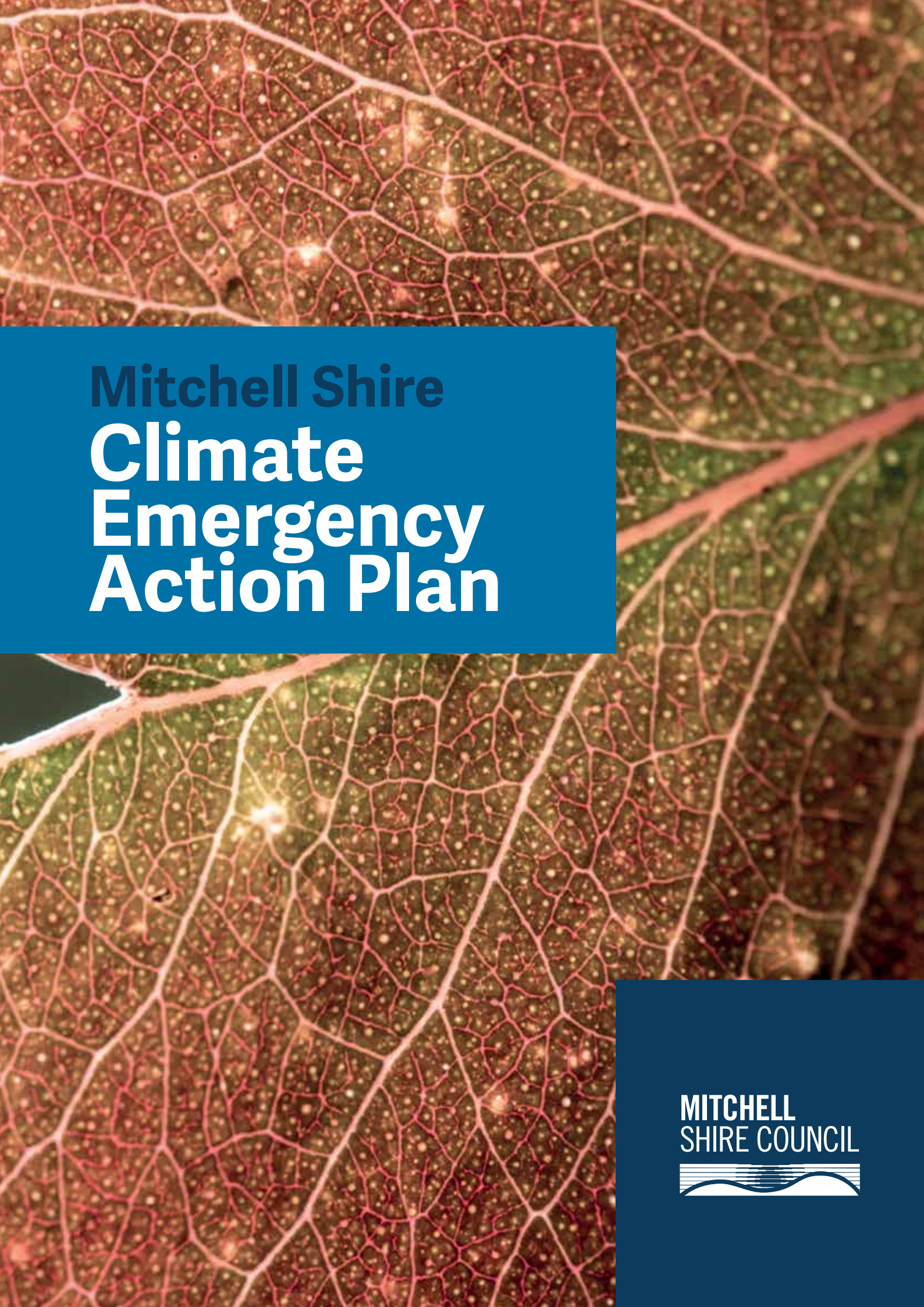

Mitchell Shire
Climate Emergency Action Plan

MITCHELL
SHIRE COUNCIL

Acknowledgement of Country

Mitchell Shire Council acknowledges the Taungurung and Wurundjeri Woi Wurrung people as the Traditional Owners of the lands and waterways in the area now known as Mitchell Shire. We pay our respect to their rich cultures and to Elders, past, present, and emerging, as well as other Aboriginal and Torres Strait Islander people who live, work and play in the area.

Biik-nganjin-al gaaguk, Dulaboork bundima Daabak-djak

Taungurung are proud and respected people who unite in strength and take care of country. Pronunciation: 'tun-guh-rung'

It is commonly believed that Taungurung people belong to one of two parts that are connected to the ancestral beings; Bundjil the eagle and Waang the crow. Taungurung Country covers a large area of central Victoria, including the northern areas of what is also known as Mitchell Shire. Find out more by visiting Taungurung Land and Waters Council.

Wurundjeri Woi Wurrung Country covers a large area around Melbourne and extends northwards to include: Beveridge, Wallan, Upper Plenty, Bylands, Parts of Kilmore and Parts of Wandong/Heathcote Junction.

The Wurundjeri People take their name from the Woiwurrung language word 'wurun' meaning the Manna Gum and 'djeri', the grub which is found in or near the tree.

Find out more by visiting the Wurundjeri Woi Wurrung website.

'Eucalyptus leaf' (front cover) and 'Eucalyptus' (this page), Photos by Alison Pouliot

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About Ironbark Sustainability

For nearly two decades, Ironbark Sustainability has worked with councils and their communities to reduce greenhouse emissions, tackle climate change and implement sustainability projects and programs. We bring together a wealth of technical and financial analysis, maintenance and implementation experience in the areas of building energy and water efficiency, climate action and strategy development, public lighting and data management. We pride ourselves on supporting our clients to achieve real action on sustainability.

Our Mission

The Ironbark mission is to achieve real action on sustainability for councils and their communities.

Certified B Corporation

Ironbark is a certified B Corporation. We have been independently assessed as meeting the highest standards of verified social and environmental performance, public transparency, and legal accountability to balance profit and purpose.

Cherry Tree Wind Farm, Trawool

Mitchell Shire Council

Contributions

Mitchell Shire Council would like to thank and acknowledge all those who contributed to the development of this Climate Emergency Action Plan. This includes community members who took part in workshops, completed the survey and participated in the public forum, business and industry leaders who shared their challenges and achievements in taking climate action, and councillors and Council staff who provided input and feedback.

This project also involved the formation of a Climate Emergency Community Reference Group who helped to identify high level strategic direction, provided feedback, and assisted with wider community engagement. Mitchell Shire Council would like to acknowledge the role the CECRG members have played in setting the agenda for the Plan and representing their community.

CECRG Membership

- David Cotterill
- Jeff Wilmot
- Peter Gaffney
- Danielle Spratling
- Melissa Stagg
- Peter Lockyer
- Jane Lovell
- Cr David Lowe
- Cr Nathan Clark
- Cr Rob Eldridge
- Narelle Liepa
- Brendan Garrett
- Hannah Handford
- Bailey White

Community workshop in Wallan during development of the CEAP

Executive summary

Mitchell Shire Council recognises the significant impact climate change is having on our community and is committed to addressing the current and future impacts it will have on the health and wellbeing of the Shire's people, economy, and environment.

As one of Victoria's fastest growing local government areas, Mitchell Shire faces a particular challenge in reducing emissions. The Shire's population of over 57,000 is expected to more than triple by 2041, which will require more homes, facilities, services, and infrastructure.

This Climate Emergency Action Plan (CEAP) has been developed to provide clear direction for Council over the next decade to reduce emissions and build resilience to climate change. This commitment is underpinned by our acknowledgement of a climate emergency in September 2021.

Climate change was identified as a significant issue by the community during consultation undertaken in 2021 for the Mitchell 2050 Community Vision. It was subsequently incorporated into the vision as one of six key themes. The actions identified in the CEAP will help to contribute to Council's key priorities as part of the 2050 Vision.

Responding to the climate emergency requires collaborative action across all parts of the community. In recognition of this, the CEAP has been developed in partnership with Mitchell Shire residents, businesses, and industry leaders. Council, farmers, and community groups all have roles to play in driving climate action.

By fostering collaboration and adopting a partnership approach, Mitchell Shire can build a community that is both resilient to climate impacts and achieves its net zero emissions targets.

The CEAP identifies the risks and challenges Mitchell Shire faces due to climate change and presents opportunities for Council to support the community in overcoming them. Importantly, the plan also includes actions to be undertaken by Council within its own operations and assets.

The actions described in this plan are designed for Council and the community to achieve the following goals:

Goal 1 Reduce the impact of extreme heat across Mitchell Shire

Goal 2 Improve Mitchell Shire's preparedness to climate change related emergency events

Goal 3 Protect and enhance the natural environment and support a climate resilient agricultural sector in Mitchell Shire

Goal 4 Support Mitchell Shire residents, businesses and community groups to reduce emissions

Goal 5 Accelerate the transition to more sustainable transport solutions in Mitchell Shire

Goal 6 Empower the Mitchell Shire community to take meaningful action in response to the Climate Emergency

These goals include a total of 18 corporate actions and 53 actions to support the community. The plan includes the following targets:

- Council targets
  - Net zero by 2030 (excluding landfill)
  - Net zero by 2035 (including landfill)
- Community target
  - Net zero by 2043

The Climate Emergency Action Plan will undergo a review in 2026.

Context

What is climate change?

Climate change refers to long-term changes in the average temperature, precipitation, and other weather patterns that occur across the Earth's surface. These changes are primarily driven by human activities such as burning fossil fuels, deforestation, and industrial processes that release large amounts of greenhouse gases into the atmosphere.

The increased levels of greenhouse gases, such as carbon dioxide and methane, trap heat in the Earth's atmosphere and cause the planet's average temperature to rise. This leads to a variety of impacts, such as sea level rise, changes in precipitation patterns, more frequent and severe weather events like heatwaves, droughts, floods, and storms, and altered ecosystems.

Climate change is a significant challenge facing the planet, as it has the potential to cause significant economic, social, and environmental damage if left unchecked. Addressing climate change requires a coordinated effort at the international level, including reducing greenhouse gas emissions and transitioning to cleaner energy sources, improving energy efficiency, and adapting to the impacts of climate change that are already occurring.

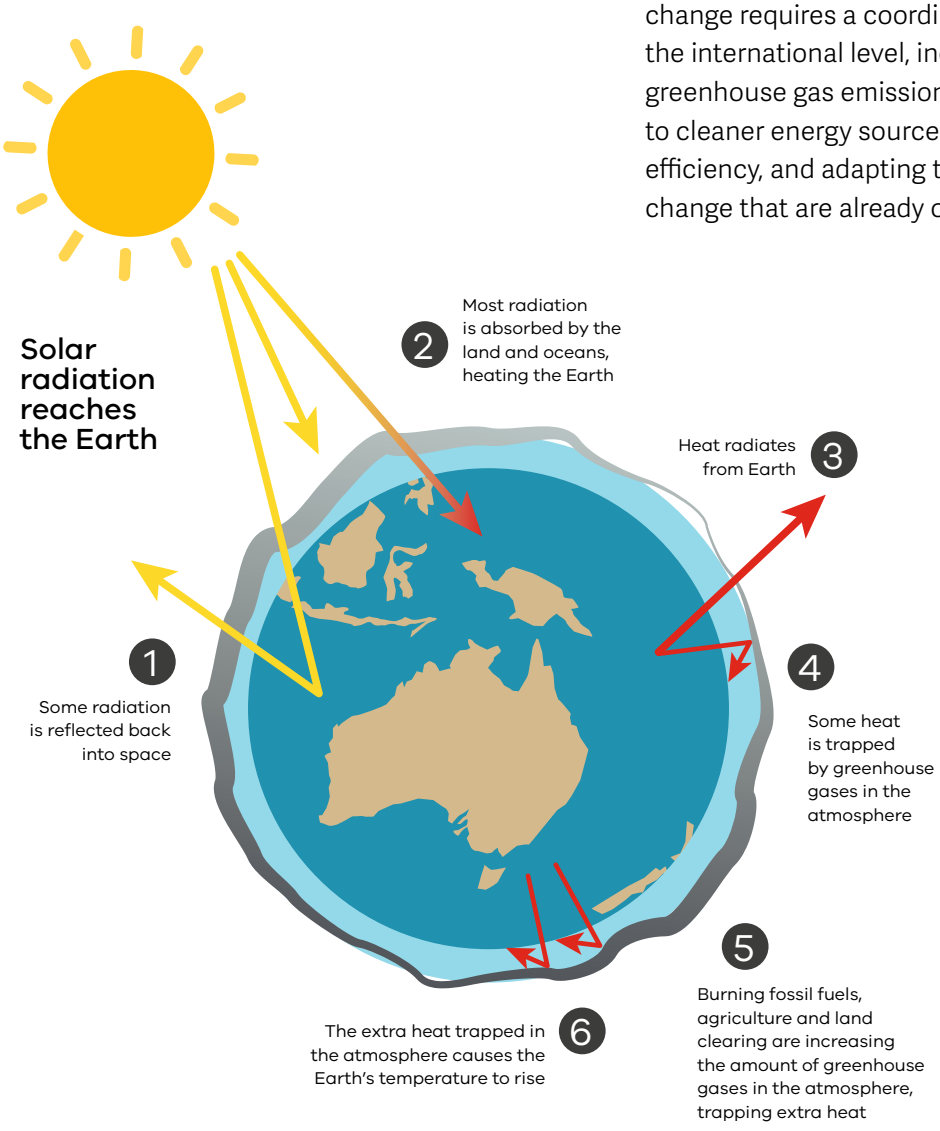


Figure 1 The enhanced greenhouse effect explained (Dept of Environment and Energy, 2019)

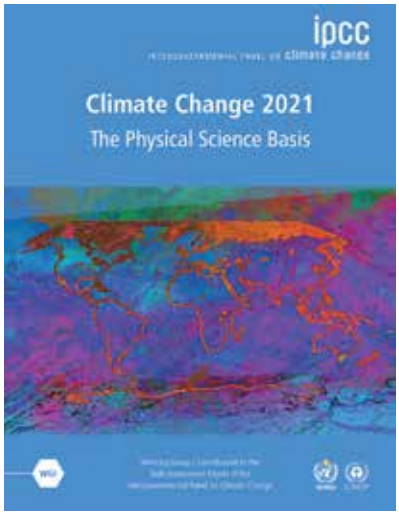
International agreement

The Paris Agreement is a legally binding international treaty on climate change, adopted by 196 countries at the United Nations Climate Change Conference (COP21) in Paris in December 2015. The primary goal of the Paris Agreement is to limit global warming to well below 2°C, and to pursue efforts to limit the temperature increase to 1.5°C, above pre-industrial levels. The Paris Agreement is widely considered to be a significant step forward in the global effort to address climate change, as it represents a strong political commitment by countries to work together to tackle this urgent challenge.

