands of Victorians and more than 600 groups working together. Beginning 30 years ago with a group of farmers and environmentalists in St Arnaud, the Landcare movement has grown to include people from retirees to families, surfers to farmers, business people to students. Landcare is recognised and has been adopted around the world as an effective community-based model for on-the-ground action, with its success due in part to its grass-roots philosophy. A Landcare group usually starts when community members with common objectives come together to tackle a local issue.

The Landcare community is already grappling with the impacts of drought, floods and other extreme weather events that will be exacerbated by climate change, as well as facing social and rural demographic change. Landcare is an important part of our social fabric, particularly across rural Victoria. Landcare's networks, resilience and on-the-ground collective action will be vitally important to shape a sustainable future for our land, biodiversity and waterways, and to support strong community connectedness in the face of climate change.



**Table 1: Roles and responsibilities for managing the impacts and risks of climate change**

Roles and responsibilities include...	
<b>Communities and individuals</b>	<p>Understand and actively manage their own risks:</p> <ul style="list-style-type: none"> <li>• Plan and act responsibly to reduce the exposure of their own person, families, private property and livelihoods to risks caused by climate change impacts.</li> <li>• Develop innovative local responses to climate change risks.</li> <li>• Explain to government and decision-makers what the community needs and values.</li> <li>• Support and encourage adaptation efforts on the ground.</li> </ul>
<b>Registered Aboriginal Parties (RAPs), Traditional Owner groups and Aboriginal Victorians</b>	<p>Work with all levels of government and the community to ensure Aboriginal values and knowledge are part of Victoria’s response to climate change:</p> <ul style="list-style-type: none"> <li>• Provide knowledge of Koorie cultural landscapes in Victoria.</li> <li>• Help non-Aboriginal people understand the cultural and spiritual significance of Victoria’s land and waters.</li> <li>• Contribute Aboriginal cultural heritage to policies and decision-making about climate change.</li> <li>• Communicate the impacts of climate change on RAPs and other Traditional Owner groups to the Government.</li> </ul>
<b>Non-government organisations and community groups</b>	<p>Build our shared knowledge and help individuals and communities to participate in adaptation action:</p> <ul style="list-style-type: none"> <li>• Provide education and training to help people learn and build skills.</li> <li>• Collect data.</li> <li>• Advocate to decision-makers and the community based on an in-depth understanding of environmental and social issues.</li> <li>• Connect grass-roots community action and government policy development.</li> </ul>
<b>Businesses and industries</b>	<p>Understand and proactively manage their own risks, including those in supply chains:</p> <ul style="list-style-type: none"> <li>• Identify opportunities created by the need to adapt.</li> <li>• Drive innovation and changes in products, services and markets to create more sustainable practices.</li> <li>• Influence customers, suppliers and investment decisions.</li> </ul>
<b>Finance and insurance sectors</b>	<p>Manage risks to financial stability, ensure unavoidable risks are shared efficiently and influence consumer behaviour:</p> <ul style="list-style-type: none"> <li>• Implement responsible lending and innovative finance mechanisms that consider and help reduce the risks of climate change.</li> <li>• Appropriately price risk based on climate change considerations.</li> <li>• Help customers understand and manage risks to their properties and businesses.</li> </ul>
<b>Universities and research institutions</b>	<p>Generate and share new knowledge and understanding about the impacts of climate change and ways to adapt:</p> <ul style="list-style-type: none"> <li>• Provide practical and easily understood advice to governments and communities on the impacts of climate change.</li> <li>• Evaluate adaptation actions and strategies to help us understand what effective adaptation action looks like.</li> <li>• Work with policy-makers to support the design and delivery of cost-effective adaptation policies and programs.</li> </ul>

<p><b>Local Governments</b></p>	<p>Provide leadership and good governance, represent the needs and values of local communities, and foster community cohesion:</p> <ul style="list-style-type: none"> <li>• Manage climate change risks to council community services and assets, with support from the State Government.</li> <li>• Identify the needs and priorities of the municipality, and communicate these to State Government where needed.</li> <li>• Develop and deliver locally-appropriate adaptation responses.</li> <li>• Build the resilience of local assets and services.</li> <li>• Plan for emergency management at the municipal level, provide relief and recovery services, and support emergency response operations.</li> <li>• Help the State Government understand localised impacts and responses.</li> <li>• Work with the community to help people understand and get involved in climate change adaptation.</li> <li>• Help connect the State Government with the community.</li> </ul> <p>Building a shared understanding of the roles and responsibilities of state and local government is a priority action under the Adaptation Plan -see A Partnership with Local Government (p. 29)</p>
<p><b>State Government</b></p>	<p>Understand and manage the state-wide risks and impacts of climate change and provide leadership and support to the Victorian community:</p> <ul style="list-style-type: none"> <li>• Manage risks to Victoria’s public goods, assets and Government services.</li> <li>• Provide leadership for Victoria in emissions reduction, transition and adaptation to climate change.</li> <li>• Demonstrate best practice in State Government operations.</li> <li>• Produce data, analyse risk and fill in information gaps to help individuals, businesses, local government and the wider community understand and manage risks.</li> <li>• Provide leadership, policy, technical and financial support to local governments.</li> <li>• Lead state-wide emergency management, including preparing for, responding to and recovering from natural disasters.</li> <li>• Facilitate partnerships between Government and the community to help local communities, regions and sectors adapt effectively.</li> <li>• Embed climate change considerations into policy, regulation and decision-making.</li> <li>• Work to address market failure through appropriate policy, regulation and investment.</li> </ul>
<p><b>Federal Government</b></p>	<p>Address Australia-wide climate change risks and support other jurisdictions and the Australian community:</p> <ul style="list-style-type: none"> <li>• Manage climate change risks to Commonwealth assets and programs.</li> <li>• Demonstrate national leadership on adaptation <ul style="list-style-type: none"> <li>o Provide national, state and regional climate change data and information and invest in research.</li> <li>o Develop an updated national, cross-jurisdictional framework for adaptation in partnership with states and territories.</li> <li>o Undertake sector-based vulnerability assessments for national industries that are exposed to the impacts of climate change, such as agriculture.</li> <li>o Enable cooperation and information-sharing across jurisdictions.</li> </ul> </li> <li>• Set national standards and advice for adaptation planning.</li> <li>• Support states to manage emergencies, including funding for relief and recovery.</li> <li>• Provide funding to states and the community for adaptation.</li> <li>• Ensure Australia meets its international obligations on climate change.</li> </ul>

The State Government's priority areas for action set out the work that is necessary to fulfil the Government's roles and responsibilities to the community.

## 2.4 Priority areas for action

This Adaptation Plan sets out the Victorian Government's priorities for leading and supporting the community to adapt to climate change from 2017 to 2020. It explains how the Government will support adaptation and coordinate action on different scales (local, regional and sectoral). It also outlines how the Government is already addressing adaptation, and lays out the Government's plan for strengthening these mechanisms and filling important gaps.

These are the Government's priorities over the life of the Adaptation Plan:

- **More effectively manage risks to the Government's own assets and services from climate change (Part 3)** by assessing the Government's current capabilities and practices and addressing whole-of-government risks and impacts in a more coordinated way.
- **Help the community to understand and manage the risks and impacts of climate change (Part 4)**
  - Provide guidance and up-to-date information (p. 27). As our understanding of potential climate change impacts becomes more sophisticated, we need to update the information and guidance that communities and decision-makers rely on to manage their risks. The Government will ensure that the actions under this Adaptation Plan are implemented using the best available knowledge.
  - Work closely with local governments (p. 29) to support their relationship with the community and their responsibilities to it. Local governments are primary partners in supporting the community to adapt, and the Government is committed to revitalising a strong and productive partnership with local government on climate change.
  - Support adaptation in Victoria's regions (p. 30) to help rural and regional Victorians manage their unique challenges. The Government has established nine new Regional Partnerships to support regional development and to enable collaboration within regions. Climate change impacts are among a range of priority issues for regional Victoria. Regional adaptation planning will complement the partnerships – these regional boundaries will be used to support regional adaptation action to address climate change across Victoria. This will strengthen connections within and between regional communities and build the resilience of our regions.

### How will sector-based and regional adaptation planning interact with and complement each other, and what is the role of the Victorian Government?

Adaptation presents diverse challenges and therefore needs diverse solutions. No single structure can comprehensively address adaptation – we need different approaches to tackling the issues, on different scales, which work together and complement each other.

The State Government plays a coordinating and brokering role as the 'backbone', driving participation and action across the community, enabling collaboration between stakeholders and providing foundational information and funding.

The Government provides clear policy direction to drive long-term planning, informed by local, regional and sectoral perspectives. The Government also enables an exchange of information between stakeholders within the sector or region, and between sectors and/or regions.

By implementing new coordinating arrangements (AAPs and regional adaptation planning), the Government will connect sectoral and regional adaptation to deliver an integrated response to climate change impacts in Victoria.

- **Encourage adaptation action across all policy areas and sectors of the economy (Part 5)** by strengthening the consideration of climate change in policy and regulation in health and human services (p. 34), emergency management (p. 36), the natural environment (p. 38), agriculture (p. 45), water (p. 47) and the built environment (p. 48) as well as introducing a new sector-based approach to adaptation planning in preparation for sectoral Adaptation Action Plans under the proposed new legislative framework.

**The Adaptation Plan's priorities will help the Government to achieve its broader goals, including:**

**Leadership**

- Demonstrate leadership by embedding climate change adaptation considerations across all levels of Victorian Government decision-making, policies, planning and service provision.
- Acknowledge and support other leaders across business and the community.

**Collaboration and shared responsibility**

- Work together effectively across all levels of government, business, academia and the community, to prepare for and adapt to climate change.

**Connected, resilient and safe communities**

- Build the resilience and adaptive capacity of Victoria's infrastructure and communities through effective adaptation and disaster preparedness action.

- Integrate climate change risks, impacts and projections into all phases of emergency management.

**A healthy environment**

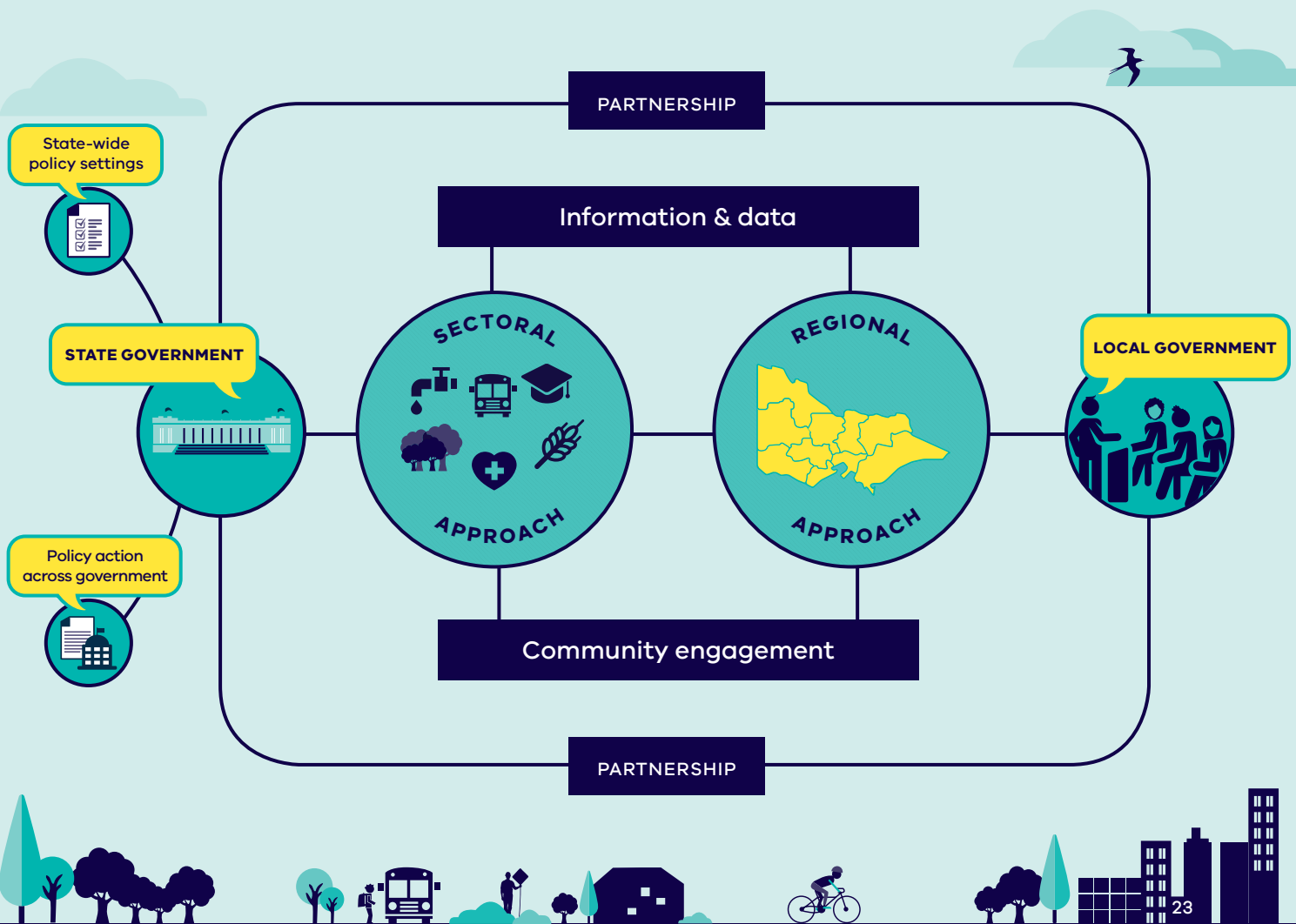
- Manage and promote resilience of Victoria's natural resources, ecosystems and biodiversity, including support for vulnerable ecosystems.

**Priority support for vulnerable communities**

- Consider matters of equity and environmental justice in decision-making and seek to ameliorate disadvantage through adaptation action.
- Foster diversity and equal participation across the community.


**A flexible and prosperous economy**

- Enable Victoria's industries, regions and communities to adapt to climate change impacts, and to maximise opportunities in a low carbon economy.



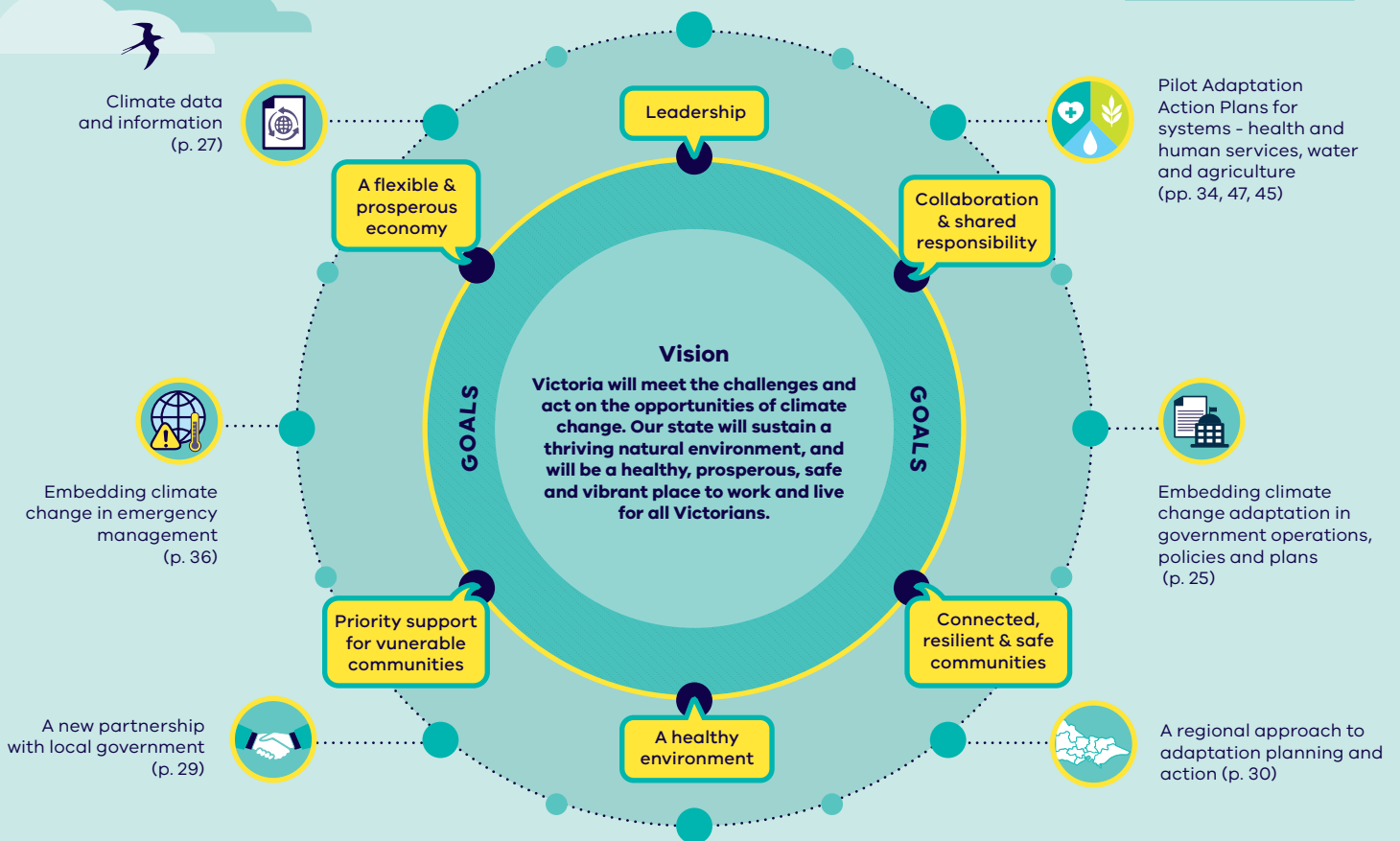
## 2.5 How to read this plan

The Adaptation Plan explains the Government's current and ongoing responses to climate change impacts, and outlines new initiatives that will build Victoria's capacity to adapt to climate change now and in the future.

 **New initiatives:** the Government is committed to delivering, monitoring and evaluating these actions over the next four years.

The Adaptation Plan will implement new structures and governance for adaptation as well as embedding climate change in policy and programs across the whole of the Victorian Government. These initiatives will improve adaptation outcomes in the immediate term, and set Victoria up to manage climate change impacts effectively into the future.

The Adaptation Plan builds on an enormous amount of work underway across Government and in the community. Government action will evolve over time as our understanding of the risks and impacts of climate change improves. However, the Adaptation Plan is an agenda for action now to help all Victorians meet the challenges of climate change.





## Leading by example: addressing risks to State Government operations and assets

The Government is responsible for managing risks to its own operations, assets and services. Getting the Government's own house in order will help departments and agencies to better manage the risks and impacts of climate change.

All Government departments and agencies need to consider and prepare for climate change impacts so they can minimise disruption to services and costs to the taxpayer and help our community adapt effectively, now and in the future.

The Victorian Government expects everyone in the community, including other levels of government, to effectively manage their own risks. The State Government does not expect more of others than it expects of itself, and is committed to leading by example to encourage others to follow.

### Governance, planning and risk management processes

All organisations, including government organisations, need effective governance, planning and risk management processes to ensure that they are appropriately considering and managing climate change risks. The Government manages risks to public assets and services through the **Victorian Government Risk Management Framework** (updated December 2016) which requires agencies to identify, assess and manage their own risks.

✓ The Government will undertake an **audit of Government operations** to determine how well Government departments and agencies are currently equipped to address climate change. By identifying its current capabilities, the Government can identify opportunities for improvement. The audit will also identify issues that need urgent attention and provide a baseline and methodology for assessing adaptation governance and measuring progress over the life of this Adaptation Plan.

The Government will continue to improve its ability to manage the risks and impacts of climate change over the life of this Adaptation Plan.

### Decision-making

The Government needs to factor climate change into its decision-making more consistently.

✓ The Government has established a **whole-of-government working group**, comprised of Deputy Secretaries from all departments, to improve consideration of climate change in Government decisions. Coordinating decision-making on issues that affect all Government departments and agencies will improve efficiency and ensure no part of Government lags behind.

The working group will develop strategies to address priority whole-of-government issues, which could include:

- o Reducing and managing climate change risks to Government assets.
- o Integrating climate change considerations into project and regulatory proposals, approvals, impact assessments and reporting, including major project approvals.
- o Improving the climate resilience of Victoria's infrastructure through the Government's response to the Infrastructure Victoria 30-Year Strategy and extending the application of infrastructure sustainability standards.
- o Building capability in the public service to measure, analyse and address the impacts of climate change.





### Advocacy and accountability

The role of the State Government also includes advocating on behalf of the Victorian community for nationally consistent guidance and keeping the Federal Government accountable for its responsibilities.

- ✓ The Victorian Government will continue to play a leadership role in **advocating for more effective national action and financial assistance from the Federal Government.** Through cross-jurisdictional forums and direct advocacy, the Government will encourage the Federal Government to address priority national issues for adaptation, which could include:
  - o Clarifying the future application of the National Disaster Recovery and Relief Arrangements.
  - o Advancing a nationally consistent approach to the development and application of climate change projections and risk assessments at state, regional and local scales.
  - o Improving consideration of climate change in national standards for infrastructure through the National Construction Code and the Australian Building Codes Board.
  - o Ensuring Australia meets the adaptation requirements of the *Paris Agreement*.

More effective leadership, guidance and information for adaptation at all levels of government will help the community to prepare for and manage the risks of climate change.



### CASE STUDY: Melbourne's Metro Tunnel

The Metro Tunnel is one of the largest rail infrastructure projects ever undertaken in Australia. Built with the latest technology, the \$10.9 billion Metro Tunnel will enable more trains to run in and out of the city to cater for Melbourne's growth.

The Melbourne Metro Rail Authority's Sustainability Strategy sets out the social, economic and environment themes and targets that are being integrated into the project planning and design, procurement, construction and operations stages of the Metro Tunnel Project.

Many of the targets have been developed to align with the Sustainability Rating Tools adopted by the project. These include the Infrastructure Sustainability Council Australia (ISCA) IS Rating Scheme Tool and the Green Building Council Australia (GBCA) Green Star Rating Scheme Tool.



## Helping Victorian communities adapt to climate change

A central role of the Government is to provide the tools and support for communities to adapt. The Government is responsible for providing guidance and up-to-date information about the impacts of climate change on a state-wide and local level.

The Government also helps local communities to build the capacity to manage risks by working closely with local government, and by connecting communities at a regional scale.

### 4.1 Guidance and authoritative up-to-date information

Communities, businesses, service providers, non-government organisations, local governments, departments and agencies need accurate, high-quality information to make effective decisions. However, the science of climate change and our understanding of what is required to adapt is also constantly evolving.

We need to regularly update the information we rely on to make decisions, so they reflect the best available science and research on climate change, and so our climate adaptation responses remain relevant. The Government also needs to use new data to build a better understanding of local impacts and risks. This helps to build the capacity of local communities and will help ensure the initiatives in this Adaptation Plan are implemented effectively.

Most importantly, we need to ensure that government, community and industry can easily access, understand and apply current and emerging information.

#### Local impact and risk assessments

Risk assessments help state and local governments and the wider community to understand the exposure of particular areas or assets to the impacts of climate change. **Future Coasts** (2012) gave a state-level overview of the vulnerability of Victoria's coastline to the impacts of climate change. The Government can now factor climate change impacts into decisions about our coasts thanks to the detailed maps from the Victorian Digital Elevation Model, the Coastal Inundation Dataset and the Victorian Coastal Hazard Guide, and the localised information from four Local Coastal Hazard Assessments. Local governments are also using these assessments in adaptation planning.

Ongoing **flood studies** also help flood-prone communities understand their risk, and new studies will more explicitly consider the implications of climate change. The studies help develop warning and response plans for floods, and produce maps to inform land-use planning, building and engineering decisions and community engagement.

We need a more comprehensive picture of the risks and vulnerabilities of the state as a whole, which includes updating our understanding of regional, sectoral and localised climate change impacts and risks.



The Government will work with CSIRO to develop **better climate projections for Victoria (from 2017)** and to produce detailed information about the impacts of climate change on a scale of 5km<sup>2</sup>. This new local-level mapping will help the Government and the community to better understand localised impacts and develop appropriate local responses. Consultation across Government and with the community will help identify priority needs for new data. The Government will use these projections to inform its decision-making and the development of new policies, as well as making the data publicly available.



The Government will commission a **vulnerability assessment (2017)** to analyse sectoral and regional vulnerability across Victoria. This information will be used in regional (p. 30) and sectoral adaptation planning (p. 32), including pilot AAPs. It will help the Government provide clear guidance to the community, effectively implement its current priorities and identify additional actions from 2017 to 2020.



The Government will update the state-level emergency risk assessment, **Emergency Risks in Victoria (2017)**, which is a requirement under the National Partnership Agreement on Natural Disaster Resilience. The assessment compares the relative severity of emergency-related risks, including climate-related natural disasters, to ensure Victoria is prepared to effectively manage emergencies.



## Climate change research

Ongoing research is an essential part of understanding risks and developing effective ways to manage them. Sectoral research can target issues and impacts that are especially important to one sector or industry.

The Government has previously partnered with CSIRO and the Bureau of Meteorology to produce climate change research for the water sector through the **Victorian Climate Initiative (VicCI)** (established in 2013). VicCI analysed the impacts of climate change on Victoria's water resources, and provided detailed projections for the industry to use in water sector planning and management.

The **Primary Industries Climate Challenges Centre (PICCC)** (established in 2011 with the University of Melbourne) is another example of a successful research partnership to build the capacity of Victoria's primary industries to manage risks and opportunities of climate change.

Building on these successes, over the next four years the Government will support climate change research in all sectors.

- ✔ State and local governments, business and industry, universities and research institutions will work together on climate change adaptation and emissions reduction through the **Virtual Centre for Climate Change Innovation (established 2016)**. Co-developed research will help identify strategies for government and the community to address climate change that meet the needs of everyone involved.

## Easy-to-use and accessible information

Research and data also need to be accessible and usable if they are to effectively inform decision-making. The Government already publishes a range of information to help the community understand climate change and its impacts. These include:

- **Climate-Ready Victoria** (2015), a series of accessible factsheets describing the impacts of climate change across Victoria and in the regions.

- The **Emergency Management Common Operating Picture (EM-COP)**, an application to improve decision-making about managing emergencies, collaborating across agencies and providing information to the community before, during and after an emergency.

- The **VicEmergency website**, a centralised portal for emergency warnings and information that helps Victorians make decisions about their own safety during emergencies.

The Government also publishes targeted climate change data and information for the agricultural sector:

- **The Break Newsletter** gives farmers details about rainfall, crop conditions and potential yields for cropping regions.
- **Milking the Weather** gives the dairy industry tailored climate change information and seasonal outlooks. Using this information, farmers can factor climate change impacts into their decisions and better manage risks.

Making climate change data and information available, and helping the community apply this information to decisions, are priorities for the Government over the next four years.

- ✔ The Government will **publish authoritative climate change data and information**, including its new climate change projections. The Government will also develop **guidance on how to use this data (from 2017)**. These guidance materials will be developed in consultation with all Government departments, local governments and other key stakeholders to ensure information is accessible, clear and fit for purpose.



## 4.2 A partnership with local government

Building a strong and enduring partnership with local government is a central pillar of the Government's approach to helping communities adapt.

Local governments play a critical role in helping their communities adapt to climate change. They are often the first to respond to localised impacts, and their strong connections to the community and local knowledge mean they are often best-placed to recognise the need for adaptation at a local scale.

The responsibilities of local and state governments are also closely linked in areas such as land-use planning, infrastructure, health, emergency management, community services and environmental management.

Councils are already leading local efforts to adapt, but are also under pressure from increasing climate change risks and limited resources. For local communities to effectively manage the impacts of climate change, local governments need to be able to manage their own risks as well as helping the community to adapt. The State Government plays a critical role helping local government overcome constraints on their ability to adapt.

### A foundation for working together

Working effectively together is fundamental to helping Victorian communities meet the challenges of climate change.

- ✓ The Victorian Government will therefore work with local governments to develop a **Partnership Agreement (2017)** to provide a foundation for an ongoing collaborative relationship on climate change. A first step in developing this partnership will be working together on principles for collaboration and a shared understanding of the two-way commitment, roles and responsibilities of state and local governments. This will be the start of a constructive and sustainable partnership based on mutual respect and a shared interest in helping all Victorian communities prepare for the challenges ahead. Each local government will be able to sign on to the Partnership Agreement. The principles and any agreed actions will evolve and can be revisited over time. The Partnership Agreement for climate change will build on the Victorian State-Local Government Agreement (established in 2008).

### Building council capacity

Council infrastructure and services are essential to community wellbeing, and are directly exposed to risks from climate change. Building the capacity of local governments to understand and address these risks is a priority for the State Government. This includes helping councils to learn from each other, and providing information, training and guidance.

- ✓ The Government will work with councils to create a **community of practice for adaptation in local government (from 2017)**. This will help state and local governments understand what is needed to effectively integrate climate change considerations in local government governance and planning. It will also enable peer-to-peer learning and information sharing between councils.
- ✓ The Government will identify needs and opportunities for **training and guidance for local governments (from 2017)**. The Government will work with councils and peak bodies to develop programs and materials that meet the needs of local governments. Training and guidance materials such as a **list of the responsibilities of state and local governments under legislation** will help local governments to understand and deliver on their responsibilities for adaptation. Helping land-use planners, engineers and other specialists effectively apply climate data in their decisions will help local communities be better prepared for the impacts of climate change.

### Targeted support for local government adaptation

State Government also helps local governments address climate change impacts by providing direct support to local adaptation projects and activities.

- ✓ The Government will identify opportunities for providing **targeted support for local government adaptation projects (from 2017)**, recognising the value of council projects that have previously been supported by the State Government. This could include consideration of the resources available to councils to address risks through locally-appropriate adaptation responses.



✓ The Government will also continue to **collaborate with and support local government Greenhouse Alliances (ongoing)**.

Victoria's regional Greenhouse Alliances coordinate climate change action between councils and support councils with research and cross-cutting projects. A closer relationship between the State Government and Greenhouse Alliances will improve coordination between state and local governments. Direct support for the work of the Greenhouse Alliances will increase their ability to support local governments in addressing climate change.

**Addressing shared challenges**

Local governments also provide vital assistance and advice to community members and local organisations. Many of these issues are common across local government areas, and the State Government has a role in coordinating work to address risks and impacts that affect multiple councils.

✓ The Government will host a **forum on managing climate-related insurance risks (2017)**. The forum will bring together local and state governments and the insurance sector to identify information needs based on that which is currently used, information that can be more effectively shared, and gaps in the information needed to appropriately price risk. This will help to identify points of intervention for the State Government and support the development of appropriate insurance products for the future.

✓ The **emergency management sector will collaborate effectively with councils (ongoing)**. This is a priority of the Victorian Emergency Management Strategic Action Plan (p. 36) and will help to clarify the roles of councils in emergency management, and ensure councils have the necessary skills and expertise to meet their obligations.

These initial measures will be built on through the new Partnership Agreement. They will also evolve over the life of the Adaptation Plan as existing initiatives become part of core business and new issues emerge.

**4.3 A regional approach to adaptation planning**

The Government is committed to helping communities and organisations in Victoria's regions to work together and adapt effectively. Some risks can be best managed on a regional scale, and the Government plays a role coordinating action within and between regions.

For collaboration to be effective at a regional scale, we need to understand the impacts of climate change that are common to each region. As part of its responsibility to provide information to the community, the Government needs to equip regional communities with the information they need to make decisions about adapting.

✓ The Government will work with regional communities to conduct a **regional adaptation gap analysis (from 2017)**. This work will build on the Government's state-wide vulnerability assessment (p. 27) by identifying regional priorities for adaptation based on the impacts the region is likely to experience, the needs and values of regional communities, and work undertaken to date. The gap analysis will also build on and seek to align with the boundaries and work of the Regional Partnerships.

New Regional Partnerships (established 2016) provide a way for regional communities, state and local governments, regional businesses and regional organisations to work together on priority issues for regional development including climate change. The nine Regional Partnership areas were mapped in consultation with local communities, bringing together areas with common interests. These boundaries will be used to support regional adaptation to climate change across Victoria.

✓ The Government will **support regional adaptation projects and planning (from 2017)** by providing dedicated resources to regional organisations, including local governments, for priority adaptation measures. This will help communities within a region to work together to address urgent risks and prepare for future climate change impacts.



## CASE STUDY: Building the strength of our regions – Adapting to Change in the Southern Loddon Mallee region

Six municipalities in and around the Southern Loddon Mallee region – Greater Bendigo, Central Goldfields, Loddon, Macedon Ranges, Mount Alexander and Buloke – are working together to build resilience to climate change.

The 'Adapting to Change' plan outlines actions for the region as a whole, acknowledging that local governments, communities and other stakeholders need to collaborate to build the region's resilience together.

The plan addresses shared regional vulnerabilities relating to community health and individual wellbeing; energy, water and other infrastructure; emergency management; water resources; buildings and development; and rural commercial activities.

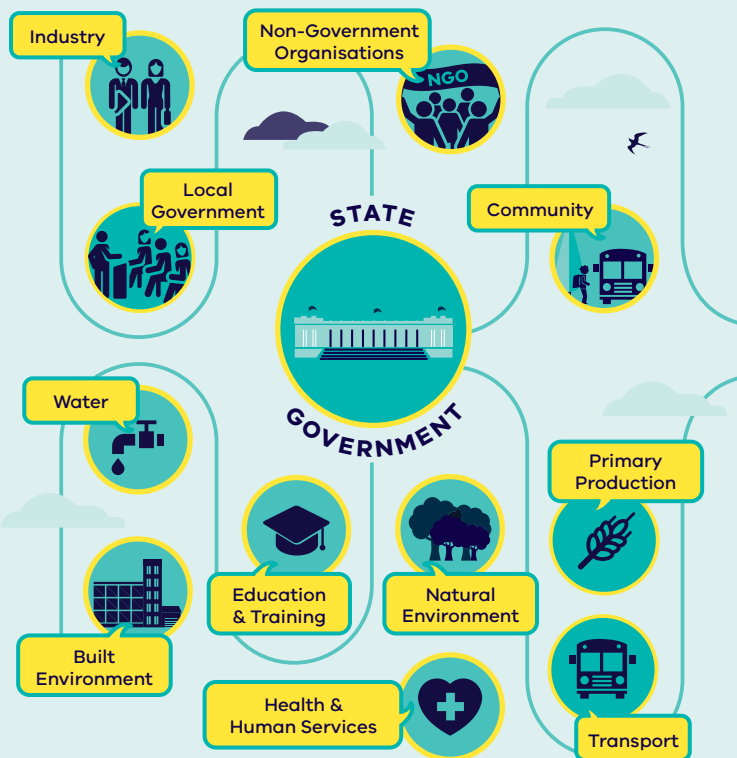
For each identified area of vulnerability, the councils have agreed on priority actions aimed at building resilience across the region.