The primary goal of the Paris Agreement is to limit global warming to well below 2°C, and to pursue efforts to limit the temperature increase to 1.5°C, above pre-industrial levels.

The Intergovernmental Panel on Climate Change (IPCC) is a scientific organisation established by the United Nations to assess scientific knowledge related to climate change. It is responsible for assessing scientific knowledge related to climate change and produces comprehensive Assessment Reports based on the latest scientific literature that are used by policymakers around the world to inform their decisions on climate change mitigation and adaptation.

In 2021 and 2022, the IPCC delivered its Sixth Assessment Report (AR6), which found that changes in the Earth's climate are already being observed in every region of the world. The report concluded that greenhouse gas emissions due to human activities have caused around 1.1°C of warming since 1850–1900. It stresses that we are perilously close to experiencing 1.5°C of average global temperature rise, and without urgent and decisive action to reduce emissions over the next two decades this threshold is expected to be exceeded.



Sixth Assessment Report, IPCC Climate Change 2021: The Physical Science Basis

State and federal policy

As a signatory to the Paris Agreement, Australia must set targets and develop a plan for reducing greenhouse gas emissions. The Agreement explicitly recognises and engages local and subnational governments and their critical role in supporting the transformation, including setting goals and strategies aligned with the science.

In 2022, the Australian Government recommitted to achieving net-zero emissions by 2050 and increased its 2030 target to 43% per cent below 2005 emissions levels. This 2030 target is in line with the lower end of the Australia Climate Change Authority's recommended range of between 40-60% reduction in emissions by 2030.

The Australian Government has established the Emissions Reduction Fund (ERF), which provides financial incentives for businesses and organisations to reduce their greenhouse gas emissions. In addition, the government has invested in renewable energy, such as wind and solar power, and is supporting research into new low-emissions technologies.

The Victorian Government has also committed to achieving net-zero emissions by 2045. To pave the way for this, the State Government has established interim targets for emissions reduction. By the end of 2030, the state is aiming is to reduce emissions by 45 to 50 percent below 2005 levels, and by 75 to 80 percent by 2035. This proactive approach demonstrates the Victorian Government's dedication to achieving a more sustainable future for the state.

To achieve these targets, the Victorian Government is investing in renewable energy and is implementing policies to encourage the uptake of electric vehicles and energy-efficient buildings. The government is also working with industry and community groups to develop innovative solutions to reduce emissions and address climate change.

To achieve these targets, the Victorian Government is investing in renewable energy and is implementing policies to encourage the uptake of electric vehicles and energy-efficient buildings. The government is also working with industry and community groups to develop innovative solutions to reduce emissions and address climate change.[xi]

Seymour electric bus fleet, the first in regional Victoria to have an entirely zero-emissions bus network

Mitchell Shire

Climate Change impacts

In Victoria climate change is already impacting.

Since 1910, the average temperature in Victoria has increased by **1.2°C**

In the last 30 years the State has experienced an overall decline in rainfall, particularly in winter and spring.

Since the 1970s the number of **unusually hot days** has also significantly increased in Victoria.[xiii]

As a result of these changes, the State is becoming warmer and drier, and the risk of fire danger is increasing.[xii]

Extreme heat already costs the State over **$87m** per year in economic **losses,** with outdoor industries such as construction and agriculture most affected.[xiv]

While overall rainfall is decreasing, the State is experiencing more **intense** downpours when it does rain. This is increasing the risk of significant flood events.

Climate change modelling undertaken by the CSIRO projects that the State will continue to get warmer and drier into the future under all emissions scenarios,[xv] but if urgent action is taken now to reduce our emissions the worst of these impacts can still be avoided.

However, adaptation to climate change that cannot be prevented will still be required.

* Days above the 99th percentile of each month of the year.

In Mitchell Shire

Like the rest of the State, Mitchell Shire is already experiencing the impacts of climate change.

Mitchell Shire is **highly vulnerable** to the impacts of drought, bushfire, and flood, all of which are increasing in frequency and severity under climate change.[xvi]

The south of the Shire was again devastated by the 2014 **Mickleham-Kilmore fires**[xix] and while the 2019–20 Black Summer Fires were outside the Shire, residents were impacted by smoke pollution.[xx]

The Millennium Drought

resulted in significant dry conditions throughout Victoria between 1996 and 2010, including in Mitchell Shire. It is considered one of the first major droughts within Australia to have been amplified by climate change.[xvii]

The October 2022 **flooding event** demonstrated the high degree of risk faced in the Shire, from damage to homes, businesses, open space, and infrastructure[xxi] to loss of crops and other agricultural impacts.[xxii]

Temperature extremes peaked during the **Black Saturday** heatwave and bushfires in early 2009, resulting in the loss of hundreds of human and animal lives as well as crop failure and stock losses, infrastructure losses and damage, and land degradation.[xviii]

These climate change impacts are already exerting short and long-term consequences on the landscape, productivity, culture, and the overall health and wellbeing of Mitchell Shire.

Mitchell Shire
Climate change risk assessment

A climate change risk assessment was undertaken in April 2023 to identify and inform the development of priority actions to reduce climate change risk within the Shire.

Mitchell Shire is exposed to a high number of climate hazards that could significantly impact the health and wellbeing of the community and natural environment, including:

Extreme temp. and heat waves

Extreme weather and storms

Bushfires

Drought

Low rainfall

Flooding

Each of these climate hazards were assessed against Council responsibilities and goals to assess the potential impact and risk to Council and the community.

This analysis identified 57 climate risks for Mitchell Shire, including three extreme and 16 very high risks. Bushfires, drought, and flooding were identified as having the greatest overall risk to Mitchell Shire.

A summary of extreme and very high risks is provided in Appendix B.

> **"The era of global warming has ended. The era of global boiling has arrived."**

So announced United Nations secretary general Antonio Guterres as it was confirmed that July 2023 had become the hottest month in the past 120,000 years.

Mitchell Shire's emissions

Council's corporate emissions profile

A corporate emissions profile takes into account both direct and indirect emissions that arise from activities and operations conducted by an organisation.

For the 2020–21 financial year Mitchell Shire Council's corporate emissions were calculated to be 22,150 tonnes of carbon dioxide equivalent (tCO_2-e).[1] This represents 3.9 percent of the total Mitchell Shire community emissions.[2]

Emissions associated with landfill operations account for the majority of Council's corporate emissions profile, totalling 75 percent. Landfill emissions are considered within Council's corporate emissions scope because Council manages waste facilities (including Mitchell landfill in Hilldene) in the Shire. Council therefore has control over how collected waste is processed, and, where possible, diverted from landfill.

Most waste being deposited into Mitchell landfill comes from the community in the form of Municipal Solid Waste (MSW), commercial and industrial waste, and construction and demolition waste. Council cannot directly control how much waste the community generates, or what community members place in their bins. This means that although the emissions from waste must be counted in Council's corporate inventory, it is the emissions source Council has the least control over.

Until 2022, electricity was the second largest source of emissions for Council. In July 2022, Council entered into electricity contracts that provide 100 percent GreenPower to its buildings and facilities, including street lighting. GreenPower is a government accredited renewable energy product, meaning Council's electricity emissions are now close to zero.

Road construction and transport fuel emissions each contribute 4 percent, with Council's remaining emissions coming from gas and minor sources such as water treatment and fugitive emissions.

Worm farm used by staff at Broadford Civic Centre

1 Greenhouse gases emissions from sources such as methane and nitrous oxide have different global warming potential to carbon dioxide. All emissions have, therefore, been converted to tonnes of carbon dioxide equivalent (tCO_2-e) to correctly account for their potential impact.

2 Mitchell Shire's Community emissions include all emissions produced within the local government boundary, including from council, residential, commercial, and industrial activities.

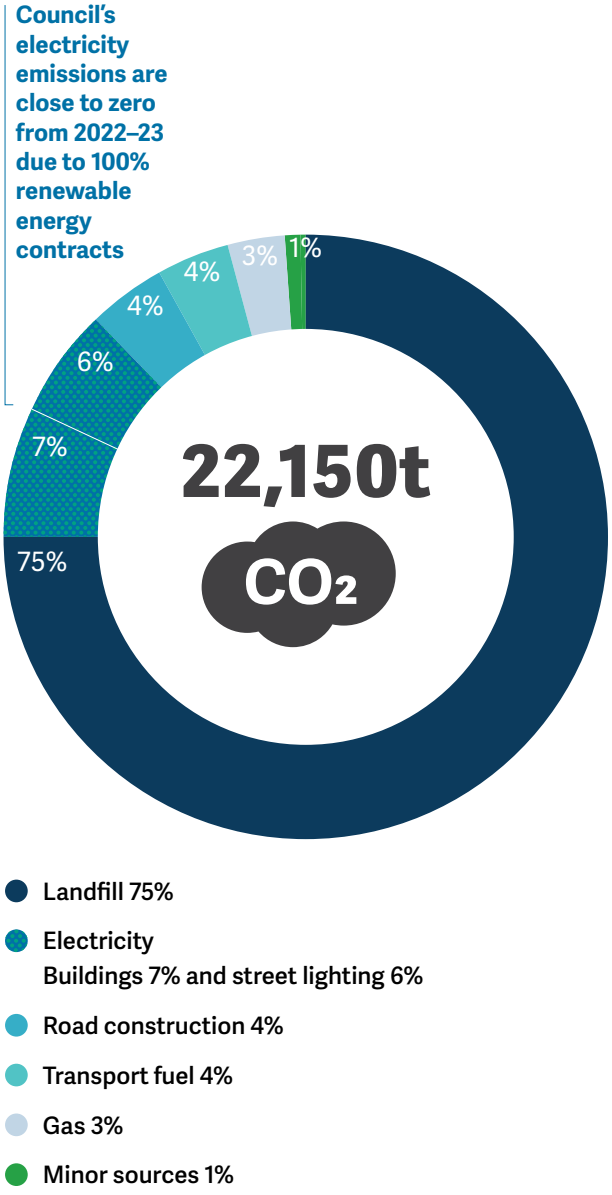


Figure 2 Mitchell Shire Council's operational emissions 2020–21

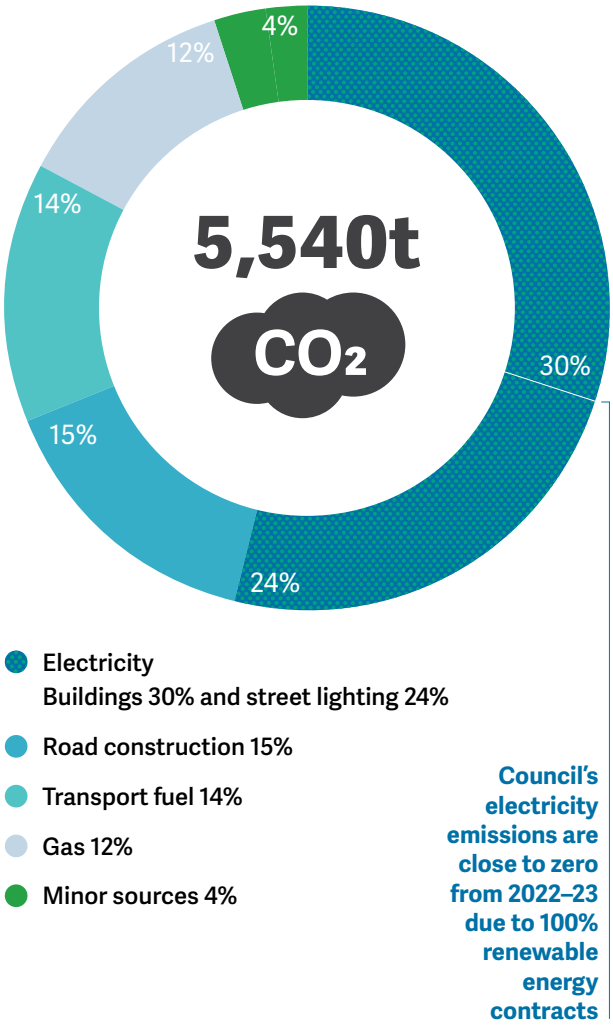


Figure 3 Mitchell Shire Council's non-landfill operational emissions 2020–21

Community emissions profile

The emissions profile of Mitchell Shire's community is derived from Snapshot Climate, which is presently the only online tool providing estimated emissions profiles for all local government areas in Australia. The tool has been developed in accordance with the Global Protocol for Community-Scale Greenhouse Gas Inventories (GPC) and encompasses a wide array of top down or state level data on emissions and their sources. Community emissions include all emissions produced within the local government boundary including from council, residential, commercial, and industrial activities.[3]

Figure 4 provides an overview of Mitchell Shire's total community greenhouse gas emissions and their sources.[4] In the 2020–21 financial year, the community generated around 572,000 tonnes of CO_2-e. The most significant source of emissions is from electricity consumption in the residential, industrial, and commercial sectors, collectively contributing 43 percent to the overall profile. The second largest source of emissions is transport, which accounts for 25 percent of all emissions. Agriculture is the third major contributor to emissions, followed by gas usage, industrial processes, and product use (IPPU), and waste disposal in landfill.