For example, under buildings and development, the plan proposes to:

- Review bushfire and flood inundation overlays to inform development in bushfire or flood hazard areas.
- Provide commercial incentives for retrofitting of developments in a manner that reduces climate change risks to new and existing infrastructure and property.
- Work with businesses in the region to integrate climate adaptation planning and resilience into business continuity plans.
- Conduct more frequent structural inspections of properties in advance of extreme events and adapt properties based on the inspection results.
- Continue to encourage the uptake of commercial insurance in the region to reduce costs of building damage.

### Sectoral adaptation action

Government facilitating relationships



Government coordinating across sectors

### Regional adaptation action

Focusing on regional issues together



Government facilitating information sharing

## Embedding adaptation in core policy areas and sectors

Adapting to climate change will be an ongoing and evolving process for the Government and the community. Policy leadership from the State Government sets the parameters for action at local and regional levels and creates certainty for business and the wider community.

The Government's focus for the next four years is to make sure the right policy settings and programs are in place to encourage adaptation and remove barriers to action in core sectors of our economy. The Government will target the policy areas or sectors that will be most affected by and/or are critically important to successful adaptation to climate change, as outlined below:

- Climate change impacts have serious consequences for human health (5.1). Successful health and human services programs are already in place to address heat and build community resilience to the health impacts of climate change. However, the Government recognises that, given the incredible diversity of the sector, a more coordinated approach between stakeholders will help identify critical gaps and accelerate action.
- More extreme weather events will demand more of our emergency management sector (5.2). By embedding climate change considerations into emergency management planning, the Government will help Victoria prepare for and manage more frequent and more severe storms, fires and floods.
- Our natural environment (5.3) is highly vulnerable to a changing climate. Factoring climate change impacts into decisions about managing and protecting Victoria's natural heritage is essential to building the resilience of our natural environment to climate change.
- Agriculture (5.4) is a large part of Victoria's economy, and is highly exposed to climate change impacts. Our farming communities are already managing the risks, but need ongoing support from Government to manage extreme weather and coordinate long-term planning.

- Climate change coupled with population growth will put more pressure on Victoria's water resources and infrastructure (5.5). The impacts of climate change on our water resources are likely to be felt most by those who can least afford to bear them. Planning ahead and improving water management is vitally important for our ongoing water security.
- Communities need a safe and resilient built environment (5.6) to be able to thrive. Improving how we factor climate change into decisions about the built environment, as well as taking immediate steps to minimise the urban heat island effect and manage risks to the transport system, will be key priorities over the life of this Adaptation Plan.

A new approach to sector-based adaptation planning will also be a core component of the proposed new *Climate Change Act* (see *Context for the Adaptation Plan* p. 8). The Government has committed to pilot AAPs in the health and human services sector (p. 34), agriculture sector (p. 45) and the water sector (p. 47) to test this model and prepare the Government and stakeholders to develop mandatory AAPs in 2021.



The Government will also hold annual **sector summits (2018, 2019, 2020)** to prepare all sectors designated by the proposed new *Climate Change Act* to develop AAPs. The summits will bring together stakeholders in each sector to identify common challenges, learn from pilot AAPs and start working together on adaptation planning.

The following sections outline in more detail the specific initiatives the Government will pursue in core sectors over the life of this Adaptation Plan. These initiatives will support and build on adaptation activity that is already occurring in Government, in the community and across the economy. They will also assist Victorian businesses and industries identify existing gaps and new opportunities in emerging markets and new technologies for adaptation.

As well as indicating the Government's future directions, this overview will help all Victorians understand the tremendous amount of work that is already underway.



# Embedding adaptation in core sectors

Communities need a safe and resilient built environment to be able to thrive.  
(Part 5.6, p. 48).

More extreme weather events will demand more of our emergency management sector  
(Part 5.2, p. 36).

The impacts of climate change have serious consequences for human health  
(See Part 5.1, p. 34).

Our natural environment is highly vulnerable to a changing climate.  
(Part 5.3, p. 38).

Climate change coupled with population growth will put more pressure on Victoria's water resources and infrastructure  
(Part 5.5, p. 47).

Agriculture is a large part of Victoria's economy, and is highly exposed to the impacts of climate change.  
(Part 5.4, p. 45).





## 5.1 Addressing the impacts on health and human services

Climate change affects the health and wellbeing of the community. Higher temperatures and heatwaves, extreme weather events, increased pollutants and allergens in the air and changing patterns of disease infection are examples of impacts that can cause illness and even death.

Increased risks to human health will increase the pressure on health and human services. We need to build the capacity of these services to respond to climate change impacts on health, which may otherwise impose heavy future costs on the Government and the wider community.

By addressing these impacts and building the resilience of the health and human services sector Victorians can continue to rely on world-class healthcare in the face of climate change.

### Health planning and risk analysis

The Government is already making progress addressing climate change impacts in health planning:

- The **Victorian public health and wellbeing plan (2015-2019)** emphasises the importance of adapting to climate change and building community resilience as part of the Government's long-term agenda to improve the health of Victorians.
- The *Climate Change Act 2010* requires local governments to consider climate change in their **municipal health and wellbeing plans**.

But more can be done. We need to increase and better coordinate action in the health and human services sector, and we need to continue to improve our understanding of the impacts of climate change on our health and wellbeing.



The Government will pilot an **Adaptation Action Plan for the health and human services sector (2017-2020)**, bringing stakeholders together to create a shared approach to adaptation. As a first step, the Department of Health and Human Services will conduct a sector-wide risk analysis. This will include a selection of built assets, such as hospitals, health centres and public housing, and services including disability, aged care and family violence, as well as community service organisations that provide health and wellbeing services. Using the results of this risk analysis, stakeholders will be able to identify shared priorities, test and scale up pilots, and incorporate these results into integrated long-term adaptation planning for health and human services.



The Government will also undertake an **assessment of the cost impacts of climate change on social determinants of health and wellbeing (2016-2018)**. This work will analyse the costs to Government and the economy of climate change impacts on housing and the urban environment.

### Reducing the risks of heatwaves

Of the many climate change hazards affecting human health, the increase in heatwaves and hot days is one of the most dangerous. The risks are especially serious for vulnerable people including the very young, elderly, sick and disadvantaged.

Helping people to manage the risks of more hot days, and longer and more frequent heatwaves, is a priority for the Government. The Victorian **Heat Health Plan (2015-2019)** describes the actions and systems in place to support those most at risk in periods of extreme heat. Victoria's **State Heat Plan (2014)** outlines roles and responsibilities for reducing the impact of heatwaves on the community, infrastructure and services.

## Heatwaves are deadly

Heatwaves cause more deaths than any other natural disaster in Victoria.<sup>10</sup> If we don't adapt, research has found that there will be an additional 6214 deaths in Victoria by 2050 from heatwaves caused by climate change.<sup>11</sup> That equates to 402 extra deaths every year, which is 150 more than died on Victoria's roads in 2015.<sup>12</sup>

Climate change impacts increase pressures on vulnerable people in particular, and on the infrastructure and services that support them. The **Community Services Climate Resilience Program** (2015-2017) assists health and community service organisations to better manage the risks and impacts of climate change on their services.

The Government is also taking steps to improve the resilience and thermal comfort of new public housing. New design guidelines require public housing to be built to a minimum 7-star standard with energy efficient appliances where practicable.



The Government is building **climate-adapted public housing demonstration houses (2016-2018)** that are designed to stay cool during hot days and heatwaves without active cooling. Three two-bedroom units will be constructed and monitored, and the evaluation of the project will inform future investment in public housing.

### Co-benefits of additional actions

In addition to these sector-specific initiatives, other types of adaptation action have co-benefits for health and wellbeing:

- A healthy natural environment (p. 38) contributes to the health and wellbeing of people who relax and unwind in nature.
- Urban greening (p. 50) makes people feel happier and healthier and improves air quality in cities and towns.
- Preparing effectively and making better long-term decisions will help minimise the physical and mental health consequences of extreme weather events and other disruptions caused by climate change.



## 5.2 Preparing for and responding to extreme weather events

Climate change poses serious risks to community safety, and will increase the pressure on our emergency services. Victoria is already experiencing more frequent and severe extreme weather events, a trend which is likely to continue in future. The cost to the Government and the community of responding to these natural disasters is rapidly increasing (p. 14).

More than ever, Victorians will depend on an effective emergency management system to deal with the increasing risk of bushfire, floods, heatwaves, storm surges and other natural hazards. By maintaining our ability to respond effectively in emergencies, improving our response capability and strengthening community resilience, we can minimise the impacts of extreme weather on Victoria.

### Responding to emergencies caused by natural hazards

The Government regularly updates the policies and systems in place to manage specific emergencies. These include:

- The **Floodplain Management Strategy** (2016) recognises that climate change will increase flood risks. It clarifies the roles and responsibilities of Government agencies and authorities for managing floods, and commits to improving flood warnings and information for communities.
- **Safer Together** (2015) is a new approach to managing bushfires that recognises that climate change is increasing bushfire risk. Strategic bushfire management plans acknowledge the likely influence of climate change on the length and severity of future bushfire seasons. Phoenix RapidFire is a bushfire management and modelling tool that incorporates climate change data by including multiple weather scenarios.

The Government will continue to improve its responses to climate-related natural hazards.

- ✓ Victoria's **Fire Management Strategy (2017-2021)** will guide the emergency management sector in helping communities to manage fire risk and reduce the consequences to the community and the environment.

### Planning for emergencies

Importantly, our current overarching approach to emergency management builds on the lessons of the past. Devastating weather events in recent years, including the Black Saturday bushfires in 2009 and the Hazelwood Mine fire in 2014, have resulted in major changes to Victoria's emergency management arrangements. Victoria's 'all communities, all emergencies' approach will bring emergency management planning at state, regional and local levels under one legislative framework, and will help reduce residual risk in land-use planning and inform future development planning decisions.

The Government is also embedding climate change considerations in emergency management planning. Planning ahead and being better prepared for emergencies will help to reduce the danger to communities and the costs of recovery from natural disasters.

Victoria's **Emergency Management Strategic Action Plan** (2015-2018) outlines state-wide priorities and actions to create safer, more resilient communities in the context of climate change.

- ✓ The Government will consolidate reforms to emergency management planning legislation by preparing **Ministerial Guidelines (2017)**. The guidelines will help decision-makers take climate change into account in state, regional and local emergency management planning.
- ✓ The Government will deliver the **Emergency Management Climate Change Program (from 2017)**, which will help communities, businesses and governments integrate climate change considerations into emergency management. It will include:
  - **Community-based emergency management planning** to connect people within communities and help them to use local knowledge, expertise and resources to plan for emergencies in the face of climate change. Through this process communities can develop community emergency management plans similar to the plan currently in place for Harrietteville.
  - **Incorporating climate change projections into risk data** to improve risk management and scenario planning to help understand and reduce the risks and consequences of future emergencies.
  - **Climate change and emergency management forums** to enable emergency management practitioners to develop a shared understanding of the challenges of climate change. Forums will enable information sharing within the emergency management sector and build capability to address the risks of climate change.

The Government is also strengthening Victoria's emergency management capability to help us respond to future emergencies, including extreme weather events caused by climate change. Under the **Emergency Management Capability Blueprint** (2015-2025), the Victorian Preparedness Goal outlines 21 capabilities needed to deal with the challenges and risks faced by the community, such as planning, community information, warnings and relief assistance. These capabilities will evolve to meet future challenges.



## CASE STUDY: Harrietville Community Emergency Management Plan

The picturesque town of Harrietville and its surrounds, in Victoria's north-east, have been the focus of an evolving community-based emergency management plan since the summer of 2013-14. The plan supports the Harrietville community to become safer and more resilient to the impacts of local natural hazards in the era of climate change, including bushfire, flood and landslide.

The plan's priorities, which are reviewed each year, include:

- Supporting the Harrietville Fire Brigade and agencies to provide timely, tailored and relevant emergency information to the community.
- Supporting local volunteers to develop a network/group (such as a community fireguard group) to connect the local community and Harrietville Fire Brigade with a key point of contact for emergencies.
- Developing an appropriate Harrietville first aid and community emergency kit.
- Developing an engagement and communications plan to provide tailored local information for locals and visitors.
- Working with tourist operators and accommodation providers to develop appropriate plans and information for staff, clients and guests.
- Supporting people to test their emergency plans and to be better prepared to make decisions before, during and after emergencies.

### Building community and infrastructure resilience

The Government recognises that preparing for emergencies includes building the resilience of communities and infrastructure. Victoria's **Critical Infrastructure Resilience arrangements** (2015) help Government and industry work together to ensure continuity of supply of essential services such as power, water and communications, and to minimise disruptions in emergencies.

The Government will continue to work with critical infrastructure owner-operators to improve consideration of climate change in planning to minimise the shocks and outages experienced by these lifeline services. The Government is working with energy businesses and emergency services to improve communication and support a more integrated response to severe weather events that could threaten energy infrastructure.

- ✓ The Government is **reducing the risks to the electricity network from bushfires (ongoing)** by making powerlines safer in high-risk bushfire areas. This includes introducing the world's first arc suppression capabilities, and improving regulatory compliance.

- ✓ The Government will **review the regulation of high-pressure pipelines for the transport of energy and other industrial products (2016-18)** to understand risks to existing infrastructure and explore options for building the resilience of this infrastructure.

The Government will also continue to help strengthen the resilience of communities so they can survive, adapt and grow no matter the shocks and stresses they may experience.

- ✓ The **Community Resilience Framework for Emergency Management in Victoria (from 2016)** will help develop and sustain all emergency management programs and actions that help build safer and more resilient communities. It will help integrate climate change projections into emergency management preparation, response and recovery.



### 5.3 Managing impacts on the natural environment

Victoria's rich and varied landscapes sustain diverse ecosystems. Victoria's alpine, mallee, grasslands, grassy woodlands, forest, heathlands, inland waters, estuaries, and coastal ecosystems are home to many thousands of species of plants and animals. Some of these species are found nowhere else in the world.

The effects of climate change on the natural environment will vary across regions and ecosystems, and may be severe. It is likely that climate change will cause irreversible changes to ecosystems and species.<sup>13</sup>

**The natural environment also helps to reduce greenhouse gas emissions and limit damage from extreme weather.**

- Vegetation and soil sequesters carbon.
- Urban vegetation absorbs carbon and cools cities (p. 50).
- Mangroves and other coastal vegetation buffer storm surge.

Plants and animals will be affected by heat stress and drought, and by changes in the numbers and composition of introduced species such as weeds and pest animals. Extreme weather events, changes to the frequency and intensity of fires and long-term changes to the climate may cause the distribution of habitats to change and will affect species composition. Freshwater flows and levels will also change. Once species or ecosystems disappear, they may never come back.

Rich and thriving biodiversity (5.3.1) is a vital part of a healthy environment, and must be protected for its own sake. Victoria's remarkable parks nurture and protect biodiversity, and spending time in these beautiful natural places makes us healthier and happier.

The natural environment is intrinsically linked to Aboriginal cultural heritage. Our parks also protect many heritage sites and are an important part of the Victorian tourism industry. Many Victorian communities depend on the natural environment to support local industries.

All of these qualities that we value in our natural environment are under threat from climate change. Some areas in Victoria are particularly vulnerable, including coastal areas (5.3.2) and the alpine region (5.3.3).



## CASE STUDY: Regional Natural Resource Management (NRM) Climate Change Adaptation Plans and Strategies

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Over three years (2013-2016) Catchment Management Authorities (CMAs) across Victoria developed Climate Change Adaptation Plans or Strategies. These plans identify priority landscapes and natural resource management actions for climate change adaptation and carbon sequestration.

The project used *Climate Change in Australia* – Projections for Australian NRM Regions data developed by CSIRO and the Bureau of Meteorology. Funded by the Federal Government, CMAs worked with research organisations across Australia to deliver the project, including:

- spatial tools to assess climate change vulnerability across the state
- adaptation pathways planning in the state
- guidance for carbon farming priorities in regions
- extensive engagement with the community and key stakeholders on climate change adaptation
- the most comprehensive NRM climate change adaptation planning to date in Victoria.

The Victorian NRM Planning for Climate Change Forum is still operating after the conclusion of the planning process in June 2016. Through the Forum, CMAs have developed a list of high priority adaptation options for NRM in Victoria, with the finer detail in the individual plans. Priorities include:

- landscape connectivity
- shared learning
- local climate change adaptation planning
- supporting carbon sequestration activities
- building resilience of soils
- protecting Aboriginal cultural heritage
- protecting and enhancing Victorian “blue carbon”
- building on the partnership with key research organisations.

Developing the next round of Regional Catchment Strategies will provide the opportunity to incorporate updated climate change information into regional strategies and programs and align with other key policies.



### 5.3.1 Protecting biodiversity

The Government has a range of programs in place to protect Victoria's unique flora and fauna. Protecting individual species is important, but conservation techniques are now available that enable biodiversity planning to consider all species, to then identify cost-effective actions that provide the most benefit to the greatest number of species, considering the impacts of climate change.

These approaches can also take into account the way the environment is changing over time, and help identify responses to increase the resilience of ecosystems and help biodiversity adapt to climate change.



#### **CASE STUDY: Protecting the lowland Leadbeater's Possum and Helmeted Honeyeater at Haining Farm**

Parks Victoria is working with Zoos Victoria and Greening Australia to revegetate and restore over 50 hectares of floodplain forest habitat at Haining Farm in the Yarra Valley. It is designed as a release site for threatened species the lowland Leadbeater's Possum and the Helmeted Honeyeater.

The project will restore the landscape and vegetation that these highly endangered species need to survive. When suitable habitat and food is available, populations will be introduced into the environment.

Restoration will take projected climate changes into account. Haining Farm also represents an opportunity to study vegetation changes over time in response to a changing climate. This is vital for threatened species management, and the health and wellbeing of Victoria's biodiversity.



Victoria's new biodiversity plan, **Protecting Victoria's Environment - Biodiversity 2036 (2017)** will set out the Government's long-term approach to protecting biodiversity and managing growing pressures on our environment caused by climate change and population growth. Implementation of the plan will focus on improving understanding of the impacts of climate change on biodiversity; testing new approaches to target-setting and conservation planning; and using this information in an adaptive management framework to help maintain a healthy natural environment in the long term. It includes:

- o Five-yearly **area-based biodiversity response planning** that will help stakeholders and the community to work together to meet the state-wide targets established in the biodiversity plan. The Government will use spatial decision-support tools and information from regional partners to identify biodiversity assets, understand how climate change will affect them, and decide on priority actions to meet the targets.
- o A **monitoring and evaluation framework** with indicators that measure the health of biodiversity in the context of a range of threats, including climate change.

More broadly, Victoria's national parks and conservation reserves will continue to provide the foundation for protecting our biodiversity, covering over four million hectares of the state.

Major bushfires, storms and floods over the last 15 years demonstrate the growing challenges of climate change faced by our parks and reserves. As well as affecting species and habitats, climate change causes damage to park facilities including coastal piers, jetties, seawalls, roads, walking tracks and visitor facilities. The Government will continue to build the resilience of our existing parks and reserves, to protect biodiversity, community wellbeing and our natural heritage.



As our understanding of the impacts of climate change improves, we need to apply the best available data.



The Government will **integrate its new climate change projections into spatial decision support tools (from 2017)** such as Strategic Management Prospects, to better identify how and where biodiversity is vulnerable to climate change impacts.



## CASE STUDY: Point Cook Coastal Park

Point Cook Coastal Park is one of the last refuges of precious parkland in a rapidly urbanising area. It adjoins the Point Cooke Marine Sanctuary, one of Port Phillip Bay's best intact reef environments, supporting a great diversity of life.

The nearby Cheetham Wetlands is a designated Ramsar site and is considered one of the most important destinations in Australia for migratory birds from as far away as Siberia, Alaska and Japan. The wetlands are now a series of artificial and natural lagoons, supporting shorebirds such as the Double-Banded Plover, Curlew, Red-necked Stint, Sharptailed Sandpiper and Pied Oystercatcher. No longer isolated in a rural setting, urban development now directly abuts Point Cook Coastal Park, redefining its orientation and identity. Over 200,000 people visit the park each year, reflecting

the strong demand for public open space. With its design and many facilities dating back to the early 1980s, it is now time for major renewal.

The Government has identified a risk of losing terrestrial crown land in Point Cook due to coastal inundation, which will intensify as a result of climate change. The Point Cook Coastal Park needs a long-term community vision and a plan to address the current and future impacts of climate change.

To secure the future of the park, new planning processes will need to balance the challenges of urbanisation, increasing visitation, sea level rise and coastal inundation that are a risk to the Ramsar wetlands, wildlife and park facilities. The Government will work with the local community to define a shared vision for the park, to ensure that it remains resilient in the face of climate change.



## CASE STUDY: The Grampians long-term fire, climate and fauna research program

The Grampians National Park is one of Victoria's recreational and biodiversity hotspots, and is a perfect location to conduct long-term fire, climate and fauna research programs. Research will ensure current and future generations can learn about our natural history, and understand the ecological dynamics of areas they visit.

Launched in 2008, a project in the Grampians is investigating species' responses to major climatic changes and fires over time, and ways to use this knowledge to manage our ecological assets. Parks Victoria and Deakin University researchers established 36 long-term small mammal-monitoring sites across the Grampians landscape as part of this project.

After several years of bushfires and significant flooding in 2011, this monitoring has become critical to understanding the effects climate and fire play on

faunal communities. Deakin University students have monitored the sites annually since 2008, assisted by Parks Victoria staff.

The research has produced important information about the way systems recover from fire under different climatic conditions, and significant practical outcomes for park management. These include:

- A landscape-scale predictive model identifying small mammal climatic refuges using long-term satellite imagery.
- Species-specific fire and climate response models that enable fire and predator management programs to respond to underlying climatic conditions.
- Better-targeted fox baiting in areas where significant mammals (such as the Southern Brown Bandicoot) have been detected.

We also need to continue to improve our understanding of the value of biodiversity to the community. **Valuing and accounting for Victoria's environment** (2016) lays out the Government's plan for adopting internationally recognised environmental-economic accounting standards in decision-making.

The System of Environmental-Economic Accounting (SEEA) applies accounting principles to link environmental statistics to socio-economic benefits. The Government is integrating SEEA into environmental reporting, including Valuing Victoria's Parks (2015), the State of the Bays Report (2016) and the State of the Environment Report (2018).

Using SEEA to measure the contribution of the natural environment to society and the economy helps the Government and the community to understand trade-offs and the cost of not protecting the environment. It also helps the Government and the community to work more effectively with business to manage natural capital by expressing the value of the environment in accepted terms.

The economic impacts of damage to the environment are particularly evident in communities where livelihoods and local industries depend on a healthy natural environment. Communities that depend on coastal or alpine tourism are facing a radically different future.

### 5.3.2 Adapting on our coasts

Eighty-three per cent of Victoria's population lives within 50 kilometres of the coast<sup>14</sup>, and our coastal population is growing.

Sea level rise and extreme weather affect coastal biodiversity, damaging or destroying wetlands and other coastal habitats. They also cause flooding, coastal erosion, damage to heritage sites and risks to public and private property.

Working with coastal communities to protect our spectacular coastline will continue to be a priority for the Government. By working together, communities that are highly exposed to climate change impacts can reduce their risks and prepare for the future.

But to effectively manage the risks to our coastal environments, we need to first properly understand them. The **Coastal Climate Change Risk Assessments** (2015) assessed risks to significant public assets from future coastal flooding and erosion in three coastal regions.

The Government is using this information to allocate funding, to manage risks, to inform coastal management policy, including a new *Marine and Coastal Act*, and to update risk and emergency management frameworks.



The Government collects data on coastal erosion and flooding on an ongoing basis, working with Catchment Management Authorities (CMAs) and Melbourne Water. The Government uses this information to decide how to manage coastal hazards that are made worse by climate change.

- ✓ The Government will **incorporate new climate change projections into existing coastal data (from 2017)**. This will ensure the information used by the Government, businesses and the community to make decisions is as detailed, localised and up-to-date as possible.

The Government has integrated climate change risks into coastal management through the **Victorian Coastal Strategy (2014)**. The strategy outlines principles and tools for decision-making that factor in climate change impacts, and priority actions for building the resilience of coastal areas.

Improving how we manage the impacts of climate change will be a central priority for coastal planning into the future.

- ✓ The Government is developing a new **Marine and Coastal Act (2017)** to improve the way coastal and marine areas are managed. It is proposed that the new Act will recognise objectives for adaptation based on the proposed new **Climate Change Act**, which will ensure that consideration of climate change is embedded in coastal management.

- ✓ As part of the review for the new **Marine and Coastal Act**, the Government proposes to develop further **guidance for decision-makers about coastal adaptation (from 2017)**. This will include policy and technical guidance to help manage coastal impacts. It will also establish a baseline to measure the condition of marine and coastal areas over time. These tools will help decision-makers understand the likely impacts on coastal communities and manage risks effectively.

- ✓ As our understanding of climate change risks to coasts evolves, the Government will work with the community to update the Marine and Coastal Strategy and Policy. **Benchmarks for sea level rise** will reflect the best available science, which will ensure coastal asset management and land-use planning can more effectively reduce the risks of climate change for coastal communities.

The Government is committed to helping coastal communities manage the risks from coastal hazards. Local Coastal Hazard Assessments provide a more detailed analysis of the risks and impacts of climate change on a particular area. These assessments have already been completed for Bellarine Corio Bay, Gippsland Lakes – Ninety Mile Beach, Port Fairy and Western Port.

The assessments evaluate hazards to coastal communities, infrastructure and the environment, including sea level rise and coastal erosion. To date they have been used as the basis for planning scheme amendments, infrastructure upgrades and better integrated emergency and hazard management.

Communities can use these assessments as the foundation for action to help their local area and council prepare for and adapt to climate change, as the Port Fairy community has done (see p. 44). The Government will continue to support our coastal communities to understand and manage the coastal risks and impacts caused by climate change through coastal hazard assessments, better climate change data for our coastline, and adaptation planning for coastal communities.

In addition to understanding and managing longer-term impacts, we also need to address immediate hazards that put people and property at risk. The Government is monitoring coastal erosion and flooding and maintaining infrastructure that helps coastal heritage, environments and assets withstand storms, flooding and erosion through the **Climate-Ready Victorian Infrastructure – Critical Coastal Protection Assets** program (2015-2019).

This includes works to repair, renew and protect cliffs, seawalls and groynes across the state including Black Rock, Portland, Lakes Entrance, San Remo, Cowes East, Narrawong, Portarlington, Point Lonsdale, Brighton, McCrae, Craigie Beach and Williamstown. The Government is also building a state-wide coastal protection asset database to help manage our coastal protection infrastructure over the longer term.



### **CASE STUDY: Community coastal action in Port Fairy**

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The township of Port Fairy, voted the world's most liveable town in 2012, sits on the coast of western Victoria. The coastline underpins the town's attractiveness and economy; however, storm events and storm surges are likely to increase with future sea level rise and threaten this area.

The State Government and Moyne Shire Council produced a Local Coastal Hazard Assessment (LCHA) for Port Fairy, which gives a detailed picture of Port Fairy's existing and future coastal hazards to inform planning and management options for the future. The assessment showed that 271 properties are currently under threat from coastal inundation, which will increase to 440 for the 2080 planning horizon if no action is taken.

The local community has been heavily involved in the town's response to the threats of climate change. Following the release of the LCHA, the community-

led Port Fairy Coastal Group developed posters that were displayed in cafes over the 2014-15 summer period, interpreting the LCHA report findings and mapping. The posters also promoted a community values and priorities survey, which received over 800 responses. The survey responses have been used by Moyne Shire Council develop its Adaptation Plan.

From early 2014 the Port Fairy Coastal Group has been monitoring sand levels and dune movements on East Beach. This program has now been extended into the local primary school's curriculum.

The partnership between the community, local and state government ensures community views and values are taken into consideration in long-term planning, and builds a strong foundation to increase Port Fairy's resilience to climate change.



### **CASE STUDY: Our Coast Project: coastal communities taking action to adapt to climate change**

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The Geelong-Queenscliff coastal adaptation program, Our Coast, brings coastal communities, councils and State Government together to identify and plan for future challenges and opportunities that may be caused by rising sea levels in the Bellarine Peninsula and Corio Bay area.

The Geelong-Queenscliff Coastal Mapping Project identified areas exposed to erosion and inundation hazards through a LCHA, and produced hazard maps for a range of severe weather events and sea level rise scenarios. Based on these maps, the Geelong-Queenscliff Coastal Climate Change Risk

Assessment in 2016 analysed the impacts of inundation on coastal communities and the natural environment.

Open-house sessions in August-September 2016 gave the community an opportunity to discuss the findings of this assessment. Building on these discussions, the next phase of the project will develop adaptation-planning solutions for the region, with support from the State Government. This will consider options such as changes to the planning scheme, coastal engineering, building and urban design approaches and further research.



### 5.3.3 Transition for the alpine sector

Victoria's alpine region is already experiencing the impacts of climate change and faces a major transition for its businesses and communities. A warmer climate means shorter snow seasons, less snow cover and less suitable conditions for snow-making.

The local economy is currently built on snow activities and tourism – about 24 per cent of the gross regional product of Alpine and Mansfield Shires comes from the Mount Hotham, Falls Creek and Mount Buller alpine resorts.<sup>15</sup>

The alpine sector is currently reforming its governance and assessing options for the future of alpine resorts in the context of climate change:

- The **Alpine Futures Project** (2016-2017) is a structural review of the alpine sector to ensure it is able to manage current and future challenges.
- The **Southern Alpine Resorts Reform Project** (2016-2017) is enabling the local and visitor community to make recommendations to the Government about the future of Mount Baw Baw and Lake Mountain resorts.

Climate change means that Victoria's snow tourism sector needs to transition. However, this change also brings new opportunities. The great natural beauty of the Victorian Alps creates potential opportunities for nature-based tourism, which could sustain thriving communities in the region. Bringing the community together to think about the long-term future of the Alps will help people to harness new economic opportunities in the region.

- ✓ The Government will support **adaptation planning for the alpine sector (2016-2018)**, working closely with the Alpine Resorts Coordinating Council, the alpine sector and communities. The planning process will produce strategies to assist the alpine region transition in the short to medium term.

Working with the alpine region to plan and implement a smooth transition will deliver broader lessons for Government and other sectors of our economy that may need to adjust to climate change impacts over time. Through its work with the alpine sector, the Government will test new approaches to adaptation planning and explore how best to work with communities to identify future economic opportunities.

### 5.4 Helping the agricultural sector to adapt

We need to manage the impacts of climate change on our agricultural sector to protect farming communities, thousands of Victorian jobs and our state economy.

Climate change is one of many pressures on our farming communities. Higher temperatures, less rainfall, changing weather patterns and extreme weather are affecting livestock and grain, grape, vegetable, fruit and other crops.<sup>16</sup>

Our agricultural sector produces milk, fruit and vegetables, meat, fibre, eggs and grains currently worth over \$13 billion every year.<sup>17</sup> Agriculture production and manufacturing directly employs around 193,000 people and supports many of our small regional towns.<sup>18</sup> Jobs in logistics, transport and advisory services and the food-processing and manufacturing industries in larger regional towns also depend on agriculture.

The agricultural sector is particularly vulnerable to changes in weather conditions, especially extreme weather. The Government is helping farmers to prepare for droughts through the **Drought Preparedness and Response Framework** (2015). This framework provides incentives for farm businesses to build capacity, adapt and be self-reliant. It also sets up a process for drought assistance, with input from regional communities and industry, and protects the welfare of individuals, families and communities.

The Government also provides relief funding and assistance to help communities during droughts. The **Drought Response Package** provided \$27 million to help drought-affected communities in 2015 and 2016. The **National Centre for Farmer Health** (established 2008) helps farming families improve their health, wellbeing and safety and build farm sustainability. The Government will continue to help farming communities to manage the risks of extreme weather to their livelihoods.

Farmers are already addressing the challenges of a changing climate, as well as dealing with other risks to their businesses such as international commodity prices, pests, diseases, and access to markets.

The agricultural sector has a long history of adapting to changing conditions. The **Agriculture Infrastructure and Jobs Fund** (2015-2019) supports projects that improve resilience and efficiency, such as a Doppler radar station in the Wimmera-Mallee region that will give farmers more accurate weather tracking and forecasts.



The Government is partnering with agricultural industries to invest in new technologies, research and innovation to help the sector adapt. For example, **research** is investigating:

- impacts of hotter, drier conditions on horticultural crops, grains, pastures and animals
- use of genomics to quickly develop climate-adapted crop varieties
- growth of wheat and other grains and plant diseases under elevated CO<sub>2</sub> conditions (**AGFACE**)
- the impact of CO<sub>2</sub> on soil processes (**SOILFACE**) and grapes (**GRAPEFACE**)
- models to help agricultural communities better understand the impacts of climate change and the potential trade-offs in agriculture
- opportunities to grow alternative crops
- ways to modify current agricultural practices to suit a warmer climate.

The Government's **Future Industries Fund Food and Fibre Strategy** (2016) outlines actions to improve productivity in the food and fibre sector in the face of climate change. The Government is also helping farmers manage risks through upgrades to irrigation

infrastructure, improved water efficiency and support to integrate climate change risk management into business strategies to build the resilience of farm businesses.

The Government will continue to work with agriculture businesses and farming communities to better plan for the future impacts of climate change.



To help build on this already substantial body of existing activity, the Government will work with business and industry, service providers, non-government organisations and farming communities to develop a **pilot Adaptation Action Plan for the agriculture sector (2017-2020)**. The pilot AAP will build on and fill gaps in work currently underway to help the agricultural sector manage risks. It will be an opportunity to test new approaches to adaptation, and the lessons learned will help scale up successful projects in the longer term. It will also help the Government and the sector work together to address complex challenges such as long-term food security and maintaining Victoria's capacity to export food and fibre products. A pilot AAP for the agriculture sector will be a useful practical foundation for the first AAP for the primary production sector under the proposed new *Climate Change Act*.



### CASE STUDY: Adapting to climate change in the meat and wool industry

Through Rural Industries Skills Training, the Commonwealth Department of Agriculture (supported by the Victorian Government) has trained 100 sheep industry consultants to deliver a producer workshop about adapting to climate change and reducing carbon emissions.

The 'More Lambs, More Often' program focuses on 'bullet-proofing' sheep farmers from climate change.

Farmers surveyed at the start of the project wanted to learn ways to better manage variable seasons, including late autumn breaks and failed springs.

The program is delivered by trusted advisors and focuses on enabling farmers to develop solutions. More than 90 per cent of participating sheep producers indicated they would change the way they manage climate impacts as a result of the workshop.