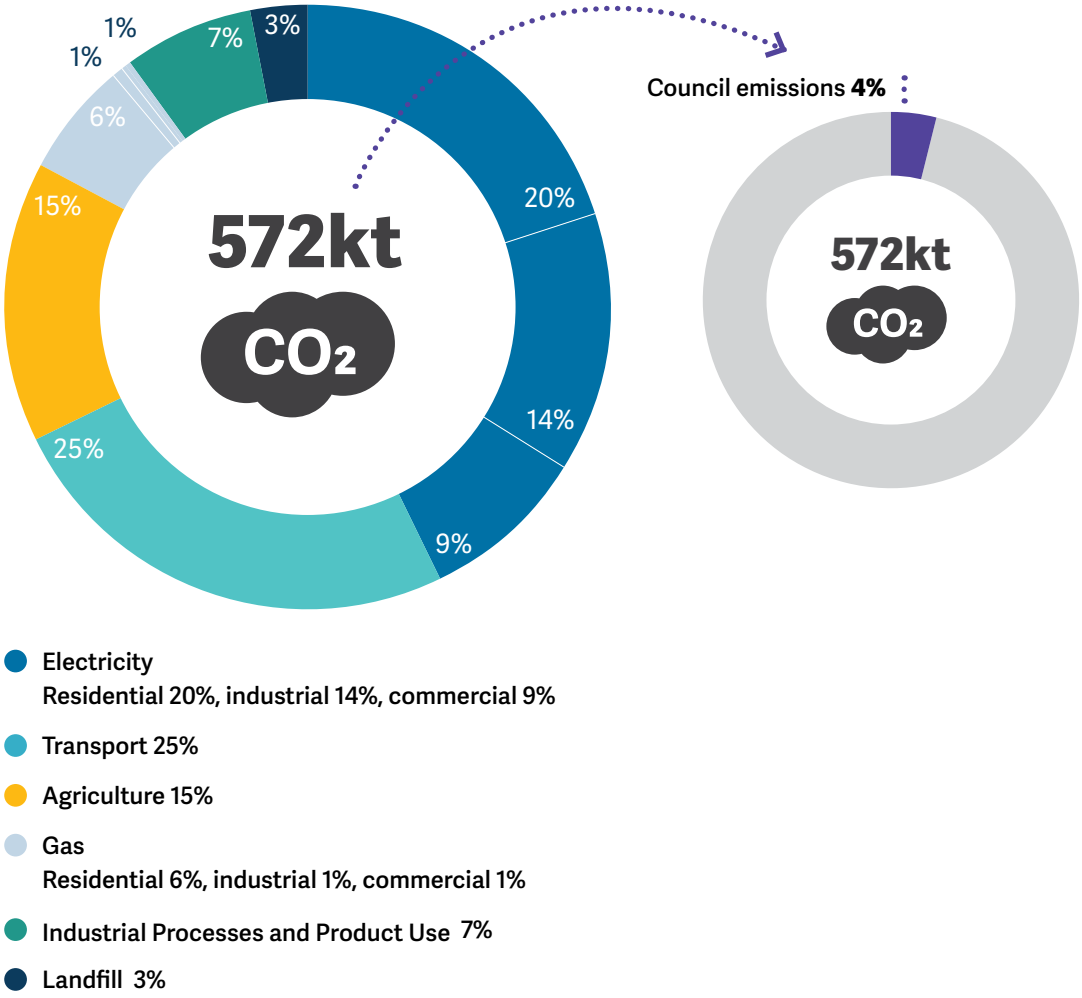


Figure 4 Mitchell Shire Community Emissions Snapshot 2020/21

3 Emissions from the Puckapunyal Australian Army training facility and base are not included in Mitchell Shire's community emissions

4 Based on Snapshot Climate data: https://snapshotclimate.com.au/

Community priorities

The Mitchell Shire community has played a critical role in the development of this Climate Emergency Action Plan. Key stakeholders from households, businesses and industry participated in a series of engagement activities to identify community issues, priorities, and concerns around how to address the climate emergency.

Figure 5 Wallan community workshop

Engagement activities that informed the development of this plan included:

- Establishment of a Climate Emergency Community Reference Group (CECRG) to identify high level strategic direction, opportunities, and goals to address the climate emergency and assist with engagement of the wider community.
- Community workshops in Seymour and Wallan to understand the Shire's valued assets and how these assets are at risk from climate change.
- A workshop with the Mitchell Environment Advisory Committee (MEAC).
- A community survey to gauge what the community thinks Council's role should be in addressing the climate emergency.
- Staff survey and workshops to learn what Council is already doing to reduce emissions and adapt to climate change, and its capacity to further support community action.
- Interviews with local business and industry leaders to understand what support they need from Council to reduce their own emissions and protect their assets.
- A public forum in Broadford to share the outcomes and recommendations that emerged during the engagement process and give the community an opportunity to provide feedback on the proposed actions for the plan.
- Following endorsement of the draft CEAP at the Ordinary Council meeting in September 2023, the document was exhibited for public consultation for a period of four weeks.

The contributions and feedback of each engagement activity have been used to guide the CEAP development process. The actions recommended in this plan reflect the challenges, needs and capacity of both the Mitchell Shire community and Council. Ongoing collaboration between community and Council is crucial to success when addressing the climate emergency and creating a better Mitchell Shire for future generations.

Providing a range of engagement opportunities allowed Council to hear the diverse views of the community. Key insights gained through the engagement process included:

- Changes to Mitchell's climate are already being experienced, including increased bushfire and flooding risks, more extreme storm events, droughts and heatwaves, and loss of local biodiversity.
- Residents value the Shire's access to diverse landscapes, waterways and wetlands, its engaged and connected community, and overall lifestyle.
- Many of these assets are at risk in the face of climate change, in particular due to the loss of agricultural land and associated food security.
- There is great opportunity for the community to reduce emissions and adapt to the changing climate, including greening of the Shire's townships, adopting more sustainable modes of transport, and building resilient infrastructure.
- Nearly 75 percent of survey respondents think Council has a role in supporting the community to reduce greenhouse gas emissions and protect itself against climate impacts.

'Niran seed' by Priscilla Indichnavon. hArt23 'Climate Solutions' exhibition (First Prize Winner)

Is there anything else Council should be doing to respond to climate change? Community members said:

> Encourage energy efficiency and how to live more sustainably across the community.

> We really want solar. We don't have solar because we don't have the money. Perhaps Mitchell Shire could come up with a low deposit low interest loan scheme for home owners?

> Planting more trees and increasing biodiversity links along waterways through revegetation projects.

> Ensure that all strategic and statutory planning include best practices to reduce emissions and the impacts of climate change. Green our towns, using native plants to aid biodiversity.

> Spread behaviour change from a grass root level.

> Encourage energy efficiency and how to live more sustainably across the community.

> Set strong targets for emissions reduction in Mitchell and renewables uptake. Engage community leaders across different parts of the community, and seek their commitment to addressing climate change issues.

> Helping educate young people about sustainability.

> This should be Council's highest priority. Climate change should be considered in all activities and aspects of Council.

Net zero emissions targets

Net zero emissions targets are critical for councils to tackle climate change and protect the environment.
By reducing greenhouse gas emissions, local governments can mitigate the effects of climate change, safeguard the health and wellbeing of their communities, and contribute to global efforts to meet the Paris Agreement.

Net zero emissions means reducing greenhouse gas emissions as much as possible with available technology and offsetting any remaining emissions through measures such as carbon sequestration or investment in renewable energy projects.

Setting ambitious targets can also inspire other communities to take action and demonstrate leadership around the country. Targets provide certainty for investors and the business community and will help create jobs in clean energy, land restoration, zero-emissions transport, and the circular economy. By investing in renewable energy, energy efficiency, and other low-carbon technologies, local governments can help to build a more resilient and sustainable economy.

Reducing greenhouse gas emissions also contributes to improving public health by improving air quality which can help to reduce respiratory illnesses and decrease the prevalence of chronic diseases. Climate change disproportionately affects marginalised communities, including low-income households. Factors such as limited access to resources, socio-economic disadvantage, and discrimination can amplify vulnerability to climate-related hazards, displacement, and the unequal distribution of the burdens and benefits associated with climate adaptation and mitigation efforts.

Setting net zero emissions targets and implementing policies to achieve them can help to address these inequalities and ensure that the benefits of a low-carbon economy are shared by all.

'Connection' by Broadford Secondary College Year 11 Art creative practice students. hArt23 'Climate Solutions' exhibition entrants

Council's corporate target

While Council's total emissions profile accounts for a small fraction of the total emissions in the Shire, it still plays an important role in reducing overall emissions. Implementing measures to reduce Council's own emissions to zero can demonstrate to the wider community the benefit of low-emissions solutions and showcase a commitment to reducing greenhouse gases. Any insights gained can be shared with the community, as Council supports the Shire's own transition towards achieving net zero emissions.

In the short and medium-term, Mitchell Shire Council will focus its efforts on reducing emissions it has the most control over, such as electricity, natural gas, and passenger vehicle fuel. A significant reduction in these emissions can be achieved by implementing the actions outlined in this plan, with feasible and cost-effective options available to Council. Council will target net zero emissions for all non-landfill emissions by 2030. An interim target of reducing non-landfill emissions by 50 percent compared to Council's 2020–21 profile by 2025 will also be established.

Council will target net zero emissions for all non-landfill emissions by 2030.

Council's management of landfill waste will be changing from 2025, when a Food Organics Garden Organics (FOGO) kerbside collection service is introduced. This will result in a significant drop in new landfill emissions.

In addition to this, approved airspace[5] at Mitchell Landfill is expected to be filled by the end of this decade, with municipal waste thereafter likely to be diverted to other facilities outside the Shire.

When this happens, the only landfill emissions within Council's corporate emissions inventory will be legacy emissions from closed landfill sites within the Shire. Legacy emissions from closed landfill sites will remain within Council's emissions boundary beyond 2030 and opportunities to reduce these emissions beyond natural decomposition are limited. These known changes to waste management in the Shire, combined with Council's limited control of community waste generation, mean that Council is focusing its efforts on reducing its non-landfill emissions sources between now and 2030.

Mitchell Shire Council shall adopt a long-term net zero target of 2035 for all emissions. Achieving this will demonstrate climate action leadership, environmental responsibility, and contribute to meeting global goals. This transition will also result in cost savings for councils in the long term, as energy efficiency measures and renewable energy sources can be more cost-effective than traditional fossil fuels.

In order to achieve its medium and long-term targets, Council will likely need to purchase carbon credits to offset residual emissions. Mitchell Shire Council will continue to focus efforts on reducing absolute emissions, so as to reduce the quantity of offsets it requires. As technology develops and financial viability improves, opportunities will emerge for Council to eliminate emissions sources that are currently unavoidable, for example heavy fleet and road construction.

Mitchell Shire Council shall adopt a long-term net zero target of 2035 for all emissions.

5 Landfill airspace is the volume of space on a landfill site permitted for disposal of municipal solid waste.

Community target

An effective way to determine an appropriate net zero target for community emissions is to seek alignment with scientific research and the goals of the Paris Agreement. This is known as a 'science-derived' or 'science-based' target. It aims to ensure that emissions reductions are in line with the level of decarbonisation required to limit global warming to as close to 1.5°C above pre-industrial levels as possible. A science-derived target is determined by apportioning a fair share of the global remaining carbon budget to a community or local area. The global 1.5 °C carbon budget is the total amount of carbon that can be emitted before we exceed 1.5°C of global temperature rise.

In 2019, the Independent Expert Panel on Interim Emissions Reduction Targets for Victoria undertook work to develop a state-wide carbon budget. This budget has been used to determine Mitchell Shire's own portion of remaining emissions to contribute to keeping global warming to 1.5°C. The methodology behind this includes scaling to allow areas with high population growth rates and high levels of disadvantage a greater share of the budget, since they are expected to find it more challenging to reduce emissions. This is a more equitable approach than allocating the national and state carbon budgets based on population alone.