## 5.5 Protecting our water resources

Climate change poses serious risks to our precious water resources. Victoria is becoming hotter and drier, which means there is less water available, traditional water supply systems may not work in the same way, and the health of our waterways is under threat. Droughts, floods and heatwaves also strain our water supply and water infrastructure.

We need clear and effective planning to protect our water resources and make sure that our water system can cope with climate change impacts.

The **Water for Victoria plan** (2016) sets the direction for adaptation in the water sector for the coming decades. It includes many different strategies and actions, some of which are outlined below. As part of this plan, the Government has established the **Aboriginal Water Program** (2016) to help incorporate Aboriginal values and expertise into water management.

### Aboriginal values in our waterways

The Aboriginal Waterways Assessment (AWA) project allows Traditional Owners to more effectively participate in water planning and management. It provides a way to understand waterway and wetland health, linked to Aboriginal values and uses.

The AWA is a tool used to determine these values and uses. For example, there may be significant totem species in an area that may benefit from different watering regimes from environmental water. Species identified may include migratory species that are linked to spirituality, culture, lore or cultural economics. Using the AWA, the values and uses of waterways are determined by the Traditional Owners.

Using tools like the AWA and involving Traditional Owner groups in committees that implement floodplain management and coastal planning are important steps to ensure the Government values and respects the knowledge and perspectives of Aboriginal Victorians in managing these areas and preparing for the impacts of climate change.

Through Water for Victoria, the water sector is committed to leading climate change actions arising from the Adaptation Plan and the review of the *Climate Change Act 2010*.



A **pilot Adaptation Action Plan for the water cycle system** will help the water sector to coordinate and monitor adaptation initiatives. It will build on the initiatives in Water for Victoria and help Victoria's water sector to remain at the leading edge of climate change adaptation planning. It will also help the sector to embed consideration of climate change in planning and operations.

Continually improving our understanding of the risks and impacts will be essential if the water sector is to plan effectively for climate change. The Government will therefore continue to invest in **research** and work with the community, local governments, Traditional Owner groups, research institutions and the water industry to **build partnerships to share knowledge**.

This will help decision-makers understand how to apply research to policy, planning and practice. The Government has developed **guidelines for assessing the impacts of climate change on water supplies** to help water corporations plan effectively.

We can also improve our ability to adapt and reduce the pressure on our scarce water resources by improving water efficiency. The Government is reviving the successful Target 155 water conservation program through the **Target Your Water Use** program in regional Victoria, and expanding the **Schools Water Efficiency Program**.

The Government also supports innovation in the water sector through **Intelligent Water Networks** for urban water corporations and by participating in the **Cooperative Research Centre for Water Sensitive Cities**.

As well as reducing the amount of water we use, we need to build the resilience of our water infrastructure so that it can withstand the impacts of climate change. The Government is investing in **sustainable irrigation projects** in our irrigation districts. The Goulburn Murray Connections Project (2016–2020) will help save water and improve agricultural productivity in the Goulburn Murray irrigation district.

We also need to be able to sustain environmental water delivery in a changing climate. The Government is investing in **environmental works for priority watering sites** and using **sustainable water strategies** to identify opportunities for increasing the amount of water in the environmental water reserve in the future.

Water infrastructure is only one component of the built systems that support our communities and are threatened by climate change. For the water system and other types of infrastructure to remain viable in future, we also need to build the resilience of the built environment as a whole.



## 5.6 Improving the resilience of our built environment

A safe and resilient built environment is essential to the wellbeing of a community. Extreme weather can damage or even destroy buildings and settlements, and threaten the people that live and work there. The risks to our homes, businesses, schools, hospitals and community buildings are growing as the climate changes. To better manage these risks, we urgently need to adapt our built environment and the way we make decisions about it.

We need to integrate consideration of climate change impacts into decisions we make now about how we plan for and build our future communities (5.6.1). We need to improve the resilience of our urban environments, particularly to extreme heat (5.6.2), and the resilience of our transport system and infrastructure.

### Establishing a Suburban Development Portfolio (2016)

The Government has established a suburban development portfolio to address the critical challenges of population growth, structural economic change, climate change and demographic change.

The portfolio will focus and coordinate the Government's efforts to ensure that Melbourne is well positioned to meet these challenges, remaining prosperous and liveable and sharing the benefits of growth fairly across its sub-regions.

A key driver for the Government in establishing the portfolio is to ensure that all Victorians have access to a healthy environment that is resilient to the impacts of climate change impacts. This means that new suburbs should be designed to allow for green spaces for sport and leisure, water sensitive design to help save water, and green infrastructure to help reduce the impacts of extreme weather.

The portfolio will provide governance and coordination through Metropolitan Partnerships and five-year plans, building on existing initiatives.

### 5.6.1 Factoring climate change impacts into land-use planning

Unless we more systematically factor in climate change risks, land-use planning decisions we are making now could result in loss and damage to property, severe disruptions to services and even injuries or death in the future. Addressing risks in the planning stage is also much more cost-effective than repairing damage, retrofitting or losing buildings and towns in extreme weather.

As part of **Plan Melbourne (2016)**, the Government is reviewing planning and building systems to support **environmentally sustainable development outcomes for new buildings** to improve energy and water efficiency and waste management.

Individual hazards can also be managed through the planning scheme. The **Bushfire Management Overlay** (updated 2016–2017) maps areas with extreme bushfire risk to ensure planning decisions prioritise human life and safety. **Coastal hazard assessments** (from 2012) (p. 42) have also informed planning scheme amendments.

However, we also need a more comprehensive approach to managing the risks of climate change in land-use planning.



The Government will **review land-use planning policies and provisions (2017–2018)** to improve the way the land-use planning system manages natural hazards, climate change and environmental risks. The review, which will be part of implementing the updated Plan Melbourne, will be the foundation for changes to planning provisions and planning schemes. It will ensure provisions remain current and based on the best available climate science and will help growth and settlement patterns to avoid and reduce long-term risk.

Addressing climate change impacts through land-use planning is complicated and constantly evolving in practice. Decision-makers, especially local governments, need guidance to help them use climate change data and projections effectively in planning decisions.



✓ The Government will provide **authoritative data, information and guidance for local governments (from 2017)** to help planning authorities consider the impacts of climate change in planning decisions. The Government will work with councils and industry bodies to ensure these materials meet the needs of local governments and help improve planning decisions in practice.

✓ Working closely with councils, the Government will also develop **standards for managing climate change risks in land-use planning (2017-2019)**. These standards will help develop a process for responsible authorities to demonstrate they have met their obligations in managing climate change risks through land-use planning. It will help local governments apply robust processes such as the Australian Standard 'Climate change adaptation for settlements and infrastructure – a risk-based approach'. Clear standards and due process will provide more certainty for local governments about liability for planning decisions.

✓ The Government will host a **forum on climate change and liability for land-use planning decisions (2017)**. The forum will bring state and local governments and other interested organisations together to discuss options for clarifying the liability of councils for land-use planning decisions in the context of climate change.

However, as well as planning for the future, we also need to manage risks to our existing communities and building stock. Under Plan Melbourne, the Government will produce:

✓ **Whole-of-settlement adaptation and risk mitigation strategies (from 2018)**. These will help existing communities that are particularly exposed to climate impacts to manage those impacts through, for example, updates to local planning schemes and regional growth plans.

In addition, under the Water for Victoria plan, the Government will:

✓ **Review building and planning measures (2017-2018)** to help reduce the risk of localised urban flooding caused by stormwater in our cities and towns. This review will also consider opportunities to support urban cooling and greening through stormwater management.

## Energy efficiency: a win-win for climate and the community

The Victorian Government is helping people to make their homes more energy efficient. Improving the efficiency and thermal performance of homes reduces power bills, and makes homes more comfortable and climate-resilient.

Based on Victoria's energy mix in 2016, improved energy efficiency and productivity reduces greenhouse gas emissions. Reduced demand also reduces the pressure on the energy system, especially during extreme weather events, which improves security of energy supply.

The Government's Energy Efficiency and Productivity Statement (2015) commits to improving the efficiency and quality of our buildings and relieving energy cost pressures on the most vulnerable. The Government's Saving Energy, Growing Jobs initiative (2016) includes a program to retrofit public housing stock and the houses of people with complex health conditions to make them more energy efficient and help reduce energy bills.

The Government's Building Business Productivity Program is providing small and medium-sized businesses with grant funding to reduce their energy costs through a new energy efficiency assessment program. The Government is also rolling out the Residential Efficiency Scorecard, to help Victorians understand how to improve the energy efficiency of their homes.



## 5.6.2 Addressing heat in the urban environment

The Government also recognises the threats to human health from urban heat. Cities and towns are hotter than non-urban areas because of the urban heat island effect.

This is caused by 'heat-absorbing materials such as dark coloured pavements and roofs, concrete, urban canyons trapping hot air, and a lack of shade and green space in dense urban environments'.<sup>19</sup>

### Partnerships for a resilient Melbourne

Melbourne was one of the first cities to be selected to join the 100 Resilient Cities network, pioneered by the Rockefeller Foundation. The Resilient Melbourne Strategy – the first such strategy for any Australian city – sets out coordinated mechanisms for the 32 metropolitan councils to address chronic stresses and acute shocks that affect greater Melbourne, including climate change. The Victorian Government is partnering with the Resilient Melbourne Delivery Office to deliver many actions from the strategy, including a metropolitan urban forest strategy and an emergency management community resilience framework for Victoria.

We can reduce the urban heat island effect using street trees, parks and gardens, green roofs, green walls, water-sensitive urban design, recycled water and shading to cool the urban environment. Local governments are leading the way in urban greening, planting urban forests and keeping vegetation green using integrated water management.

The Victorian Government supports a whole-of-government approach to cooling and greening the city.

✔ The Government will work with the City of Melbourne to build a large, publicly accessible **green roof in Melbourne's CBD (from 2017)**. This project will help the community learn about the benefits of green roofs and inspire other projects.

✔ Through initiatives such as Plan Melbourne, the Government will **support cooler, greener cities projects (from 2017)** to support the uptake of urban greening and integrated water management. Projects could include urban forest strategies, stormwater harvesting, recycled water infrastructure, sustainable irrigation and green roofs.

### A climate-ready city centre: working with the City of Melbourne to build a cooler, greener, more resilient Melbourne

The Victorian Government will continue to work closely with the City of Melbourne to ensure Melbourne remains a great place to live, work and play.

The City of Melbourne has a number of projects underway to make Victoria's capital cooler and greener, including:

- \$60 million invested in green infrastructure since 2010 to adapt the city to climate change, including green space expansion, tree planting and stormwater harvesting.
- An Urban Forest Strategy with a goal of increasing canopy cover by 40 per cent to cool city temperatures.
- The Integrated Climate Adaptation Model tool (developed in 2015) to enable the council to strategically consider multiple climate risks at once and test the outcomes and consequences of implementing interventions in a range of future climate scenarios.
- Fostering the sharing of adaptation research and strategies by hosting the Inner Melbourne Climate Adaptation Network of adaptation professionals.
- Strategic installation of a number of large stormwater tanks under urban parks, to support localised flood mitigation efforts. For example, a two-megalitre tank was recently installed at Lincoln Square in Carlton.

The City of Melbourne is also a member of the C40 network of cities committed to addressing climate change, enabling the city to learn from and share solutions with other cities across the world. The council's refreshed Climate Change Adaptation Strategy will be released in early 2017, building on the strong foundations of the 2009 strategy.

Future collaboration between the Victorian Government and the City of Melbourne will include working together to implement elements of the Resilient Melbourne Strategy; joint engagement with the private sector including the insurance industry, social services and community advocates to identify and manage the risk to vulnerable areas in the city; and creating a large, publicly accessible green roof in Melbourne.



### 5.6.3 Building the resilience of our transport system

A reliable transport system and safe and accessible transport routes are essential components of a liveable built environment. However, climate change impacts cause disruption and long-term damage to our transport network.

Extreme heat can slow or halt public transport and threaten the health and safety of passengers. Storms and other extreme weather can disrupt signalling and damage infrastructure. Flooding and heat damage to roads cause long-term degradation and can close roads in the short term, restricting access to towns, properties and services.

Disruptions to the transport system reduce productivity, and damage to infrastructure can be extremely costly in the short and long term. We need a transport system that can withstand extreme weather and the increasing pressure on infrastructure from climate change.

#### Planning for resilient transport infrastructure

To build the resilient transport system of the future, we need to incorporate the risks and impacts of climate change into transport planning.

The Melbourne **Metro Tunnel** (from 2016) includes a climate risk assessment and an adaptation plan to address climate risks. This includes measures to protect infrastructure, stations and precincts, and the use of materials that are resilient to a changing climate.

The **VicRoads Sustainability and Climate Change Strategy** (2015-2020) includes a range of measures to protect infrastructure and community wellbeing in the face of climate change impacts. It includes an assessment of risks from climate change, which will guide VicRoads in planning to minimise the disruption to road networks caused by climate change impacts. It will also help VicRoads to work with landholders in relevant areas to effectively manage these risks.

Victoria's extensive existing transport infrastructure requires upgrades and maintenance as a matter of course. By factoring climate change impacts into these upgrades, we can build the resilience of the transport system through regular maintenance. The Government has an ongoing **program of works to upgrade existing infrastructure** that incorporates standards to adapt to climate change.

The **Western Distributor Project (2018-2022)** includes bridges, tunnels and improvements to existing roads and ramps. Design of these upgrades will consider future environmental changes and impacts so this infrastructure is better able to withstand extreme weather conditions.

#### Managing the impact of climate hazards on the transport network

The Government will continue to improve the way it manages current climate change hazards that affect transport infrastructure and the safety of those who use it.

In particular, the Government is focussed on ensuring the system is well prepared to manage hazards such as extreme heat. For example, V/Line's **Hot Weather Policy** (ongoing) requires trains to slow down when the temperature is above 36°C because steel tracks expand in the heat. V/Line actively encourages passengers to monitor weather forecasts and to allow extra time for journeys on hot days. VicRoads is working with the Metropolitan Planning Authority to **improve metropolitan street tree canopy coverage** (commenced 2011) in growth areas and existing road corridors to reduce the urban heat island effect.

Using innovative building and planning techniques and an integrated approach, the Government will continue to build the resilience of our transport infrastructure. This will position Victoria's transport system to adapt effectively to climate change, minimise its impacts on the environment, and continue to connect the community and support our economy.



## Monitoring and evaluation

Adaptation is a complex and ongoing process, and it can be difficult to measure our progress.

Success in adaptation often means a non-event where negative impacts were avoided or reduced. It is difficult to match outcomes to our efforts when we might have to measure lives that were not lost in a heatwave due to climate-adapted housing, or the lack of damage to houses built away from the coast to reduce the risk of storm surge.

As highlighted in this Adaptation Plan, climate change impacts and their management also depend on the local context and the diverse challenges across states, regions, sectors and individual adaptation projects.

These attributes mean there is no off-the-shelf approach to monitoring and evaluating adaptation.

However, the Government is committed to developing a robust, tailored system of monitoring and evaluation to help ensure that its adaptation initiatives are effectively reducing risks to the community, infrastructure, economy and environment.

Thoroughly evaluating the Adaptation Plan will help to track Victoria's progress in adapting to climate change over time, and will inform future adaptation planning including under the proposed new *Climate Change Act*.



The Government will develop a best-practice **monitoring and evaluation framework for adaptation (2017)** to monitor the implementation and effectiveness of the Adaptation Plan. Monitoring and evaluation will occur over the life of the Adaptation Plan, and will incorporate feedback from the community. The framework will establish and measure baseline indicators to monitor the success of Victoria's adaptation action in the longer term.

The Government will also continue to provide information to the community through the Commissioner for Environmental Sustainability's State of the Environment Report (2018), and through progress and evaluation reports for individual projects.



### **CASE STUDY: 'How well are we adapting?'** **– Western Alliance for Greenhouse Action monitoring and evaluation framework**

The Western Alliance for Greenhouse Action is developing and implementing a monitoring, evaluation and reporting framework to assess how well eight councils in Melbourne's west are improving adaptive capacity and implementing adaptation actions.

The framework is designed to evaluate and report on adaptation actions, and focuses on learning, rather than measuring success or failure. Processes and outcomes are evaluated against program objectives and against historic baseline data.

The process of developing the framework involves staff from different areas of council. This makes the process itself an effective educational tool to improve understanding of climate change impacts on council operations and assets.

The framework is currently being used to monitor councils' work in community wellbeing and emergency management, and open space and water security.

The framework will allow the participating councils to report on their progress in adaptation within council and to external stakeholders and the community.

## Summary of actions

Action	Lead department	Timeframe
<b>Leading by example: addressing risks to State Government operations and assets</b>		
Victorian Risk Management Framework	All departments	updated 2015
✓ Audit of Government operations	DELWP	2017
✓ Whole-of-government working group	DELWP with DTF	2017
✓ Advocating for more effective national action and financial assistance from the Federal Government	DELWP	ongoing
<b>Helping Victorian communities adapt to climate change</b>		
<b>Guidance and authoritative up-to-date information</b>		
Future Coasts	DELWP	2012
Flood studies	DELWP	ongoing
✓ Better climate projections for Victoria	DELWP	from 2017
✓ Vulnerability assessment	DELWP	2017
✓ Update Emergency Risks in Victoria	EMV	2017
Victorian Climate Initiative (VicCI)	DELWP	2013 - 2017
Primary Industries Climate Challenges Centre (PICCC)	DEDJTR	established 2011
✓ Virtual Centre for Climate Change Innovation	DELWP	established 2016
<i>Climate-Ready Victoria factsheets</i>	DELWP	2015
Emergency Management Common Operating Picture (EM-COP)	EMV	2016
VicEmergency website	EMV	ongoing
Agriculture newsletters, including: <ul style="list-style-type: none"> <li>• The Break</li> <li>• Milking the Weather.</li> </ul>	DEDJTR	ongoing
✓ Authoritative climate change data and information for the community	DELWP	from 2017
✓ Guidance on how to use updated data	DELWP	from 2017
<b>A partnership with local government</b>		
✓ Partnership Agreement	DELWP	2017
✓ Community of practice for adaptation in local government	DELWP	from 2017
✓ Training and guidance for local governments, including: <ul style="list-style-type: none"> <li>• List of the responsibilities of state and local governments under legislation.</li> </ul>	DELWP	from 2017
✓ Targeted support for local government adaptation projects	DELWP	from 2017
✓ Collaborate with and support local government Greenhouse Alliances	DELWP	ongoing
✓ Forum on managing climate-related insurance risks	DELWP	2017

✓ Effective collaboration between emergency management sector and councils	EMV	ongoing
<b>A regional approach to adaptation planning</b>		
✓ Regional adaptation gap analysis	DELWP	from 2017
✓ Support regional adaptation projects and planning	DELWP	from 2017
<b>Embedding adaptation in core sectors of our community</b>		
✓ Sector summits	DELWP	2018, 2019, 2020
<b>Addressing the impacts on health and human services</b>		
Victorian public health and wellbeing plan	DHHS	2015-2019
Municipal health and wellbeing plans	DHHS and local governments	ongoing
✓ Adaptation Action Plan for the health and human services sector	DHHS	2017-2020
✓ Assessment of the cost of climate change impacts on social determinants of health and wellbeing	DHHS	2016-2018
Victorian Heat Health Plan	DHHS	2015-2019
State Heat Plan	EMV	2014
Community Services Climate Resilience Program	DHHS	2015-2017
✓ Climate-adapted public housing demonstration houses	DHHS	2016-2018
<b>Preparing for and responding to extreme weather events</b>		
Floodplain Management Strategy	DELWP	2016
Safer Together	DELWP with EMV	2015
✓ Fire Management Strategy	EMV	2017-2021
Emergency Management Strategic Action Plan	EMV	2015-2018
✓ Ministerial Guidelines to consolidate reforms to emergency management planning legislation	EMV	2017
✓ Emergency Management Climate Change Program, including: <ul style="list-style-type: none"> <li>community-based emergency management planning</li> <li>incorporating climate change projections into risk data</li> <li>climate change and emergency management forums.</li> </ul>	EMV	from 2017
Emergency Management Capability Blueprint	EMV	2015-2025
Critical Infrastructure Resilience arrangements	EMV	2015
✓ Reducing the risks to the energy network from bushfires	DEDJTR	ongoing
✓ Review the regulation of high-pressure pipelines for the transport of energy and other industrial products	DELWP	2016-18
✓ Community Resilience Framework for Emergency Management in Victoria	EMV	from 2016
<b>Managing impacts on the natural environment</b>		
<b>Protecting biodiversity</b>		
✓ Protecting Victoria's Environment - Biodiversity 2036, including: <ul style="list-style-type: none"> <li>area-based biodiversity response planning</li> <li>monitoring and evaluation framework.</li> </ul>	DELWP	2017
✓ Integrate new climate change projections into spatial decisions support tools	DELWP	from 2017
Valuing and accounting for Victoria's environment	DELWP	2016

Adapting on our coasts		
Coastal Climate Change Risk Assessments	DELWP	2015
✓ Incorporate new climate change projections into existing coastal data	DELWP	from 2017
Victorian Coastal Strategy	DELWP	2014
✓ <i>Marine and Coastal Act</i>	DELWP	2017
✓ Guidance for decision-makers about coastal adaptation	DELWP	from 2017
✓ Benchmarks for sea level rise	DELWP	ongoing
Climate-Ready Victorian Infrastructure – Critical Coastal Protection Assets	DELWP	2015-2019
Transition for the alpine sector		
Alpine Futures Project	DELWP	2016-2017
Southern Alpine Resorts Reform Project	DELWP with Southern Alpine Resorts Management Board	2016-2017
✓ Adaptation planning for the alpine sector	DELWP with Alpine Resorts Coordinating Committee	2016-2018
Helping the agricultural sector to adapt		
Drought Preparedness and Response Framework	DEDJTR	2015
Drought Response Package	DEDJTR	2015-2016
National Centre for Farmer Health	DEDJTR	established 2008
Agriculture Infrastructure and Jobs Fund	DEDJTR	2015-2019
Agriculture sector research	DEDJTR	ongoing
Future Industries Fund Food and Fibre Strategy	DEDJTR	2016
✓ Adaptation Action Plan for the agriculture sector	DEDJTR	2017-2020
Protecting our water resources		
Water for Victoria plan, including: <ul style="list-style-type: none"> <li>• Aboriginal Water Program</li> <li>• research</li> <li>• build partnerships to share knowledge</li> <li>• guidelines for assessing the impacts of climate change on water supplies</li> <li>• Target Your Water Use</li> <li>• Schools Water Efficiency Program</li> <li>• Intelligent Water Networks</li> <li>• Cooperative Research Centre for Water Sensitive Cities</li> <li>• sustainable irrigation projects</li> <li>• environmental works for priority watering sites</li> <li>• sustainable water strategies.</li> </ul>	DELWP	2016
✓ Adaptation Action Plan for the water cycle system	DELWP	2017-2020



Improving the resilience of our built environment		
Factoring climate change impacts into land-use planning		
Environmentally sustainable development outcomes for new buildings	DELWP	from 2016
Bushfire Management Overlay	DELWP	updated 2016-2017
Coastal hazard assessments	DELWP	from 2012
✔ Review land-use planning policies and provisions	DELWP	2017-2018
✔ Authoritative data, information and guidance for local governments	DELWP	from 2017
✔ Standards for managing climate change risks in land-use planning	DELWP	2017-2019
✔ Forum on climate change and liability for land-use planning decisions	DELWP	2017
✔ Whole-of-settlement risk mitigation strategies	DELWP	from 2018
✔ Review stormwater management in building and planning	DELWP	2017-2018
Addressing heat in the urban environment		
✔ Green roof in Melbourne's CBD	DELWP with City of Melbourne	from 2017
✔ Support local governments' cooler, greener cities projects	DELWP	from 2017
Building the resilience of our transport system		
Metro Tunnel	Melbourne Metro Rail Authority	from 2016
VicRoads Sustainability and Climate Change Strategy	VicRoads	2015-2020
Program of works to upgrade existing infrastructure	DEDJTR	ongoing
Western Distributor Project	DEDJTR	2018-2022
Hot Weather Policy	V/Line	ongoing
Improve metropolitan street tree coverage	VicRoads and Victorian Planning Authority	commenced 2011
Monitoring and evaluation		
Monitoring and evaluation framework for adaptation	DELWP	2017

## How the Adaptation Plan was developed

The Adaptation Plan is based on:

- **Scientific evidence**, including the **Climate-Ready Victoria** climate science information sheets that the Victorian Government produced in 2015, which detail the projected impacts of climate change for key sectors and regions in Victoria. These are based on the CSIRO and Bureau of Meteorology Climate Change in Australia project. They incorporate the latest ensemble of global climate models (CMIP 5), which informed the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. (See <http://www.climatechange.vic.gov.au/understand>)
  - **Independent evaluation of Victoria's first Climate Change Adaptation Plan** (see Appendix 2), which indicated that although key actions were implemented, greater awareness of and engagement in adaptation planning across the whole of the Victorian Government is needed. The evaluation found that the first Adaptation Plan had a limited effect in driving Government climate change action that was not already underway. This was linked to the broader lack of mandate for adaptation planning. The second Adaptation Plan sets a more ambitious agenda and will make the Government more accountable for action.
  - **Online public consultation** on *Victoria's Climate Change Adaptation Plan Directions Paper* in August-September 2016. Over 45 submissions were received from individuals, business owners, CMAs, councils, Greenhouse Alliances and industry peak bodies. The submissions indicated general support for the vision, goals and principles set out in the Directions Paper; highlighted the need for more clarity in adaptation roles and responsibilities; and supported the State Government taking a leadership role in climate change adaptation. The importance and intrinsic value of the natural environment was emphasised in several submissions.
  - **Extensive engagement with the Victorian community** over 2015 and 2016 including:
    - More than 250 people participated in nine **community conversations** about climate change delivered by Sustainability Victoria.
    - More than 100 people attended the **Climate Change Leadership Forum** in Melbourne.
    - **Regional climate change think tanks** engaged more than 300 people across regional Victoria.
    - **Sector-specific roundtables** early in 2016 gathered more than 150 stakeholders in key sectors to discuss Victoria's action on climate change.
    - **Submissions to the Independent Review of the Climate Change Act 2010** included more than 100 individual submissions and more than 1550 campaign submissions.
- Feedback from these forums highlighted a strong desire for State Government leadership and a whole-of-government approach to climate change action. Participants noted the importance of local, place-based responses, building community resilience and strong partnerships between government, the community and business.
- Advice from the **Climate Change Advisory Panel**, a group of key external stakeholders convened to inform the Government's action on climate change. Panel members include representatives from business, industry, NGOs, local government, Traditional Owners and social services. The panel provides expert advice on Victoria's climate policy, including the Adaptation Plan, to ensure the Government is meeting the needs of all Victorians.
  - Advice from an **ad hoc academic advisory panel** of adaptation researchers, who provided input on current national and international best practice in adaptation and options for Victorian Government action.



- **Engagement with local governments**, including workshops held across Victoria with infrastructure, planning and climate change/sustainability local government officers in mid-2016 and written submissions on a discussion paper. In general, local governments emphasised the need for State Government leadership, and recommended that climate change adaptation be considered as an issue affecting all sectors rather than an environmental problem. Feedback supported long-term funding for councils to adapt, and recognition of the different capacities of different councils. Many councils indicated support for a review of the Planning Scheme to better incorporate climate change, and highlighted the need for the State Government to provide information and guidance to inform decision-making. The targeted engagement leading into the development of the Adaptation Plan is a part of

ongoing discussion and collaboration on climate change between state and local government in areas such as sustainability, planning, health and environmental management.

- **Engagement with key State Government stakeholders** to build on and embed climate change in the long-term plans and strategies currently under development across Government. This includes ongoing work with policy teams, and discussions with the whole-of-government **Adaptation Coordinating Committee** and the **Interdepartmental Committee on Climate Change and Energy**.

Continued consultation and engagement and regularly updated information will be critical to ensure successful implementation of the Adaptation Plan.



# Final Evaluation of the Victorian Climate Change Adaptation Plan

Final Report

Prepared for

Department of Environment, Land, Water and Planning



RESEARCH



EVALUATION



DESIGN

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## Executive Summary

The first *Victorian Climate Change Adaptation Plan* (the Adaptation Plan) is a state-wide, cross-sectoral, whole of government plan for Victoria's response to the changing climate. This report presents an overall evaluation of the Adaptation Plan, which was in place between 2013 and 2016. It identifies lessons learned and makes recommendations to inform the development of the next iteration of Victoria's climate change adaptation policy.

The evaluation draws on feedback from key government stakeholders and monitoring data, collected over the life of the Adaptation Plan.

Overall, most of the activities and outputs outlined under the Victorian Climate Change Adaptation Plan have been delivered. While much of the impact of the Adaptation Plan is difficult to disentangle from work that would or may have happened anyway, stakeholders emphasised that the Adaptation Plan provided value in the form of:

- raising the profile of adaptation work within and across government
- providing a framework for adaptation planning – a “bridging document” that has set out a higher level framework that can now be built on to deliver more on-ground impacts
- consolidating and communicating the range of government action in progress, in turn, providing a mechanism for improving coordination across government and between stakeholders.

Based on the results and discussion above, we make the following recommendations to inform the development, implementation and evaluation of the second Climate Change Adaptation Plan for Victoria:

1. DELWP should consider improving how the Adaptation Coordinating Committee (or similar group) is structured and run, including clarifying its objectives and how to best solicit input from key decision-makers.
2. DELWP should consider the lessons identified in this evaluation (Section 4.2) and how they might be applied to the next iteration of Victoria's Climate Change Adaptation Plan (2017-2020).
3. DELWP should ensure that the second Adaptation Plan has a clear set of objectives that are achievable within the timeframe of the Adaptation Plan and are logically linked to the activities outlined in and associated with the Adaptation Plan. DELWP should consider using a program logic to test these links and identify expected outcomes and a more systematic set of indicators of success. This should be complemented with a plan for how the Adaptation Plan will be evaluated.
4. As a document with a clear communications role, DELWP should ensure that the second Adaptation Plan has a strategic-level communications and engagement plan.

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## Acronyms

ACC	Adaptation Coordinating Committee
The Act	<i>Climate Change Act 2010</i>
The Adaptation Plan	the first <i>Victorian Climate Change Adaptation Plan</i>
DELWP	Department of Environment, Land, Water and Planning
VAS Partnership	Victorian Adaptation and Sustainability Partnership
VCCCAR	Victorian Centre for Climate Change Adaptation Research



# 1 Introduction

## 1.1 Overview

**The first Victorian Climate Change Adaptation Plan (the Adaptation Plan) is a state-wide, cross-sectoral, whole of government plan for Victoria's response to the changing climate.** Developed in 2013, the Adaptation Plan provided a strategic framework over four years that aimed to ensure:

- *appropriate risk management strategies are in place for public assets and services*
- *enhanced disaster resilience strategies are being implemented*
- *government policies and programs encourage and facilitate climate resilience and adaptive capacity across the Victorian community.*<sup>1</sup>

The Adaptation Plan was developed as a requirement under the Victorian *Climate Change Act 2010* (the Act), and was implemented by the Department of Environment, Land, Water and Planning (DELWP; formerly the Department of Environment and Primary Industries, and Department of Sustainability and Environment).

The Act stipulates that “the implementation and effectiveness”<sup>2</sup> of the Adaptation Plan is to be evaluated through “independent review”.<sup>3</sup> **This report presents an overall evaluation of the Adaptation Plan. It identifies lessons learned and makes recommendations to inform the development of the next iteration of Victoria's climate change adaptation policy.**

## 1.2 The Adaptation Plan

Providing a commitment to strategic adaptation planning, the Adaptation Plan involves the following key components:

- **Existing adaptation responses:** *demonstrates the broad scope of Victorian Government adaptation responses already underway.*
- **Roles and responsibilities:** *provides guidance on roles and responsibilities of government – in particular, state and local government – and the private sector, on the basis that climate risks are best managed by those closest to the risk.*
- **Key strategies and priorities:** *establishes key whole of Victorian Government strategies and strategic priorities to manage the major short and long term climate risks to public assets and services and to build community preparedness.*
- **Integrating climate risk management:** *reinforces the need to embed climate risk management across all portfolios of the Victorian Government and across all regions of the state.*
- **Partnerships:** *supports capacity-building in local government through a strengthened adaptation partnership.*

<sup>1</sup> Department of Environment, Land, Water and Planning 2013, *Victorian Climate Change Adaptation Plan*, p. 3.

<sup>2</sup> *Climate Change Act 2010* (Vic), s. 16(3).

<sup>3</sup> *Ibid*, s. 18(1).

- **Regional focus:** recognises the importance of place-based responses to managing climate risks and the need to develop regional partnerships and deliver effective action on the ground.<sup>4</sup>

The overarching strategic priority of the Victorian Government through the Adaptation Plan is to “strengthen coordination across government and to integrate and mainstream consideration of climate risks into existing government policies, asset management approaches and service planning”.<sup>5</sup> In addition to strengthened coordination and mainstreaming of adaptation planning, the Adaptation Plan outlines six specific strategic priorities (Figure 1):

- **Managing risks to public assets and services.**
- **Managing risks to natural assets and natural resource-based industries.**
- **Building disaster resilience and integrated emergency management.**
- **Improving access to research and information for decision making.**
- **Supporting private sector adaptation.**
- **Strengthening partnerships with local government and communities.**<sup>6</sup>

Development and implementation of the Adaptation Plan was guided by the following principles, as required under the Act:

- **informed decision-making**
- **integrated decision making across government**
- **risk management**
- **complementarity with other levels of government**
- **equity**
- **community engagement.**<sup>7</sup>

Figure 1 shows how the integration of climate risk management, developing and strengthening partnerships and place-based regional policy responses fed into the Adaptation Plan's overarching strategies and six key strategic priorities. The main focus of this final evaluation is the overall effectiveness and impact of the Adaptation Plan's strategic priorities and how well this work was aligned with the principles of the Act. This evaluation will also consider the extent to which the Adaptation Plan clarified the roles and responsibilities of government, the private sector and the community.