This plan sets a target for net zero emissions by 2043 for the Mitchell Shire community. This is aligned with the Shire's carbon budget to keep global warming to 1.5°C and will require an average CO_2-e reduction of 5 percent each year between now and 2043. This target also accounts for the high projected population growth and socio-economic context of Mitchell Shire.

In order to track progress towards this target, Mitchell Shire sets the following interim community targets:

- 40 percent reduction in community emissions compared to the 2020–21 baseline by 2030
- 70 percent reduction in community emissions compared to the 2020–21 baseline by 2037.

This plan sets a target for net zero emissions by 2043

Carbon budget

Total emissions allowed globally to limit warming to
1.5°C
current budget
380Bt

Allocation of the global carbon budget to individual countries, regions and organisations is scaled, taking into account development level, socio-economic status, population and population growth.

CO_2

Victoria's
share of these emissions – current budget
2.2Bt

Mitchell Shires'
share of these emissions – current budget
8.3Mt

Emissions reduction pathway

Council emissions

Mitchell Shire Council aims to achieve net zero greenhouse gas emissions by 2035. Analysis of the Council's FY 2020–21 emissions inventory has identified a number of actions Council can undertake to significantly reduce its emissions.

These actions include:

Continue to implement Council's Environmentally Sustainable Design (ESD) for Council Buildings policy

Installation of solar photovoltaic panels (PV) on Council buildings

Energy efficiency audits and improvements at key facilities

Upgrade street and open space lighting to LED, including smart lighting for major roads

Phased transition of fleet to electric vehicles

Introduce Food Organics Garden Organics (FOGO) kerbside collection

Implement a sustainable infrastructure policy

The impact of these actions on Council's emissions inventory to 2035 are shown in Figure 6. It is estimated that Council's annual organisational emissions can be reduced by 33 percent by 2030. Council's remaining emissions will predominantly come from landfill, heavy vehicle fuels, road construction and water use. These emissions will need to be offset or inset,[6] where possible, to achieve Council's emissions reduction targets.

It is important to note that whilst Council has effectively reduced its energy emissions to zero by purchasing 'carbon neutral' gas and purchasing renewable electricity, actions to further reduce electricity consumption remain viable. Actions to improve energy efficiency and install rooftop solar panels, for example, will reduce electricity costs that over time can boost funding for other actions.

It is estimated that Council's annual organisational emissions can be reduced by 33 percent by 2030. Council's remaining emissions will predominantly come from landfill, heavy vehicle fuels, road construction and water use.

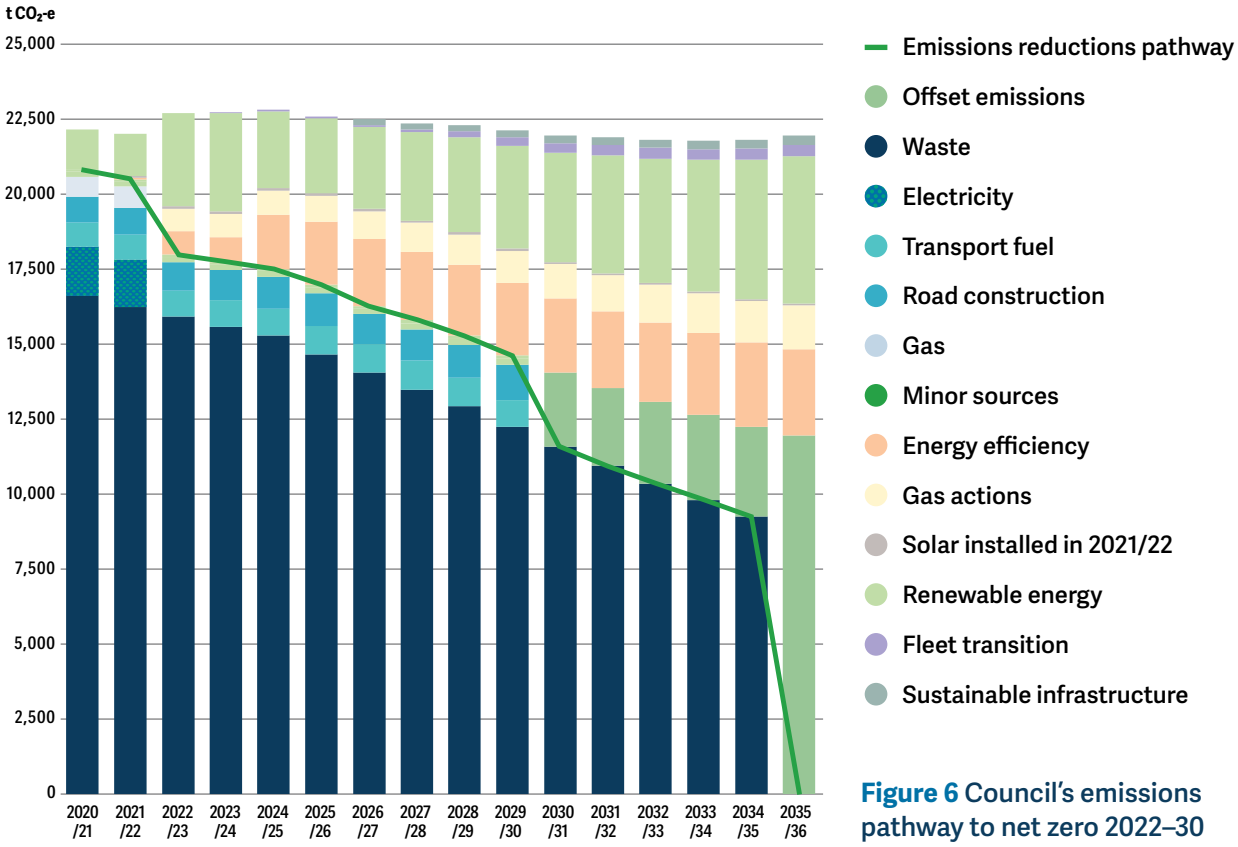


Figure 6 Council's emissions pathway to net zero 2022–30

6 Insetting' is the aim of reducing GHG emissions from within one's own supply chain - www.weforum.org/agenda/2022/03/carbon-insetting-vs-offsetting-an-explainer/

Community emissions

Community members can contribute to making the transition to a net zero Mitchell Shire happen even faster by:

- Walking, cycling, or catching public transport where possible instead of driving for short trips
- Installing solar panels on your roof
- Choosing an electricity plan that includes renewable energy (e.g. GreenPower)
- Buying appliances with high energy efficiency ratings
- Replacing gas hot water tanks, heaters, ovens, and stovetops with electric ones when possible
- Enjoying more fruits, vegetables, legumes, and nuts – especially from local and sustainable agricultural sources
- Buying an electric vehicle for your next car

Council's role in reducing community emissions is to support the community and advocate to the State and Federal government to take action. In doing this, Council has the potential to accelerate community emissions reduction by 15 to 20 percent more than if Council did not act. Between now and 2030, this represents a total of approximately 300,000 tonnes of avoided CO_2-e emissions into the atmosphere.

The results of high-level modelling of the actions described in this plan are presented in Figure 7, which shows Council's effect on emissions reduction against the current business-as-usual (BAU) projection. This BAU trajectory is based on the current rate of electric vehicle uptake and renewable energy generation. It is expected that the transition to low emissions technology will naturally accelerate over the coming years, driving community emissions down even further.

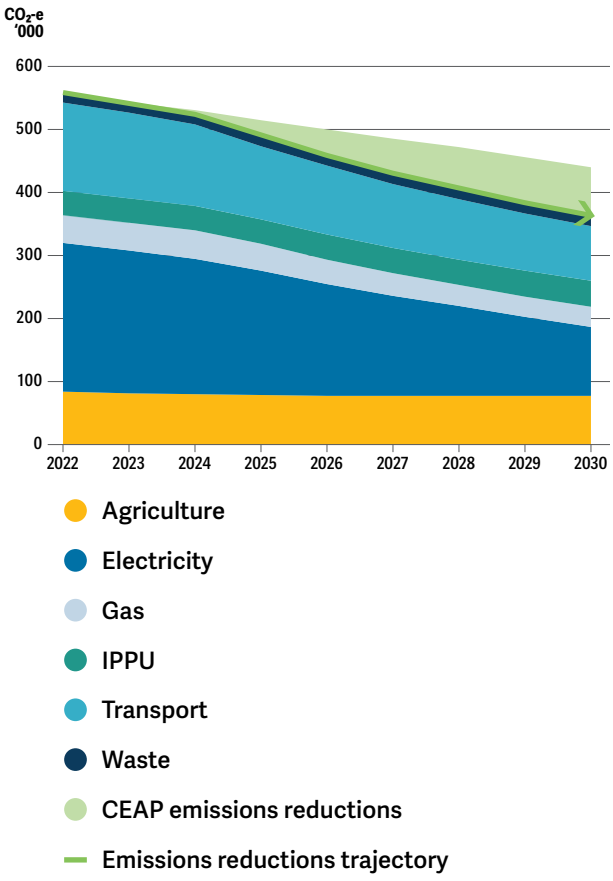


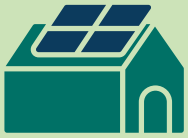
Figure 7 Community emissions reduction pathway 2022–23

'Think About It' by Isla Mondon. hArt23 'Climate Solutions' exhibition (Youth Artist Prize Winner)

Actions already underway

Mitchell Shire Council is already responding to climate change by undertaking the following activities across the Shire.

Energy



Installing solar energy on Council facilities.

Promoting opportunities for increased uptake of renewable energy in the community.

Procuring renewable energy through 'Greenpower' for **99%** of Council's electricity consumption, including streetlighting.

Purchase of accredited carbon offsets for natural gas used at Council sites.

Transitioning Council buildings towards **all-electric,** including the installation of a heat pump system at Seymour Sports and Aquatic Centre.

Climate change

Continuing to plan for and respond to climatic changes and emergencies, including bushfires, floods, and storm events.

Adoption and implementation of the Mitchell Shire Council Environmentally Sustainable Design (ESD) for Council Buildings Policy and Minimum Standards.

Ongoing ESD audits of Council buildings.

Climate change embedded into the Council Plan and the Mitchell Shire Municipal Health and Wellbeing Plan.

Home Energy and Water Efficiency Toolkits made available for loan through libraries.

Ongoing collaboration with community groups.

Member of the Goulburn Murray Climate Alliance.

Resource use and waste management

Introducing Food Organics Garden

Organics kerbside

collection in 2025.

Development of a

Sustainable

Events guide to reduce our ecological footprint when running events.

Hosting the Southern Goulburn Regional Waste and Resource Recovery Education officer position.

Supporting Clean Up Australia Day activities.

Building a better practice Resource Recovery Centre in Seymour with a focus on diverting more waste from landfill.

Providing a compost bin and worm farm

rebate

and delivering home composting workshops.

Land and biodiversity

Ongoing commitment to strategic planting of

Indigenous species

to create wildlife corridors and enhance biodiversity values.

Active management of Council's bushland reserves (approx. 225ha) for ecological and social outcomes.

Implementation of an annual grant program for properties with conservation covenants.

Providing environmental education materials and extension for

biodiversity outcomes

on privately owned land.

Continuing to support

Landcare

in the Shire.

Public electric vehicle charging, Broadford

Mitchell Shire Council

Actions already underway (cont)

Urban ecology

Developing the Mitchell Shire Urban Forest Strategy.

Developing the Beveridge and Wallan
Growth Area Movement Strategy.

Installation of the Shire's first public Electric Vehicle (EV)
fast charging stations
in Broadford and Kilmore.

Advocating for and actively supporting the installation of EV chargers for community use in the Shire, particularly in Wallan and Seymour.

Continuing our participation in the Sustainable Subdivisions Framework trial.

Actively participating in the Council Alliance for the Sustainable Built Environment project
Elevating ESD.
Targets Planning Policy Amendment.

Climate Emergency Action Plan

This Action Plan presents priority actions for Mitchell Shire to implement by 2030 to both reduce emissions and adapt to a changing climate. It encompasses a range of actions including those to be undertaken by Council within its own operations and assets, actions aimed at supporting the community, and actions focused on advocating to the State Government, Federal Government, and local service providers.

'Round and round the Banksia' by Jennifer McInnes. hArt23 'Climate Solutions' exhibition entrant

It will require strong leadership and advocacy, and a collective commitment to achieve a zero emissions future. We all have a part to play, and by working together in a global effort we can protect current and future generations from the impacts of climate change.

Council's role

Council can assist in driving emissions reductions within the community, through its leadership role in the Shire, local understanding, and established networks. Council's existing services, ranging from planning and capital improvements to community development support, can be utilised to motivate and facilitate community climate action. By ensuring the actions described in this plan are inclusive, Council can assist in supporting and empowering the community.

Mitchell Shire Council alone cannot ensure emissions reduction targets are achieved. Figure 8 represents Council's three spheres of responsibility. 'Directly responsible' refers to the areas in which Council has direct authority and decision-making power. This includes managing resources, and infrastructure under its organisational operations. Council's sphere of influence involves the council's ability to shape and guide actions of others within the community, for example through education and facilitation of programs. Advocacy relates to Council's role in representing and championing the interests, concerns, and rights of the Mitchell Shire community, advocating to state and federal bodies on their behalf.

Although Council can regulate and make decisions regarding its own operations and assets, the responsibility for achieving a net zero target rests on the collective efforts of residents, businesses, industry, and the actions of the state and federal governments. Accomplishing emissions reductions at such a significant scale necessitates contributions from various stakeholders and broader societal and structural changes beyond the Council's direct control.

The programs outlined in this Action Plan emphasise key areas within Council's spheres of influence that can significantly reduce emissions in the region, namely educating, facilitating, and supporting the local community to take positive steps towards climate action. Furthermore, the Council will actively engage in advocacy on behalf of the community and demonstrate leadership to influence decisions that extend beyond its control.

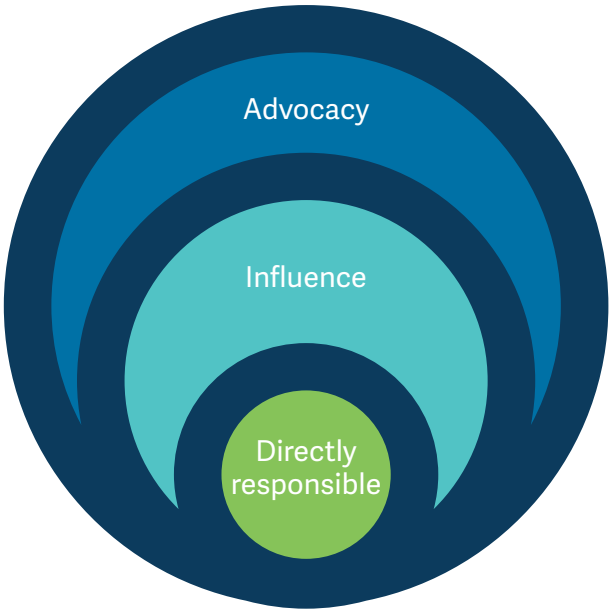


Figure 8 Council's spheres of responsibility

The community's role

Each member of the Mitchell Shire community has a critical role to play in reducing emissions and adapting to climate change. Whilst this Action Plan primarily focuses on the responsibilities of Council to implement actions, it is intended to be carried out in collaboration with the community. The opportunities outlined in this Action Plan are designed to be inclusive, mutually advantageous, and scalable both at the community and individual level.

A checklist of 'what you can do as a community member' is provided in Appendix A of this plan. This includes actions an individual or group can take to reduce their climate impacts and in turn help reduce emissions in the Shire. The potential impact of each action to reduce emissions has been indicated as 'low', 'moderate' or 'high'.

hArt23 'Climate Solutions' exhibition entrant.
'Lions Park Scene' by Robbie Wales

Climate emergency goals

The actions described in this plan are designed for Council and the community to overcome barriers and challenges to achieve the following goals, which were derived from community engagement activities:

Goal 1 Reduce the impact of extreme heat across Mitchell Shire

Goal 2 Improve Mitchell Shire's preparedness to climate change related emergency events

Goal 3 Protect and enhance the natural environment and support a climate resilient agricultural sector in Mitchell Shire

Goal 4 Support Mitchell Shire residents, businesses and community groups to reduce emissions

Goal 5 Accelerate the transition to more sustainable transport solutions in Mitchell Shire

Goal 6 Empower the Mitchell Shire community to take meaningful action in response to the Climate Emergency

Council, residents, businesses, farmers, and community groups all have distinct roles to play in driving climate action in each of these focus areas. By fostering collaboration and adopting a partnership approach, Mitchell Shire can build a community that is both resilient to climate impacts and achieves its net zero emissions target.

This section of the plan describes each focus area in more detail, including key actions and roles for Council and the community. The Strategic Priority areas provide high level directions and actions. The detailed programs will be designed in collaboration with relevant community stakeholders.

'The La Nina Effect' by Lynda Robinson.
hArt23 'Climate Solutions' exhibition entrant

Goal 1: Reduce the impact of extreme heat across Mitchell Shire

Extreme heat refers to abnormally high temperatures that exceed the normal or average temperature range for a particular region or season. An increase in the frequency and intensity of extreme heat days is already being experienced in Mitchell Shire.

Mitchell 2050 community vision key priorities:

PROVIDE open spaces that serve the diverse needs of all our community.

SHOW leadership to prevent or mitigate the increasing impacts of climate related weather events on our communities and environment.

Extreme heat events pose significant risks to human health, with prolonged exposure leading to heat-related illnesses and increased vulnerability among certain populations. Protecting human wellbeing and minimising the strain on healthcare systems is a key motivation for mitigating extreme heat impacts. Other consequences of extreme heat can include more extreme bushfire weather, increased power outages, and disruptions to economic activity and essential services. Extreme heat can also affect agricultural productivity, resulting in reduced yields and economic losses, and impact native plant and animal populations.

Mitigating extreme heat aligns with broader climate change mitigation and adaptation efforts. As climate change intensifies, extreme heat events are expected to become more frequent and severe. Taking action to reduce extreme heat not only helps to reduce the immediate risk but also contributes to mitigating climate change, enhancing community resilience, and adapting to a changing climate.

Challenges

- Insufficient canopy cover and green space on public and private land.
- Insufficient infrastructure to mitigate extreme heat in thae public domain.
- Development that exacerbates the urban heat island effect.
- High costs for residents to cool and heat their homes.
- Vegetation removal.

Council's role

- Plant and protect trees on Council-managed land.
- Educate and encourage landholders to plant and protect trees on private land.
- Provide relief from extreme heat with shading, seating, and drinking water in the public domain and along pedestrian and cycle paths.
- Support vulnerable residents during periods of extreme temperatures, including provision of airconditioned indoor community spaces.
- Advocate for improvements to the planning scheme to reduce urban heat island effect including greater protection of canopy trees and more public open space.
- Implement the Mitchell Shire Urban Forest Strategy (under development).

Community's role – What can you do?

- Plant and maintain existing vegetation, particularly large canopy trees.
- Consider the urban heat island effect when building or renovating, for example by choosing light coloured roof and paving products.
- Support other community members who are particularly vulnerable to heat.
- Reduce your water use.

Colin Officer Flora Reserve, Broadford

Goal 2: Improve Mitchell Shire's preparedness to climate change related emergency events

Climate change is increasing the frequency and intensity of extreme weather events such as floods, storms, and bushfires. These events pose immediate risks to human lives, infrastructure, and ecosystems.

Mitchell 2050 community vision key priorities:

DEVELOP partnerships to implement shared innovative solutions to environmental issues.

SHOW leadership to prevent or mitigate the increasing impacts of climate related weather events on our communities and environment.

Emergency management helps in preparing for, responding to, and recovering from these events, ensuring the safety and wellbeing of affected populations. It involves coordinating resources, implementing evacuation plans, establishing emergency shelters, and providing timely information to the public. Effective management of emergencies caused by climate change can save lives, reduce property damage, and enhance community resilience.

Emergency management serves as a framework for collaboration among various stakeholders, including all levels of government, first responders, emergency relief organisations, businesses, and communities. It facilitates the development of robust mitigation and adaptation strategies, risk assessments, and contingency plans. Emergency management also promotes information sharing, knowledge transfer, and capacity building, enabling communities to better understand and address climate-related risks. By integrating climate change considerations into emergency management practices, preparedness, response and recovery efforts can be improved, ultimately minimising the impacts of climate change on society and the environment.

Challenges

- Need to prepare for increased frequency and intensity of extreme weather events due to climate change.
- Flood models and flood mitigation measures may need updating in light of climate impacts.
- Understanding of current best practice fire risk reduction and management practices.
- Community education and engagement in emergency preparedness and response for extreme weather events.
- Some existing assets (e.g. roads and bridges) are not able to withstand the impacts of extreme weather events.

Council's role

- Partner with state and local emergency authorities to ensure emergency management procedures consider likely impacts of climate change on the frequency and intensity of extreme weather events.
- Support dissemination of information on emergency preparedness and best practice emergency risk management.
- Assess accessibility and resilience of community evacuation centres.
- Assess and upgrade critical infrastructure for climate risk and vulnerability.
- Advocate for up-to-date regional flood modelling and mitigation measures.

Community's role – What can you do?

- Develop and maintain personal preparedness plans for bushfires, floods, and storm events.
- Keep up to date with best practice fire prevention and risk minimisation advice.
- Get to know your neighbours and welcome new residents

Lions Park, Broadford

Goal 3: Protect and enhance the natural environment and support a climate resilient agricultural sector in Mitchell Shire

Access to the natural environment, diverse landscapes and its farming community were all identified by residents as the things they value about Mitchell Shire. These are all at risk due to a changing climate.

Mitchell 2050 community vision key priorities:

ESTABLISH Council as a recognised leader in sustainable environmental management.

PROTECT, enhance and connect landscapes, and increase the extent, variety and quality of the natural habitat.

PROVIDE open spaces that serve the diverse needs of all our community.

Agriculture is directly impacted by changes in temperature, rainfall patterns, and extreme weather events which can affect yields, livestock health, and overall food production. As the population continues to grow, ensuring food security becomes increasingly crucial. Sustainable agricultural practices that mitigate climate change, such as promoting regenerative farming, reducing greenhouse gas emissions from livestock, and enhancing soil health, are vital for adapting to and mitigating the impacts of climate change on food systems.

The natural environment consists of essential ecosystems that contribute to climate change mitigation and adaptation. Forests act as carbon sinks, absorbing and storing large amounts of CO2 from the atmosphere. Protecting and restoring forests and other natural habitats not only helps sequester carbon but also supports biodiversity conservation and ecosystem resilience. Healthy ecosystems also contribute to water regulation, soil conservation, and climate regulation, enhancing community resilience to climate-related hazards such as floods and droughts. By prioritising the preservation of the natural environment, we can address the challenges posed by climate change and work towards a more sustainable and resilient future.

Challenges

- Livestock are a significant source of emissions due to enteric fermentation.
- Native vegetation at risk of removal.
- A need for greater knowledge of sustainable land management practices within the community.
- Climate impact risks to primary production as extreme weather events affect animal health, plant growth and water security.

Council's role

- Support landowners to increase sustainable agricultural and land management knowledge, including the importance of biodiversity conservation.
- Advocate for state and federal government research and support for farmers and landowners to improve sustainability of land management and farming practices.
- Protect and enhance existing biodiversity values, including nature reserves, biodiversity corridors, rural roadsides, and canopy trees.
- Advocate for greater protection of nature reserves and forests under state government responsibility.

Community's role – What can you do?

- Landowners can explore opportunities to improve sustainability of land management, gardening and farming practices.
- Community groups can partner with Council and state government to protect nature reserves and biodiversity corridors.
- Protect and enhance biodiversity values on private land.
- Become a citizen scientist – record changes in nature in response to Climate change and other factors and submit to relevant databases such as INaturalist, eBird and FrogID to inform future planning and adaptation.
- Enjoy more fruits, vegetables, legumes, and nuts – especially from local and sustainable agricultural sources.
- Reduce your food waste to zero.

Crimson Rosella (Platycercus elegans), Colin Officer Flora Reserve, Broadford

CASE STUDY: Primary producers in Mitchell Shire[7]

Mitchell Shire has a number of primary producers who are proactively leading the way in utilising high- and low-technology systems to reduce emissions. In doing so, they are also improving farm resilience and productivity whilst supporting the local economy and food system.

Though often adopted informally, regenerative agriculture principles are common in Mitchell Shire, and the value of improving soil health from an environmental and productivity perspective is well understood. McIvor Farm in Tooborac is one such example which seeks to improve soil carbon and the quality of feedstock through pasture cropping. This is coupled with a planned tree planting project and ongoing engagement with a soil carbon consultant to better understand farming and emissions reduction opportunities.

Blue Tongue Berries in Seymour is similarly improving the quality of their farm through healthy soil management practices. Blue Tongue Berries, being located on a steep sloping hill, uses a terracing system to minimise soil runoff and increase nutrient and rainfall capture. Warialda Belted Galloway Beef in Clonbinane use a rotational grazing technique to improve soil and pasture. Another local producer utilises polycropping to retain farm biodiversity and improve soil carbon.

In addition to soil management, local farms are actively pursuing energy efficient technologies and renewable energy to reduce emissions and operational costs. McIvor Farm, Blue Tongue Berries and Warialda Belted Galloway Beef in Clonbinane all utilise solar PV for on-site renewable energy generation. Blue Tongue Berries couple this with wind turbines to supply the off-grid property.

On these farms, solar pumps are common, and farmers are working with local agricultural pump suppliers to map out efficient irrigation systems. This will allow the properties to transition away from the use of diesel and improve farm resilience. Other low-energy systems at local farms include using underground larders and upgrading cool rooms, which are typically large energy users. One producer recently retrofitted the refrigeration unit to a 'Cool Bot' unit, eliminating the need to run an energy-intensive refrigeration unit. Such upgrades not only reduce capital costs, but also reduce operational costs associated with a larger unit.

Mitchell Shire also has an active network of Landcare and Environment Groups and Agricultural Societies that seek to celebrate, engage, and inform primary producers and lifestyle farmers in sustainable agricultural practices.