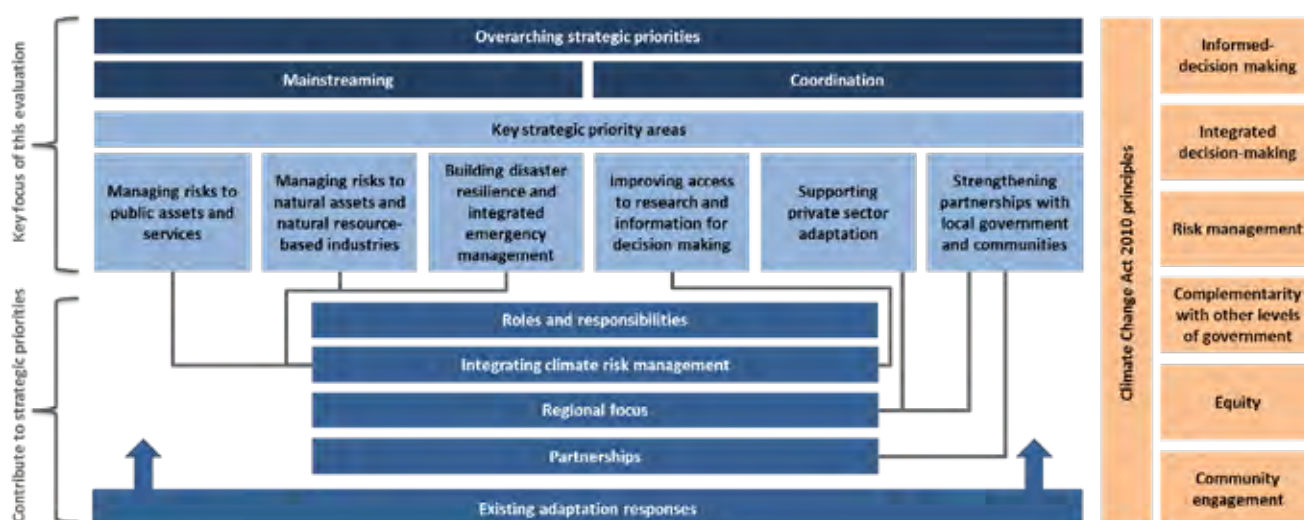
<sup>4</sup> DELWP 2013, *Victorian Climate Change Adaptation Plan*, p. 3.

<sup>5</sup> DELWP 2013, *Victorian Climate Change Adaptation Plan*, p. 12.

<sup>6</sup> *Ibid*, pp. 19-41.

<sup>7</sup> *Climate Change Act 2010* (Vic), s. 7-13; DELWP 2013, *Victorian Climate Change Adaptation Plan*, pp. 8-9.

Figure 1. Components of the Victorian Climate Change Adaptation Plan and its evaluation.



### 1.3 Context

Over the four years of the Adaptation Plan, some emerging factors influenced the policy context around strategic adaptation planning in Victoria.

- In November 2014, the change of government in Victoria led to a renewed focus on climate change adaptation and mitigation as strategic priorities. The newly elected Andrews Labor Government made a commitment to re-establish Victoria as a leader in addressing climate change.
- An independent review of the *Climate Change Act 2010* was undertaken in 2015. In its response to this review, the Victorian Government committed to developing Victoria's first legislated Climate Change Strategy encompassing both adaptation and mitigation policy, to be released in 2020.<sup>8</sup>
- The Australian Government's *National Climate Resilience and Adaptation Strategy* was released in December 2015, aiming to provide a mandate for strengthened policy responses to climate change adaptation around Australia.<sup>9</sup>
- Progress in international climate change governance, through the Paris Agreement in December 2015, has increased support for reducing climate vulnerability and building adaptive capacity in all levels of government.<sup>10</sup>

These contextual factors should be kept in mind in reviewing the efficacy of the first Adaptation Plan.

<sup>8</sup> DELWP 2016, *Victorian Government response to the Independent Review of the Climate Change Act 2010*, p. 18.

<sup>9</sup> Department of Environment 2015, *National Climate Resilience and Adaptation Strategy*, p. 5.

<sup>10</sup> DELWP 2016, p. 18.

## 2 Evaluation approach

### 2.1 Evaluation framework

This evaluation report is the final component of the overarching evaluation of the Adaptation Plan. The approach to the final evaluation is broadly informed by an established evaluation framework and is guided by the following questions:

1. To what extent have the planned activities been implemented?
2. To what extent has the implementation of the Adaptation Plan aligned with the principles expressed in the Adaptation Plan and the Act?
3. What has been the overall effectiveness and impact of the Adaptation Plan?
4. What are the lessons for future climate change adaptation strategic policy?

### 2.2 Methods and synthesis

This final evaluation draws together and builds on data from a range of sources across the life of the Adaptation Plan:

- six-monthly monitoring of adaptation plan actions
- a mid-term evaluation (June 2015), which included a review of monitoring data collected to-date, interviews (17) and a survey of Victorian Government staff (15)
- evaluations and consultation done as part of other projects, including consultation for Victoria's Climate Change Adaptation Plan 2017-2020 and evaluations of the Victorian Centre for Climate Change Adaptation Research and the pilot Climate Change Mentors Initiative.
- additional data collected for this final evaluation, including phone interviews (8) with members of the Adaptation Coordinating Committee (ACC) and DELWP executives and an online survey of key government employees (12) involved in delivering the Adaptation Plan.

### 2.3 Limitations

Certain limitations of this final evaluation should be kept in mind when reviewing the findings.

- The outcomes of high-level plans and policies such as the Adaptation Plan are typically influenced by a wide variety of external factors. As such their actual influence is difficult to establish, particularly when there are not clear and measurable objectives.
- This evaluation report relies largely on the views and insights of key government stakeholders. This is valuable in understanding how the Adaptation Plan has been delivered. However, it means the outcomes of the Adaptation Plan (i.e. progress against its goals) are primarily subjective interpretations. This is reasonable for some aspects of the Adaptation Plan, but a more systematic set of indicators of success would be useful in evaluating future initiatives.

### 3 Findings: implementation and effectiveness of the Adaptation Plan

Table 1 outlines the high-level findings from this final evaluation of the Adaptation Plan against each of the questions outlined above in Section 2.1. Table 2 then provides additional detail about the extent of achievement of each of the Adaptation Plan's key activities and goals.

Table 1. Summary of evaluation findings.

Key question	Relevant Adaptation Plan components	Key findings
1. To what extent have the planned activities been implemented?	<p>The 27 activities under the overarching priorities and the six strategic priorities. (These encompass integration of risk management, regional focus and partnerships see Figure 1)</p>	<p><b>The vast majority (24 of 27) of activities outlined under the Adaptation Plan have been completed.</b> The exceptions were that a proposed public sector asset management forum was not established and there had not been any work to clarify insurance arrangements to support private sector adaptation. Similarly, a proposed research and information network was only established informally and for a limited duration.</p> <p><b>See Table 2 for further details.</b></p>
2. To what extent has the implementation of the Adaptation Plan aligned with the principles expressed in the Adaptation Plan and the Act?	<p>Clarification of roles and responsibilities</p> <p>Principles outlined in the Adaptation Plan and the Act:</p> <ul style="list-style-type: none"> <li>• <i>Informed decision-making</i></li> <li>• <i>Integrated decision making across government</i></li> <li>• <i>Risk management</i></li> <li>• <i>Complementarity with other levels of government</i></li> <li>• <i>Equity</i></li> <li>• <i>Community engagement.</i><sup>12</sup></li> </ul>	<p>The Adaptation Plan itself outlines the roles and responsibilities for different levels of government, for the private sector and for the community.<sup>11</sup> Overall, feedback from government stakeholders is that, in practice, 'slight' to 'moderate' progress has been made in this area, and that there remains further opportunity for clarifying these roles and responsibilities.</p> <p><b>Adaptation work by Victorian Government agencies was reported to be at least slightly aligned with the Adaptation Plan's principles.</b> This varied across departments and appears to be most well-established within DELWP and Department of Health and Human Services (DHHS). Participants in the Adaptation Coordinating Committee (ACC) note that it mostly operates in line with the principles.</p> <p><b>Three key barriers have limited the extent to which the principles have been explicitly applied:</b> lack of awareness about the principles; uncertainty about the relevance of the principles (and that they are inherently important to good decision-making); and the relatively low priority given to adaptation planning by some portfolios during stages of the Adaptation Plan.</p>
3. What has been the overall	<p>Overarching strategic priority: to "strengthen coordination across government and to</p>	<p><b>Coordination</b></p> <p><b>The ACC has led to some level of information sharing and coordination among state</b></p>

<sup>11</sup> *Climate Change Act 2010* (Vic), s. 7-13; DELWP 2013, *Victorian Climate Change Adaptation Plan*, p. 9.

<sup>12</sup> *Climate Change Act 2010* (Vic), s. 7-13; DELWP 2013, *Victorian Climate Change Adaptation Plan*, pp. 8-9.



Key question	Relevant Adaptation Plan components	Key findings
effectiveness and impact of the Adaptation Plan?	<p>integrate and mainstream consideration of climate risks into existing government policies, asset management approaches and service planning”.<sup>13</sup></p> <p>Six key strategic priorities:</p> <ul style="list-style-type: none"> <li>• <i>Managing risks to public assets and services.</i></li> <li>• <i>Managing risks to natural assets and natural resource-based industries.</i></li> <li>• <i>Building disaster resilience and integrated emergency management.</i></li> <li>• <i>Improving access to research and information for decision making.</i></li> <li>• <i>Supporting private sector adaptation.</i></li> <li>• <i>Strengthening partnerships with local government and communities.</i><sup>14</sup></li> </ul>	<p><b>government agencies, but its overall influence appears to be relatively limited.</b> Some representatives indicated that it has helped foster an improved understanding of actions and policies among select government agencies, particularly DELWP. Others suggested its impacts have been limited and that it requires clearer objectives, broader representation, and deeper engagement within and across departments.</p> <p><b>More broadly, several key stakeholders noted that the Adaptation Plan itself was a useful approach to coordination,</b> one noting that it helped provide a “consolidated view of what’s going on – you then can do gap analysis of what departments are doing and where. Having a plan does give that overall overarching view and, without it, you don’t know what you’re missing”.</p> <p><b>Mainstreaming</b></p> <p>As with coordination, <b>the Adaptation Plan has led to mixed results in terms of ‘mainstreaming’ climate considerations in government planning and decision-making.</b> Around half of interviewees and survey respondents (53%) noted that mainstreaming had occurred to a slight extent, 41% noting it had happened moderately or greatly.</p> <p>This variability appears to depend on both the department involved and the particular issue, with climate change considerations being more obviously relevant to some areas than others. <b>There appears to be a need for more guidance about how climate change applies in the particular context of different government departments and what integrating climate change into decisions actually means.</b></p> <p><b>Strategic priorities 1-6</b></p> <p><b>Overall, the majority (24/27) of the activities planned under each of the Adaptation Plan’s strategic priorities have been implemented.</b> In turn, there has been some contribution towards the goals of the Adaptation Plan, however, the extent and evidence of this contribution is less clear.</p> <p>A sentiment expressed by several interviewees was that “we were on the trajectory to have more attention paid [to climate change adaptation] and, although [the Adaptation Plan] would have made a difference, it was not a major influence”. Others noted that the</p>

<sup>13</sup> DELWP 2013, *Victorian Climate Change Adaptation Plan*, p. 12.

<sup>14</sup> Ibid, pp. 19-41.



Key question	Relevant Adaptation Plan components	Key findings
		<p>benefits of the Adaptation Plan were to raise the profile of climate change adaptation planning and provide a framework for adaptation planning across government — “the Adaptation Plan has laid a good foundation for further work”.</p> <p><b>Several stakeholders observed that the Adaptation Plan’s success in this regard was a notable achievement</b> in the context of an elected government (prior to November 2014) that considered climate change a low priority.</p> <p><b>For each of the components above see also Table 2 for more detail.</b></p>

Table 2. Implementation of the Climate Change Adaptation Plan’s activities and achievement of its goals (in relation to evaluation questions 1 and 3).  
Table key:

Support from stakeholders and other data that there has been good progress towards the goal across departments/ sectors/ regions	Stakeholders and other data indicate that there has been some progress towards the goal, often with substantial further work required or high variability across departments/ sectors/ regions	Stakeholders and other data indicate that there has been no or minimal progress towards the goal and substantial further work required	No clear evidence of achievement, progress or otherwise
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Strategic priority	Activity	Implemented	Goal	Was the goal achieved?
<b>Overarching Strategy: Coordination and Mainstreaming</b>	A process for mainstreaming adaptation into decision making is put in place and reports are delivered to Government on progress	Yes	Adaptation planning is mainstreamed into Government decision making as part of standard and continuing management practices	<p>The majority of interview and survey participants considered that there has been at least some progress towards adaptation planning being mainstreamed into government decision-making. There were, however, a mix of views about the extent to which this has occurred. Around half of participants indicated that mainstreaming has occurred only to a slight extent and that more work in this area is required.</p> <p>Cited examples include adaptation planning being “core business” in areas such as water planning, natural resource management and emergency management. The DHHS has its own Climate Change Strategy and its Property and Assets</p>



Strategic priority	Activity	Implemented	Goal	Was the goal achieved?
	ACC is established to coordinate policy across the Victorian Government	Yes	Coordination of adaptation policy responses is strengthened across government	<p>Services Strategy incorporates climate change considerations. In other areas of the Victorian Government, climate change considerations are only starting to be explicitly considered in policies, standards and plans.</p> <p>Around half of the respondents who were able to comment on this goal indicated that the ACC has had some beneficial impact on the coordination of adaptation policy responses. All noted, however, that there was a need for more work in this space.</p> <p>“There was the expectation that the ACC was going to be the vehicle for coordination. It serves a purpose in the high level architecture, but it meets infrequently, often with people delegating to others. It’s not an ideal vehicle for integration – it needs a clearer purpose and objective”</p> <p>The ACC’s impact in this area has been limited by a range of factors, including ACC members not having decision-making authority (as the role was often delegated down to non-executive levels). In particular, participants saw a need for clearer objectives and an improved process for consulting within departments on matters considered at the ACC (i.e. longer timelines, greater depth of engagement within departments).</p> <p>Beyond the ACC members, there was a low level of awareness about the ACC’s existence, its role and its influence on coordination.</p>
	Information exchange within government on agency responses to climate risk and opportunities occurs within the Committee	Yes	Information exchange leads to early identification of interagency and state-wide climate related risks	<p>Around half of respondents indicated that the ACC has led to a minor improvement in information exchange.</p> <p>A small subset of respondents suggested that this had, in turn, led to early identification of inter-agency and state-wide climate risk, though the nature of these cases is unclear.</p>
<b>Strategic Priority 1: Managing risks to public assets and services</b>	A public sector asset management forum is established	Forum yet to be established	Best practice around climate risk identification and management are shared between managers of public	<p>While several stakeholders noted that there have been discussions about establishing the forum, this has yet to occur. Others noted that there are <i>ad hoc</i> forums for sharing best practice (planning forums, forums for local government), but</p>





Strategic priority	Activity	Implemented	Goal	Was the goal achieved? that there is no comprehensive forum established.
	<p>The Victorian Risk Management Framework is applied more broadly across the Victorian Government to address all hazards</p> <hr/> <p>Municipal Health and Wellbeing Plans are completed for each Victorian local government area, and consider climate change</p>	<p>Yes</p> <hr/> <p>Yes</p>	<p>assets</p> <p>Climate risks are integrated into whole of government risk management for public assets and services</p>	<p>Progress has been made in this area following on from the Victorian Auditor General's Office (VAGO) <i>Implementation of the Government Risk Management Framework</i> report. Around half of interviewees noted the Adaptation Plan had contributed to this goal but there is a need for more detailed work, particularly around identifying specific risks and interdepartmental responsibilities.</p> <p>Local Governments are required to complete a Health and Wellbeing Plan under the <i>Public Health and Wellbeing Act 2008</i>. All plans have been completed and incorporate climate change to varying extents. This varies between councils according to their own assessment processes. There is potential for greater/more systematic consideration and support in doing so. "Councils indicate that this is both a good and a vexed means of ensuring consideration of climate change - mandatory requirements should be accompanied by guidance and support".</p>
<b>Strategic Priority 2: Managing risks to</b>	<p>Environment Partnerships program is</p>	<p>Yes</p>	<p>New critical infrastructure and essential service proposals take into account climate risks</p>	<p>The Victorian Government's Critical Infrastructure Resilience Strategy was released in July 2015. It does not directly address climate change risks itself, though there are risk management guidelines that mention it.</p> <p>Only one stakeholder was able to comment on the influence of the strategy, noting it was influential in driving more systematic, state-wide approaches to hazard management, including the water sector being required to consider the impact of climate change and drought on planning for future water infrastructure needs.</p> <p>Based on the available data, climate risks appear to have been considered in select examples, though the extent of consideration across essential service proposals is unclear.</p> <p>The evaluation and supporting data do not directly consider indicators of environmental condition or resilience. However,</p>



Strategic priority	Activity	Implemented	Goal	Was the goal achieved?
<b>natural assets and natural resource based industries</b>	<p>implemented (range of actions)</p> <p>Provide a range of research, information and on the ground services to help farmers manage risks and identify opportunities associated with seasonal climate risks</p>	<p>Yes</p>	<p>across the landscape (the environmental condition of waterways is improved, and the climate resilience of biodiversity, coasts and land is maintained or improved)</p> <p>Primary industries are supported by research and development programs to adapt to potential climate change impacts, manage their own risks and take advantage of new practices</p>	<p>there was indication from around half of interviewees that the Environmental Partnerships activities should have contributed to positive outcomes.</p>
<b>Strategic Priority 3: Supporting disaster resilience and integrated emergency management</b>	<p>Elements of the Victorian Emergency Management Reform white paper proceed to legislation</p> <p>The new Victorian emergency management committees are established, including: State Crisis and Resilience Council, Risk and Resilience Subcommittee</p>	<p>Yes</p> <p>Yes</p>	<p>Emergency management is better integrated and strengthened at state, regional and local levels</p>	<p>The activities under the Adaptation Plan have a clear and logical link to this goal and there was indication from the majority of interviewees that primary industries have been supported. The key caveat was that much of this work would have happened without the Adaptation Plan.</p>
	<p>Government is working towards community resilience and safety programs</p> <p>Programs and projects that target community members vulnerable to climate change are underway</p>	<p>Yes</p> <p>Yes</p>	<p>Community resilience and safety continue to be built</p>	<p>All respondents in a position to comment on this goal indicated that there has been integration and strengthening of emergency management, though they also noted there is need for continued work here. The Adaptation Plan's actual role in this integration and strengthening is unclear, with the activities likely to have occurred anyway.</p> <p>"There is certainly enhanced integration, largely driven by the Critical infrastructure legislation and high level committee processes".</p>
<b>Strategic Priority 4: Improving access to</b>	<p>A Research and Information Network is</p>	<p>Temporary informal</p>	<p>Engagement between research and policy makers</p>	<p>The majority of respondents considered that the Adaptation Plan contributed to this goal based on roll-out of resilience and safety building programs. For example, the DHHS Heatwave Strategy explicitly considers the risks of climate change in relation to 75,000 public housing dwellings with vulnerable people living in them. Similarly, at least one project funded through the Victorian Adaptation and Sustainability Partnership (VAS Partnership) helped to retrofit vulnerable residents' dwellings to reduce the risks from heatwaves.</p> <p>There was a range of positive comments about improved engagement between researchers and policy makers through the</p>