7 This case study is based on interviews with primary producers in Mitchell Shire.

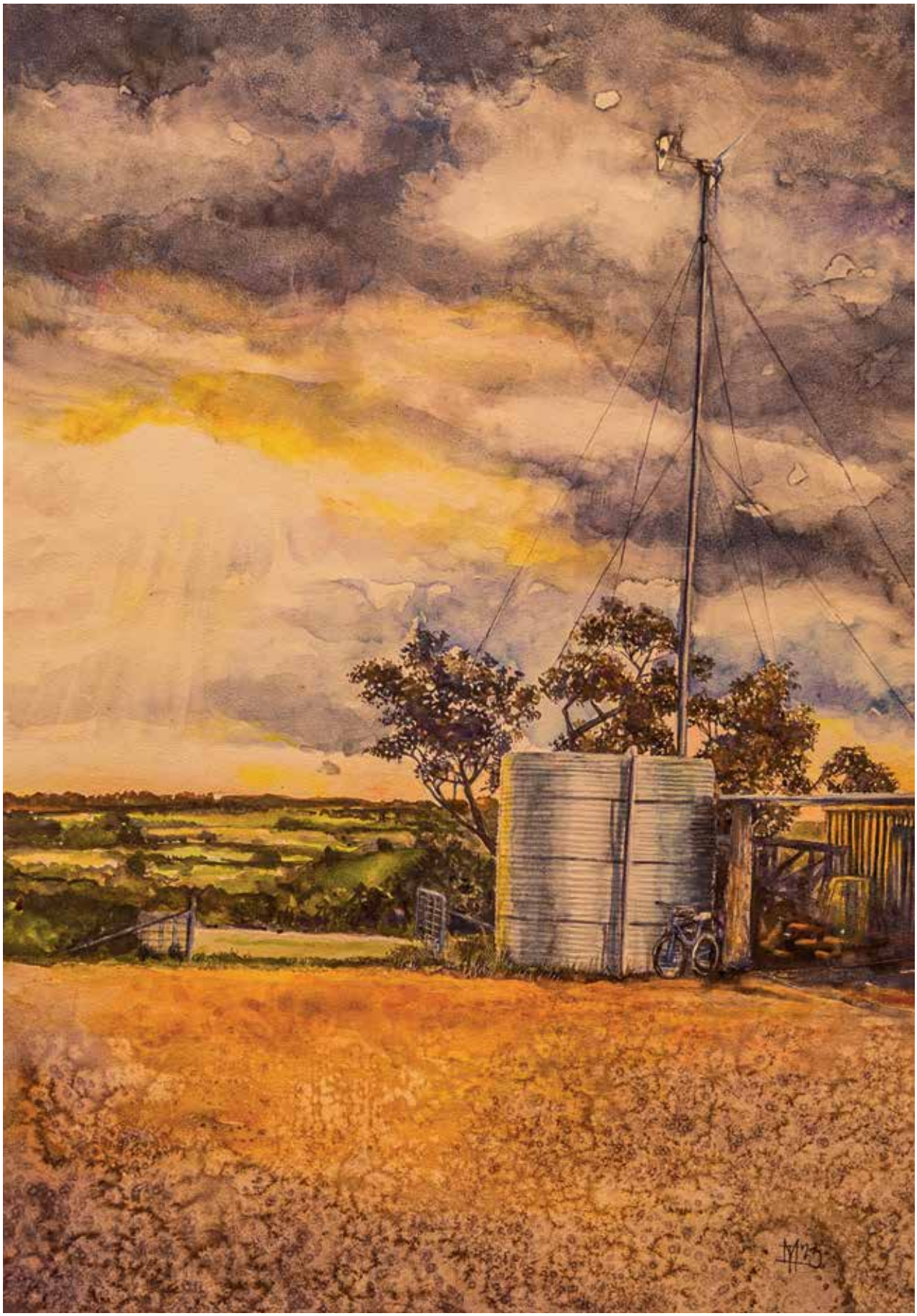


Figure 9 'The Elements', painting of Blue Tongue Berries by Terri MacDonald.
hArt23 'Climate Solutions' exhibition entrant

Goal 4: Support Mitchell Shire residents, businesses and community groups to reduce emissions

Electricity and gas use in the residential, commercial and industrial sectors make up half of Mitchell Shire's current greenhouse gas emissions profile. Residents and businesses can therefore play a significant role in achieving net zero by implementing emissions reduction measures.

Mitchell 2050 community vision key priorities:

DEVELOP PARTNERSHIPS to implement shared innovative solutions to environmental issues.

SHOW LEADERSHIP to prevent or mitigate the increasing impacts of climate related weather events on our communities and environment.

Implementing these measures can also lead to cost savings and economic benefits. Low emissions practices, such as using energy-saving appliances and adopting renewable energy solutions, can result in reduced energy bills and operational costs for businesses. Similarly, residents can benefit from reduced energy expenses by implementing energy-efficient measures in their homes. In addition, transitioning to low-carbon technologies and industries can create job opportunities and stimulate economic growth in emerging sectors.

Reducing emissions also demonstrates responsible stewardship of the planet and sets an example for future generations. By taking proactive measures to reduce emissions, residents and businesses show their commitment to sustainability and environmental protection.

Challenges

- High up-front cost to install energy efficient appliances, electric, solar PV, and battery systems.
- Limited access to renewable energy electricity contracts for businesses.
- Limited understanding of major emissions sources and low emissions alternatives.
- Can be difficult to implement sustainability retrofits for rental properties and the affordable housing sector.

Council's role

- Facilitate programs that enable affordable access to energy efficient appliances, electric and renewable energy systems.
- Educate residents on emissions reduction opportunities including behaviour change and benefits.
- Engage with businesses on opportunities to reduce emissions.
- Advocate for state planning legislation to require better sustainability outcomes.
- Advocate for improved sustainability outcomes in social and affordable housing.

Community's role – What can you do?

- Choose energy efficient appliances.
- Electrify your home and business (heating, cooking, hot water) and shift away from fossil fuels such as natural gas where possible.
- Install rooftop solar panels and switch to 100% GreenPower.
- Support local businesses that implement sustainability measures.
- Make small changes to make your home more sustainable, such as changing light globes, stopping draughts, and using timers.
- Check for water leaks in your home and workplace
- Undertake sustainable gardening and agricultural practices to save energy and water.
- Install a water tank.

'Eucalyptus leaf'. Photo by Alison Pouliot

CASE STUDY
Sustainable house

This part brick, part timber house in Seymour is an example of what is achievable in reducing residential greenhouse gas emissions and energy costs. It has two residents.

Its NaTHERS[8] star rating is 7.2, which is just above the 7 star rating now mandated for new houses in Victoria. This has been achieved by insulation in the ceiling, walls and floor, and double glazing in the windows. The house has windows facing north to capture the sun's warmth in winter that are shaded to keep the summer sun out.

It has 5.7kW of solar panels and a 7.0kWh battery.

There is no gas. The all-electric appliances include an induction stove, electric oven, reverse cycle space heating and cooling, a heat pump for hot water and LED lighting.

The total energy bill for 2022 was $626.

Import of electricity from the grid was 2300kWh, representing 1955kg of greenhouse gas emissions. There is no other energy usage in the house.

For comparison, the average residential electricity consumption in the Mitchell Shire in 2022 was approximately 5300kWh, which is around 4500kg of emissions. The consumption of gas and wood and their associated emissions are in addition to this.

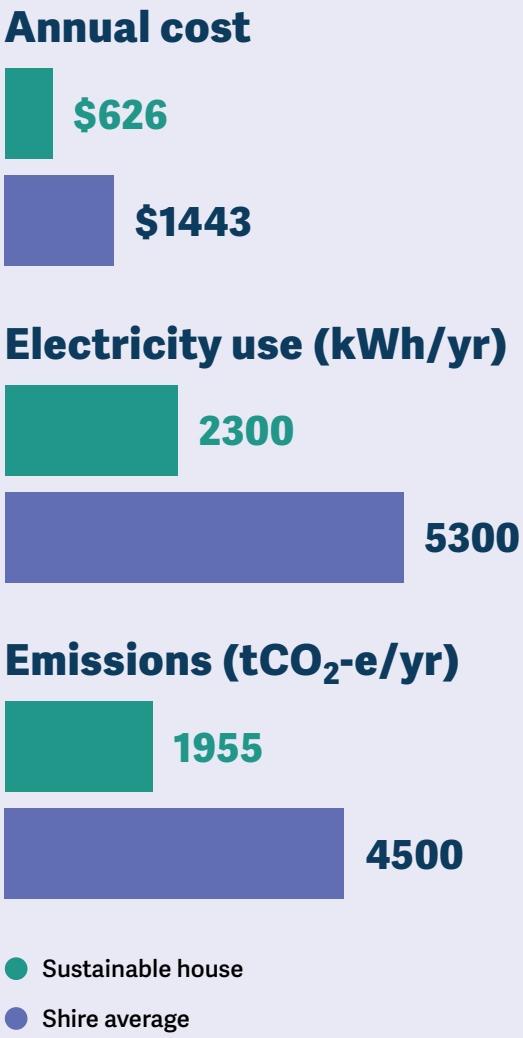


Figure 10 Comparative electricity cost, usage and emissions of a sustainable vs average house in Mitchell Shire

It has 5.7kW of solar panels and a 7.0kWh battery.

8 The Nationwide House Energy Rating Scheme (NatHERS) provides energy ratings for new dwellings. It is designed to help create energy efficient, resilient and comfortable homes that cost less to run.

CASE STUDY
Nestlé Australia

Nestlé Australia has a factory in Broadford producing Allen's lollies, which accounts for almost 1% of the Shire's emissions. The company has a target nationally to reduce emissions by 50% by 2030 against a 2018 baseline and be net zero by 2050.

This is being achieved by considering all sources of emissions from the company's operations, which include ingredient procurement, sustainable packaging development, cleaner logistics, energy fficiency, renewable energy use and investment in carbon drawdown.

As of December 2021, all company stationary electricity is sourced from renewable power through a 10-year Power Purchase Agreement. Combined with other Nestlé's factory sites across Australia, this switch to renewable electricity will reduce the company's emissions footprint by 73,000 tonnes of carbon emissions annually.

Nestlé is also investing heavily into the research and development of food-grade recycled plastic, as part of its commitment to make 100% of packaging recyclable or reusable by 2025. As part of this, Nestlé Broadford has recognised Mitchell Shire students who were part of Project Ready for their participation in a recent design thinking challenge as part of their 2021 work readiness qualification. Students researched and proposed environmentally sustainable packaging solutions to leaders from Nestlé Broadford to assist in achieving their vision of a waste-free future.

As well as emissions reduction initiatives, the company is partnering with Greening Australia to plant 10 million trees in Australia. The trees will sequester an estimated 2.1 million tonnes of CO_2-e over a 25-year carbon-crediting period – equivalent to the fuel emissions from more than 25,000 cars each year. Together with local communities and landholders, the trees will help restore local biodiversity, water quality, and soils. They will also play a significant role in offsetting emissions the company cannot reduce.

Figure 11 2021 participants of Project Ready. Photo by the North Central Review

Goal 5: Accelerate the transition to more sustainable transport solutions in Mitchell Shire

Transport is responsible for a quarter of total emissions in the Shire, making it the second most significant source of emissions. Two-thirds of transport emissions are from car trips within the region, with the remaining third coming from freight.

Mitchell 2050 community vision key priorities:

DEVELOP PARTNERSHIPS to implement shared innovative solutions to environmental issues.

SHOW LEADERSHIP to prevent or mitigate the increasing impacts of climate related weather events on our communities and environment.

BETTER CONNECT the Shire through improved roads, public transport, trails, and paths.

Vehicles powered by petrol and diesel release CO_2-e into the atmosphere, contributing to climate change. By reducing these emissions, the impacts of climate change can be mitigated. Transitioning to cleaner and more sustainable modes of transportation, such as public transport, active transport options like walking and cycling, and electric vehicles (EVs) [9], helps decrease the overall carbon footprint of the transport sector.

Along with CO_2-e emissions, vehicles emit pollutants such as nitrogen oxides (NOx), particulate matter (PM), and volatile organic compounds (VOCs). These contribute to air pollution and have adverse effects on human health, leading to respiratory problems, cardiovascular diseases, and other health issues. Reducing transport emissions can therefore also improve air quality, mitigate the associated health risks, and enhance the wellbeing of communities.

In a region as geographically diverse as Mitchell Shire, reducing transport emissions will require a diversity of solutions. Whilst improved walking and cycle infrastructure or education on public transport will encourage communities in urban areas like Wallan to use their cars less, a different strategy is needed in regional townships such as Beveridge and rural parts of the Shire. A key component of this plan will be to advocate for better public transport coverage and availability of EV charging throughout the Shire. An integrated transport strategy will ensure actions in each part of the Shire respond effectively to the local context.

By promoting the adoption of electric vehicles, investing in public transit infrastructure, and encouraging active transportation, Council and the community can significantly reduce transport emissions and create a more sustainable and resilient future.

9 Standard EVs already produce less emissions per km driven than standard petrol vehicles even when charged from Victoria's electricity grid. While the Victorian grid supplied electricity is currently reliant on fossil fuel generation, ambitious renewable energy targets are rapidly decarbonising the grid. For example, Victoria has set a target of having 95% of electricity generation across the State to be from renewable energy by 2035. As the grid decarbonises EVs will continue to get greener.

Challenges

- High cost and limited availability of low emission vehicles.
- Limited access to public and active transport options in the Shire.
- Habit and convenience of driving personal cars.
- Lack of knowledge regarding electric vehicle cost and feasibility.
- Limited active transport options in the Shire.

Council's role

- Advocate for improvements to public transport networks.
- Improve active transport infrastructure, including accessibility considerations.
- Educate on the benefits of electric vehicles, and public and active transport.
- Advocate for access to low emission transport share schemes e.g work with e-bike or car share companies.
- Reduce the carbon emissions of Council's fleet.
- Support and facilitate the installation of EV charging stations.
- Develop a Shire wide Integrated Transport Strategy.
- Educate on the value of carpooling and consolidating car travel.

Community's role – What can you do?

- Use public transport, cycling or walking for shorter trips when possible.
- Advocate for improvements to public transport and cycling and walking paths.
- Carpool where possible.
- Purchase low emission vehicles, including electric vehicles (EVs), e-bikes and smaller cars.

Public transport, Kilmore East

CASE STUDY
Primary producers around Mitchell Shire[10]

Wine by Sam is a boutique urban wine producer located in Seymour. From its beginning, the winery has adopted energy efficiency and sustainability initiatives to reduce operational costs and provide a quality product for customers.

The cellar door and winery are housed in a retrofitted dyeworks, reducing costs and the embodied energy associated with a new development. The winery is currently undergoing a certification process with industry body Australian Wine Institute Australia (AWRI) for sustainable certification. Sustainable Winegrowing Australia, AWRI's subsidiary, is working with Wine X Sam to conduct a carbon and energy audit and support ongoing emissions reductions activities.

The property is serviced by a 99.9kWh solar PV array, which powers all electrical winery equipment, the cellar door and a recently installed public EV charging station. The 25kW charger is operated by Chargefox and offers a vital piece of transport infrastructure in a town with no other public chargers. It also supports visitors to the winery and surrounding area while providing passive cashflow to the business. Given the success of the charger for both the winery and community, Wine X Sam are hoping to one day expand this service and offer more chargers to visitors to the region.

With operational emissions approaching zero through the use of renewable energy, the winery is now tackling the significant issue of packaging in the beverage industry. Wine X Sam are working with their glass bottle supplier, ACI Glass Packaging to reduce the volume of glass in their wine bottles, effectively reducing the emissions associated with the manufacture and delivery of wine. The lightweight bottles use 17% less glass by weight than regular bottles. For a winery that produced one million bottles last year, this is a reduction of approximately 77,000 kgs of glass used per year. As these lightweight bottles become more popular, the winery hopes there will be a wholescale adoption of these sustainable alternatives across the industry. This work in reducing emissions associated with packaging is supported by the winery's on-site treatment of organic waste. Waste from the wine making process either goes to local farms to produce compost, to local graziers or back into garden beds. This waste treatment process supports a closed-loop waste system while improving community network and soil health.

The lightweight bottles use 17% less glass by weight than regular bottles. For a winery that produced 1 million bottles last year, this is a reduction of approximately 77,000 kgs of glass used per year.

10 This case study is based on interviews with primary producers n Mitchell Shire

99.9kW solar panel system on the roof of Wine X Sam's Seymour winery and cellar door (above) and Sam Plunkett, Wine X Sam co-founder (right)

Goal 6: Empower the Mitchell Shire community to take meaningful action in response to the Climate Emergency

Effective community engagement and support are crucial in the face of the climate emergency. Climate change is a complex global challenge that requires collective action and collaboration.

Mitchell 2050 community vision key priorities:

ESTABLISH Council as a recognised leader in sustainable environmental management.

DEVELOP PARTNERSHIPS to implement shared innovative solutions to environmental issues.

Engaging and involving communities in climate change action fosters a sense of ownership, empowerment, and shared responsibility. By actively involving community members, their perspectives, knowledge, and skills can be leveraged to develop effective solutions and implement climate change mitigation and adaptation strategies that are tailored to local contexts. Community engagement promotes awareness, education, and behaviour change, enabling individuals to make informed choices and take actions that contribute to reducing greenhouse gas emissions and building resilience to climate impacts.

Climate change affects communities in various ways, and it is essential to provide support to vulnerable populations. Community empowerment ensures that the impacts of climate change, such as extreme weather events or changes in agricultural patterns, are addressed inclusively and equitably. Support mechanisms can include providing access to resources, services, and infrastructure to mitigate and adapt to climate change impacts. Additionally, community support promotes social cohesion, strengthens networks, and enhances community resilience in the face of climate-related challenges. By prioritising community engagement and support, we can foster collective action, ensure equity, and build resilient communities capable of effectively responding to the impacts of climate change.

Challenges

- Lack of access to easy to understand information about climate change and local action options from credible sources.
- Large range and variety of information sources
- 'Echo chamber' effect of social media.
- Convenience of single use items and lack of capacity to repair items.

Council's role

- Provide clear information and straightforward data from credible government and research sources in a variety of forms (e.g. online, print media, in person events).
- Engage with community members across all cultures, genders, languages, ability, and socio-economic status.
- Support community groups to expand outreach and engagement.

Community's role – What can you do?

- Advocate to governments and service providers for a safe climate.
- Seek accurate information from credible sources.
- Utilise available Council resources.
- Participate in community engagement events and connect with others though community groups.
- Support those less fortunate than yourself where possible.
- Collect friends and experiences, not just things.

Community workshop in Wallan during development of the CEAP

CASE STUDY Mitchell Community Energy

Mitchell Community Energy Inc. (MCE) is an expert community-based organisation working to improve awareness of climate change impacts in the Mitchell Shire community. Its primary goal is to inspire and empower individuals to take proactive measures in reducing greenhouse gas emissions in the region.

MCE collaborated with Council on a project to install 400 solar panels on the roof of the Seymour Sports and Aquatic Centre at Chittick Park. It has been estimated that the system is saving Council around $30,000 per year in electricity bills. Work by MCE has also seen the installation of a 99kW solar system on Karingal Elderly Citizens Hostel in Seymour and a 30kW system on Goulburn Options, Seymour.

Three other projects proposed by MCE to Council have been the replacement of gas heating at the Seymour Aquatic Centre by heat pumps (currently underway), additional solar panels at the Aquatic Centre on carport type structures to provide shade, and a 5MW solar farm on the former landfill site in Hume and Hovell Road.

As part of the Strathbogie-Seymour Energy Alliance, and financed by the Victorian Government, MCE investigated the feasibility of a pumped hydro energy storage scheme at Trawool Reservoir in the Tallarook Ranges, 10 km southeast of Seymour. Although it was found to be feasible, the emergence of large-scale batteries means the project is no longer commercially viable.

Projects like these will improve stability and reliability of the electricity grid that will be increasingly depended upon as renewable energy becomes a more significant part of the nation's power supply.

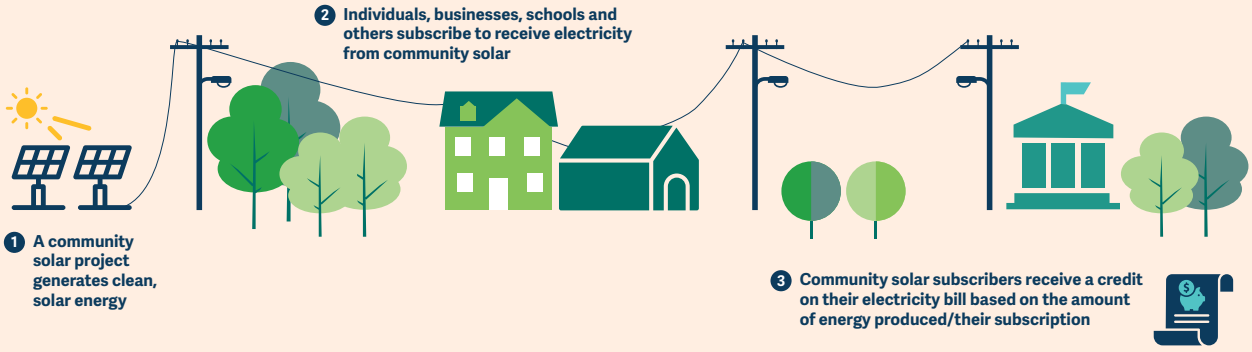


Figure 12 Community energy process

Actions

This section presents climate adaptation and emissions reduction opportunities in Mitchell Shire. These are actions for Council to undertake to either reduce its own corporate emissions, assist in the reduction of community emissions, or support the community to adapt and become more resilient to the worst impacts of climate change.

The opportunities are organised and numbered based on the Focus Areas they fall under. These opportunities were identified through evidence-based action planning and Council, community, and stakeholder engagement.

The Action column describes the action Council is recommended to take to address the climate emergency. The role Council will play by implementing each action has been identified as either Directly Responsible, Influence or Advocacy. This acknowledges Council's varying spheres of responsibility over its own activities, the community, and broader state and federal government policy. The timeframe column indicates whether the action can be implemented, and benefits realised in a short, medium, or long timeframe.

The impact/reach column represents an estimate of how impactful the action is expected to be in reducing annual emissions by 2030 or the reach it will have in adapting to climate change. The cost column gives a high-level estimate of the total implementation cost to Council, and an indication of the types of resources that will be required.

Influence and advocacy actions will typically require collaboration and partnerships with community groups, other local governments and government bodies for their successful implementation. Education, facilitation, and outreach programs must consider the diverse community that is Mitchell Shire, ensuring equal access regardless of cultural background, language, gender, socio-economic, life stage, ability, or geographic location.

'Australian Flowering Eucalypt' by Helen Miles.
hArt23 'Climate Solutions' art exhibition entrant

Key

Timeframe

SHORT: action can be completed, and benefit fully realised within less than 5 years.

MEDIUM: action can be completed, and benefit fully realised within 5 to 10 years.

LONG: action will take over 10 years to be completed, and benefit fully realised.

Impact/reach

LOW: annual emissions reduction potential of the action in 2030 is expected to be less than 1000t CO_2-e per year, or the adaptation intervention has a reach on an individual scale.

MEDIUM: annual emissions reduction potential of the action in 2030 is expected to be between 1000 and 5000t CO_2-e per year, or the adaptation intervention targets a sub-sector of the community.

HIGH: annual emissions reduction potential of the action in 2030 is expected to be more than 5000t CO_2-e per year, or the adaptation intervention has a community-wide focus.

Cost

$: cost generally includes staff time and/or training and workshop facilitation. Typically less than $100,000.

$$: cost includes staff time and minor capital expenses. Typically between $100,000 and $200,000.

$$$: cost involves major capital works or dedicated staff to navigate complex implementation processes. Typically more than $200,000.

Council corporate actions

Actions listed in Table 1 are for Council to implement to reduce its corporate emissions. Council's corporate emissions represent four percent of total emissions in Mitchell Shire. Implementation of these actions will contribute to achieving Council's corporate emissions reduction targets.

Key Indicators

By 2025
Energy efficiency assessments have been conducted at all large council sites.

By 2025
Council has completed a feasibility assessment of additional rooftop solar capacity on council buildings.

By 2027
All street lights in Mitchell Shire have been upgraded to LEDs.

By 2025
Council has developed and adopted a plan detailing the transition to a fully electric council fleet.

By 2025
Council has introduced a kerbside FOGO collection service.

Table 1 Actions to reduce Council's corporate emissions

#	ACTION DESCRIPTION	START YEAR	IMPACT (tCO_2-e)	INDICATIVE COST	ESTIMATED SAVINGS
CO1	Implementation and ongoing improvement of the Mitchell Shire ESD for Council Buildings Policy 2021	2021–22	125–135	$0	$3.4m
CO2	Develop and implement sustainability Technical Specifications for minor works and plant	2023–24	55–65	$110,000	$115,000
CO3	Energy efficiency audits at 7 Large Council sites[11]	2023–24	70–80	$240,000	$260,000
CO4	Energy efficiency audits at 11 Small Council sites[11]	2024–25	15–25	$75,000	$190,000
CO5	Install Additional 290 kW rooftop Solar PV on Council assets (see case study page 52)	2024–25	280–320	$550,000	$1.9m
CO6	Replace all park and sports lights with LED	2024–25	140–160	$1.0m	$1.5m
CO7	Street Lighting Bulk Change to LEDs	2025–26	760–800	$1.5m	$6.1m
CO8	Adding Smart Lighting to Major Roads	2026–27	140–50	$220,000	$580,000
CO9	Develop a Sustainable Fleet Policy and Fleet Transition Plan[12]	2023–24	25–35	$75,000	$200,000
CO10	Transition all Council fleet passenger vehicles to EVs	2023–24	180–200	$400,000	$420,000
CO11	Install sufficient charging stations at Council sites for passenger and utility EVs	2023–24	N/A	$365,000	$0
CO12	Develop and implement Sustainable Infrastructure Policy	2026–27	230–250	Cost neutral	
CO13	Transition all Council fleet vans and utility vehicles to EVs.	2024–25 (van) 2027–28 (utes)	360–400	$35,000	$640,000

11 See Appendix C for electricity site list

12 A Sustainable Fleet Policy is an interim strategy to reduce vehicle emissions before transitioning to an all-electric fleet, e.g., with fuel reduction targets, fuel emission standards for new vehicles and fuel-efficient driver training. A Fleet Transition Plan will facilitate a phased transition to an all-electric Council fleet that is cost effective and aligned with available technology.