Strategic priority	Activity	Implemented	Goal	Was the goal achieved?
<b>research and information for decision making</b>	<p>established</p> <p>The Victorian Centre for Climate Change Adaptation Research is implemented and built upon</p>	<p>network only</p> <p>Yes</p>	<p>on whole of government priorities is strengthened</p> <p>Coordinated approaches are in operation that provide information to councils and the community to effectively support their adaptation planning and risk management</p>	<p>VCCCAR initiative. After VCCCAR's closure, an informal network was established but discontinued shortly after the change of government.</p> <p>VCCCAR was found to have fostered collaboration and interaction between researchers and decision-makers and increased the confidence of policy-makers in embedding climate change adaptation into their work.</p> <p>There have been other actions since VCCCAR closed in 2014 (e.g. the Climate Change Mentors Initiative, climate change websites and ad hoc engagement between researchers and individual teams/departments), but these are not coordinated or strategic in the same way that VCCCAR was.</p>
	<p>Research and information on climate related risk analysis and adaptation is developed and disseminated across government</p> <p>Seminars, workshops, annual forums and think tanks are held</p>	<p>Yes</p>	<p>Research is developed and disseminated that meets end-use needs and avoids duplication of efforts</p> <p>Adaptation research is applied more broadly to policy and programs</p>	<p>The majority of respondents stated that there has been progress towards this goal in a range of areas. Some noted, however, that it is often unclear whether end-user needs have been met.</p> <p>VCCCAR held 17 think tanks, five annual forums and supported five visiting fellows. No similarly coordinated activities have occurred since VCCCAR's closure in 2014.</p>
<b>Strategic Priority 5: Supporting private sector adaptation</b>	<p>Hazard identification and information is provided to facilitate place based and private sector risk management including local coastal hazard assessments and flood mapping</p> <p>Victorian Government participates in interjurisdictional forums on national issues</p>	<p>Yes</p> <p>Yes</p>	<p>Place based risk management is effectively facilitated</p>	<p>Interviewees cited multiple examples of Victoria participating in national forums and select examples of this facilitating improved regional risk management. The majority of interviewees indicated the activities outlined in the Adaptation Plan have contributed positively to this goal.</p> <p>"There's better data in terms of flood mapping, fire hazard mapping and local coastal hazard assessment projects, which are providing an information base for business to plan with".</p> <p>At national-level forums (e.g. National Climate Change Adaptation Research Facility), Victoria's participation "would have happened without the Adaptation Plan, but it gave Victoria a profile" and "... [it] made our participation better".</p>



Strategic priority	Activity	Implemented	Goal	Was the goal achieved?
	Work is underway to remove barriers to effective adaptation	Yes	Conditions are set to enable businesses to adapt and plan effectively to manage their own climate change risks and opportunities	There have been some actions to remove barriers (e.g. better data through flood and fire-hazard mapping; Energy Efficiency and Productivity Statement etc.). However, half of respondents indicated that much more work needs to be done to support the private sector to manage adaptation, with one noting "There are a significant number of barriers in place through older standards and regulations that were written without taking into effect climate change impacts. These need to be reviewed".
	Work is underway to clarify insurance arrangements	No	The development of effective insurance markets is supported	Initial discussions between state and local government and the insurance sector have been held, however there is further work to do in this area.
	Regulation, policy and planning instruments are in place	Yes	Coordinated approaches are in operation that provide information to the private sector to effectively support their adaptation planning and risk management	Respondents noted that information is typically provided on a hazard or sector basis e.g. bushfire information, agriculture information. Much of this has been done as business as usual rather than driven by the Adaptation Plan. Approaches are coordinated within policy areas, but not generally coordinated across government.
<b>Strategic Priority 6: Strengthening partnerships with local government and communities</b>	Memorandum of Understanding (MoU) with local government sector is developed Victorian Adaptation and Sustainability (VAS) Partnership is implemented (confirm local government adaptation responsibilities and liability to climate change impacts)	Yes  Yes	A shared understanding is established between state government and local government and priorities are aligned	Work done under the Adaptation Plan was noted to be important in building the basis for improved relationships between state and local government. However, the majority of respondents noted that there is still a degree of misalignment and lack of clarity about roles and responsibilities between state and local government.  One respondent noted, there is a "good understanding of where we need to go and what we would like to achieve but there is a misalignment is how this is delivered and tailored to a local context and how it is funded". Similar concerns were also raised through consultation with the local government sector.  Other points raised through this evaluation included the need for improved alignment around issues such as insurance liability, finance and resourcing, roles and responsibilities and shared measures of success.  Additional feedback received through consultation for the



Strategic priority	Activity	Implemented	Goal	Was the goal achieved?
	<p>VAS Partnership is implemented (Develop a funding program to encourage partnerships and drive action)</p> <p>Work is conducted with regional communities through the VAS Partnership and regional growth plans</p>	<p>Yes</p> <hr/> <p>Yes</p>	<p>Local adaptation action is driven through strategic resources allocation through the VAS Partnership</p>	<p>second adaptation plan suggests that many local government representatives consider the MoU to be ineffective, expressing concern that it is not legally binding and was not based on adequate stakeholder engagement.</p> <p>Work done under the Adaptation Plan was a key contributor to this goal. All respondents indicated that local adaptation was supported through the VAS Partnership, one noting the “VAS Partnership has involved significant engagement with regional local governments and, indirectly, with communities. This was achieved through the grants rounds, mentoring and the MoU”.</p> <p>Mid-term evaluation of the program found that without the program adaptation in regional and rural councils would not have progressed to as great an extent. One example includes the <i>Rural People; Resilient Futures</i> pilot project, which tested a model for engaging rural community service organisations in planning for the impacts of climate change.</p>
	<p>VAS Partnership is implemented (mentoring and training to support local government; knowledge sharing and learning; adaptation planning hub; policy conduit role between state and local government)</p>	<p>Yes</p>	<p>Adaptation partnerships, collaboration, learning and knowledge sharing are enabled through the VAS Partnership</p>	<p>As above, this goal was well-supported by work done under the Adaptation Plan and VAS Partnership. All interviewees indicated that collaboration, learning and knowledge sharing had been supported, with a key program being the Climate Change Mentors Initiative. Although much of the Mentors’ work was found to be intangible in nature (i.e. informal conversations and meetings), mentors were noted to be valuable facilitators of knowledge and networks.</p>

Note: “the majority” refers to instances in which more than 70% of survey respondents or interviewees agreed, and “around half” refers to instances in which 40-60% of survey respondents or interviewees agreed. All quotes have been provided by survey or interview respondents.



## 4 Discussion, lessons and recommendations

### 4.1 Impacts, benefits and value of the Climate Change Adaptation Plan

**Overall, most of the activities and outputs outlined under the Victorian Climate Change Adaptation Plan have been delivered. The Adaptation Plan has, in turn, helped contribute to the Victorian Government being more prepared for the changing climate.** This includes the extent to which climate change is considered in decision-making and the level of information sharing between departments. It also includes improvements to the way that risks to public assets and natural resources are considered, the relationships between state and local government and the integration of emergency management.

**Importantly, the actual impact of the Adaptation Plan on these areas is more apparent in some areas than others. Indeed, in most cases discussed in Section 3 above, the Adaptation Plan only contributed to processes that would likely have happened anyway,** such as improvements in the emergency management space. Nevertheless, it did have important impacts in some areas:

- The **VAS Partnership grants** were a key mechanism for supporting local government to plan for and adapt to climate change, with the partnership linking state-wide strategic policies with local level priorities.
- The **Adaptation Coordinating Committee** was established under the Adaptation Plan and the Act. While its overall impact has been somewhat limited, the ACC has created a foundation to continue improving information sharing, mainstreaming and coordination among state government agencies going forward.
- The **Climate Change Mentors Initiative** contributed to some of the Adaptation Plan's overarching and strategic priorities through training and information sharing between state and local government. It demonstrated a continued need for climate change adaptation resources, networking, facilitation and knowledge sharing among councils to support local governments in embedding climate-change into their services, plans and projects.

**In almost all cases, stakeholders noted the need to continue the work captured under the first Adaptation Plan in future strategic policies and programs.**

While much of the impact of the Adaptation Plan is difficult to disentangle from work that would or may have happened anyway, stakeholders emphasised that **the Adaptation Plan provided value in the form of:**

- **raising the profile of adaptation work within and across government**
- **providing a framework for adaptation planning – a “bridging document” that has set out a higher level framework that can now be built on to deliver more on-ground impacts**
- **consolidating and communicating the range of government action in progress, in turn, providing a mechanism for improving coordination across government and between stakeholders.**

## 4.2 Challenges and lessons for the future

The achievements of the Adaptation Plan should also be considered relative to the context in which it was established and the challenges it has faced throughout its delivery. These included:

- The low level of priority given to climate change adaptation and mitigation under the former state government. This meant that progress often relied on 'interest' within some portfolios, rather than having a state-wide mandate for greater consideration of climate change in day-to-day business. Although *Climate Change Act 2010* requires decision-makers to consider climate change, there is no clear guidance as to what this should entail.
- Basing the Adaptation Plan out of the environment portfolio (DELWP and predecessors) reinforced views that climate change is an environmental issue, rather than an issue that cuts across sectors and departments. This had implications for gaining interest and buy-in among other departments, particularly with respect to 'mainstreaming' climate change within government.
- In a similar vein, climate change as a whole suffers from a lack of immediacy (given the timelines for impacts) that belies the magnitude of its impacts in the long-term. As with the perception that it is an environmental issue, this was noted to be a challenge in raising awareness of, interest in and support for action.

Several key stakeholders suggested that although the demonstrable outcomes from the Adaptation Plan are relatively sparse, it was a substantial achievement given the challenges above.

These challenges and other insights from the data collected in this evaluation also point to a range of lessons that are worth documenting and considering for future work in this space. This includes:

- The value of targeted investment to support the ambitious, high-level goals articulated in this and similar plans. As noted by several interviewees, as well as helping to achieve on-ground outcomes, it also demonstrates a commitment to other stakeholders that this work is serious and important.
- The need for ancillary information, for example, in the form of policies, regulations, implementation plans and so on. This is important, practical detail that, again, complements high-level goals around mainstreaming climate change considerations.
- Being clear about what the Adaptation Plan is and what it intends to achieve, including how it is expected to contribute to mainstreaming and coordination of adaptation policy responses versus its role consolidating and communicating government action in this space. This may also help set expectations about what the Adaptation Plan itself should contribute to and be evaluated against.
- The importance of having the commitment and support from higher levels in government. This was noted to be crucial in fostering greater awareness around the issue and in gaining traction within and across departments. This would also help in changing perceptions around climate change being a solely environmental issue, as would shifting responsibility for the Adaptation Plan to a more central government agency.
- The importance of mandated processes in embedding considerations such as climate change into business-as-usual decision making (i.e. as with issues such as OHS, accessibility or

equity). Central approval and reporting processes (such as those operated by the Department of Treasury and Finance) can be powerful mechanisms in this regard.

### 4.3 Recommendations

Based on the results and discussion above, we make the following recommendations to inform the development, implementation and evaluation of the second Climate Change Adaptation Plan for Victoria:

1. DELWP should consider improving how the Adaptation Coordinating Committee (or similar group) is structured and run. Key stakeholders identified a range of opportunities for improvement that would help more effectively share information and coordinate climate change policies across departments. These include:
  - a) clarifying its objectives
  - b) improving awareness of those objectives and of its role within and between government departments
  - c) providing briefing notes and papers further in advance to facilitate more thorough consultation and engagement within departments
  - d) ensuring the structure of meetings enables all participants to share details of relevant policies and actions from within their departments
  - e) considering more regular 'working group' meetings among officers, complemented by quarterly meetings among executive-level staff with policy-level decision-making authority, with these meetings focused on key 'decision-points'.
2. DELWP should consider the lessons identified in this evaluation (Section 4.2 above) and how they might be applied to the next iteration of the Victorian Climate Change Adaptation Plan.
3. DELWP should ensure that the second Adaptation Plan has a clear set of objectives that are achievable within the timeframe of the Adaptation Plan and are logically linked to the activities outlined in and associated with the Adaptation Plan. DELWP should consider using a program logic to test these links and identify expected outcomes and a more systematic set of indicators of success. This should be complemented with a plan for how the Adaptation Plan will be evaluated.
4. As a document with a clear communications role, DELWP should ensure that the second Adaptation Plan has a strategic-level communications and engagement plan.



# Endnotes

- <sup>1</sup> United Nations 2015, *Paris Agreement*, Article 7.
- <sup>2</sup> On 22 November 2016, the Victorian Government introduced the Climate Change Bill 2016 into Parliament to create a new Climate Change Act.
- <sup>3</sup> United Nations 2015, *Paris Agreement*, Article 7.
- <sup>4</sup> Deloitte Access Economics 2016, *The economic cost of the social impact of natural disasters*, Australian Business Roundtable for Disaster Resilience and Safer Communities and Deloitte Access Economics, Sydney.
- <sup>5</sup> Victorian Government 2013, *Victorian Climate Change Adaptation Plan*, Victorian Government, Melbourne.
- <sup>6</sup> Deloitte Access Economics 2014, *Scoping Study on a Cost Benefit Analysis of Bushfire Mitigation*, Australian Forest Products Association, Sydney.
- <sup>7</sup> Collier, K 2011, *Home insurance triples in flood prone areas*, <<http://www.heraldsun.com.au/news/home-insurance-triples-in-flood-prone-areas/news-story/8edbf6156708b384b1b193fd45e9869e>>, Herald Sun, 16 June.
- <sup>8</sup> City of Melbourne 2016, personal communication. Figures based on City of Melbourne Pedestrian Counting System.
- <sup>9</sup> Based on the *Climate Change Act 2010* (Victoria).
- <sup>10</sup> Steffen, W, Hughes, L and Perkins, S 2014, *Heatwaves: Hotter, Longer, More Often*, <<http://www.climatecouncil.org.au/uploads/9901f6614a2cac7b2b888f55b4dff9cc.pdf>>, Climate Council of Australia, Potts Point; Department of Health and Human Services 2015, *Heat Health Plan for Victoria*, <<https://www2.health.vic.gov.au/Api/downloadmedia/%7B5151AA4E-D2FD-4DD8-AA58-3F74A63F2066%7D>>, State of Victoria, Melbourne.
- <sup>11</sup> Keating, A and Handmer, J 2013, *Future potential losses from extremes under climate change: the case of Victoria, Australia*, Victorian Centre for Climate Change Adaptation Research, Melbourne.
- <sup>12</sup> Ibid.; Vicroads 2016, *2015 Victorian Road Trauma: Analysis of Fatalities and Serious Injuries*, State of Victoria, Melbourne.
- <sup>13</sup> CSIRO 2016, *Implications of Climate Change for Australia's Biodiversity*, <<http://www.csiro.au/en/Research/LWF/Areas/Ecosystems-biodiversity/Monitoring-biodiversity/Biodiversity-and-climate-change>>, Commonwealth Scientific and Industrial Research Organisation, Australia.
- <sup>14</sup> Australian Bureau of Statistics 2004, *1301.0 - Year Book Australia, 2004, How many people live in Australia's coastal areas?*, <<http://www.abs.gov.au/Ausstats/abs@.nsf/Previousproducts/1301.0Feature%20Article32004>>, Commonwealth of Australia, Canberra.
- <sup>15</sup> National Institute of Economic and Industry Research 2011, *The Economic Significance of the Australian Alpine Resorts*, Alpine Resorts Coordinating Council, State of Victoria, Melbourne.
- <sup>16</sup> Melbourne Sustainable Society Institute 2015, *Appetite for Change: Global Warming Impacts on Food and Farming Regions in Australia*, WWF Australia, Melbourne.
- <sup>17</sup> Australian Bureau of Statistics 2016, *7503.0 - Value of Agricultural Commodities Produced, Australia, 2014-15*, <<http://www.abs.gov.au/ausstats/abs@.nsf/mf/7503.0>>, Commonwealth of Australia, Canberra.
- <sup>18</sup> Minister for Agriculture 2016, *Victorian Agribusiness Set To Grow And Sprout*, <http://www.premier.vic.gov.au/victorian-agribusiness-set-to-grow-and-sprout/>, Premier of Victoria, Melbourne.
- <sup>19</sup> Department of Infrastructure and Transport 2013, *State of Australian Cities 2013*, Commonwealth of Australia, Canberra.

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