#	ACTION DESCRIPTION	START YEAR	IMPACT (tCO_2-e)	INDICATIVE COST	ESTIMATED SAVINGS
CO14	Introduce Food Organics Garden Organics (FOGO)	2024–25	21,200* (high-level estimate)		
CO15	Develop and implement a Sustainable Procurement Policy for products and service providers	2024–25		Not modelled	
CO16	Implement policy that Council funds are only invested in financial institutions that do not lend to fossil fuel industries.	2024–25		Not modelled	
CO17	Embed Council's climate emergency response into all future decision making, including Council Strategies, Policies and Plans.	2023–24		Not modelled	
CO18	Review and update existing Strategies, Policies and Plans with Council's climate emergency commitments.	2023–24		Not modelled	

CASE STUDY: Rooftop solar

In 2023, 12kW of solar PV panels were installed on the roof of the Broadford Living and Learning Centre. The electricity generated by this system will be used by the building, ensuring a supply of zero emissions energy and reduced reliance on the grid.

Seymour Resource Recovery Centre

WHAT COUNCIL IS DOING
The Seymour Resource Recovery Centre features Environmentally Sustainable Design (ESD)

Opened in May 2023, the Seymour Resource Recovery Centre was designed and constructed in accordance with the Mitchell Shire *ESD for Council Buildings Policy 2021*. This has resulted in the centre being built using sustainable construction practices, with a 50kW solar system on the roof and energy-efficient lighting and air conditioning systems making the centre energy positive. A rainwater harvesting system has also been installed for the site's water needs. Furniture and artwork are made from recycled materials, including mixed plastics from kerbside bins, foam offcuts and reclaimed wood.

This new resource recovery centre is part of Mitchell Shire Council's aim to divert 80% of waste from landfill be 2030.

> **"It's been designed to be a really clean, interactive, and organised site, incorporating better-practice initiatives to both protect the environment and educate people as they drive through the facility."**
>
> **Narelle Liepa**
> Environment and Sustainability Manager at Mitchell Shire

Community actions

These actions are for Council to implement to support community adaptation and mitigation of climate change. Implementation of these actions will contribute to achieving Mitchell Shire's community emissions reduction targets. Council's role in undertaking these actions has been identified as either directly responsible, influence, or advocacy.

Key indicators have been developed for each goal. These indicators will be used to assess progress towards each goal as part of the measuring and reporting process.

Goal 1: Reduce the impact of extreme heat across Mitchell Shire

Extreme heat is when a region experiences particularly high temperatures that exceed the normal or average temperature range for that region or season.

Extreme heat events pose significant risks to human health, and Mitchell Shire is already seeing an increase in their frequency and intensity. By implementing the actions in Table 2, the impact of extreme heat days on the health and wellbeing of the Shire's community can be lessened.

Key Indicators

By 2030

Mitchell Shire has increased overall tree canopy cover across Shire townships.

At least 80% of Mitchell Shire Council owned extreme temperature respite facilities (e.g. libraries, community centres) have been assessed and upgraded to accommodate the Shire's most vulnerable residents.

Table 2 Actions to reduce the impact of extreme heat

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
H1	Increase tree canopy cover within shire townships on public land and enhance the diversity of tree species, prioritising the use of more climate adapted species. *Action to be implemented through Urban Forest Strategy.*	Directly Responsible	Medium	High	$$$
H2	Provide further protection and relief from sun and extreme heat by improving shading and access to seating, shelter and drinking water in key pedestrian areas (e.g. parks, shopping centres, bus stops) and along active transport routes in the shire's townships. *Action to be implemented through Urban Forest Strategy.*	Directly Responsible	Short	High	$$
H3	Improve canopy cover and shading of active transport routes within the Shire, including as part of new active transport routes and infrastructure. *Action to be implemented through Urban Forest Strategy.*	Directly responsible	Medium	High	$$
H4	Provide education to encourage tree planting on private property, e.g. workshops on tree planting, demonstration gardens, free or discounted seedlings, partnering with local nurseries and environmental agencies.	Influence	Short	High	$$

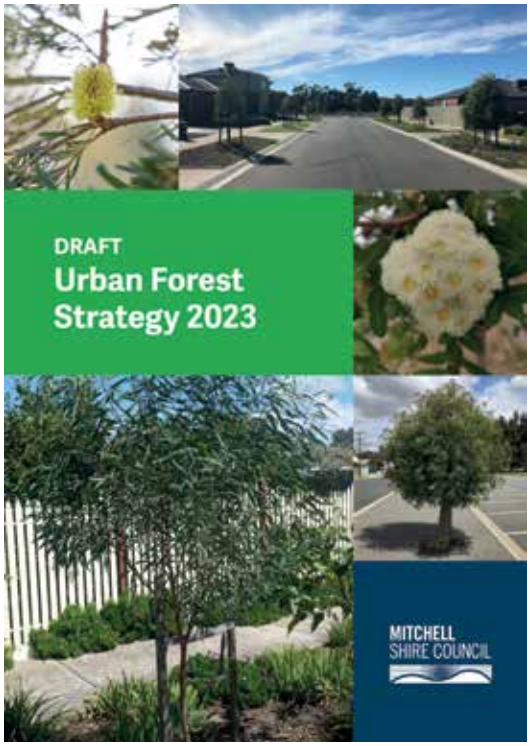
#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
H5	Strengthen planning scheme requirements to reduce urban heat island effect, including banning dark roofs, prioritising green and blue space, and protecting existing vegetation (e.g. the Sustainable Subdivisions Framework and Elevating ESD in the planning scheme amendment).	Advocacy	Short 	High 	$$ 
H6	Provide assistance to relevant service providers to ensure they effectively utilise the vulnerable persons register when considering extreme heat impacts[13].	Influence	Short 	Low 	$ 
H7	Undertake assessment of extreme temperature respite facilities (e.g. libraries, community centres) to ensure sites are accessible and have sufficient capacity to accommodate most vulnerable residents.	Directly responsible	Short 	Medium 	$ 
H8	Develop planning and building permit requirements, education campaign and planning policy to support zero emissions and climate resilient construction within the Shire.	Advocacy	Short 	Medium 	$ 

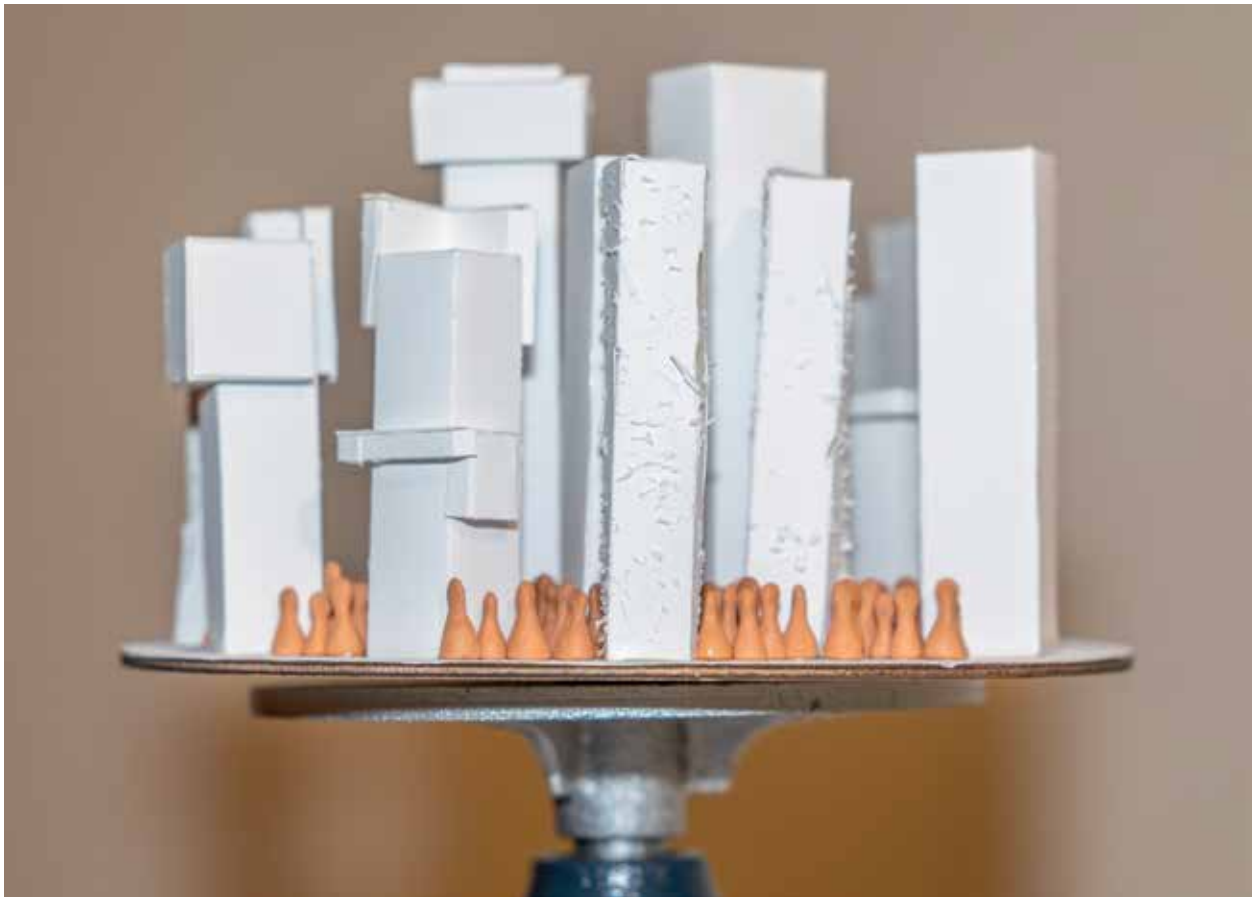
13 The Vulnerable Persons Register (VPR) is a local list of people who may need consideration in an emergency. The register is maintained by agencies that provide personal care, support and case management services to people living in the community.

WHAT COUNCIL IS DOING
Urban Forest Strategy

Mitchell Shire's urban forest is a critical and valuable community asset and includes trees, vegetation and grasslands within townships. The Urban Forest Strategy aims to mitigate challenges faced by these assets, including climate change, urban development, aesthetics, emergency management and resource constraints. A key focus of the strategy will be to increase canopy coverage within road reserves and parks and identify opportunities to improve tree retention and protection on private land.

The Urban Forest Strategy has been developed using community feedback and industry best practices to help improve canopy cover and greening within our urban areas and townships. This Strategy will play a significant role in addressing climate change impacts identified in this Plan.





'A Choice' by Loredana Rivaloro. hArt23 'Climate Solutions' exhibition (Youth Artist Prize Winner)

Goal 2: Improve Mitchell Shire's preparedness to climate change related emergency events

Climate change is increasing the frequency and intensity of extreme weather events such as floods, torms, and bushfires. These events pose immediate risks to human lives, infrastructure, and ecosystems. Implementing the actions in Table 3, will make the Shire's more resilient to natural disasters and better prepare the community for emergencies.

Key Indicators

By 2027

All key Mitchell Shire Council's emergency management plans and documents, such as the Municipal Emergency Management Plan, Fire Management Plan and Flood Management Plan, have been updated to account for projected climate change impacts.

By 2030

Climate risk and vulnerability assessments have been conducted for at least 80% of Mitchell Shire Council owned or managed critical infrastructure.

Table 3 Actions to improve Mitchell Shire's preparedness to emergency

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
E1	With our partners, revise Mitchell Shire Municipal Emergency Management Plan and sub plans to account for changes in bushfire risk and bushfire behaviour as a result of climate change.	Influence	Short 	High 	$ 
E2	Support community awareness campaign in partnership with local emergency authorities to educate the community in personal emergency preparedness plans, including for bushfire, flood, extreme storm events and new climate risks.	Influence	Short 	High 	$ 
E3	Undertake assessment of Emergency Relief Centres to ensure sites are accessible, resilient and have sufficient capacity to accommodate residents based on changes to flood and bushfire risk from climate change.	Directly responsible	Short 	Medium 	$$ 
E4	Undertake a climate risk and vulnerability assessment for critical infrastructure (e.g. bridges, power supply, communication networks) within the Shire and develop an action plan for upgrading these based on projected future flood and bushfire risks.	Directly responsible and advocacy	Medium 	High 	$$$ 
E5	Develop and implement integrated water management plans for the Shire in partnership with water authorities, that cover stormwater, drainage, sustainable water use and re-use to reduce stormwater runoff and mitigate road flooding.	Directly responsible and Influence	Medium 	Medium 	$$$ 

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
E6	Advocate to relevant authorities to improve early warning systems, particularly wildfires and rapid on-set flood events.	Advocacy	Short	High	$
E7	Advocate to ensure that flood models account for potential climate change impacts, including to 1-in-100 year flood level, and for streamlined integration of flood data into the planning scheme.	Advocacy	Short	High	$
E8	Advocate to the State Government to support flood mitigation activities that assist to protect townships up to 1-in-100 year flood levels.	Advocacy	Short	High	$
E9	Investigate and facilitate planned, ecological, and cultural burning as option for reducing fire risk.	Influence	Short	Medium	$

Figure 13 Advocacy process

Top: 'Butterflies and Flowers' by Lisa Sterio. Bottom: 'The Tor' by Sandra Bowkett.
hArt23 'Climate Solutions' exhibition entrants, Highly Commended (bottom)

Goal 3: Protect and enhance the natural environment and support a climate resilient agricultural sector in Mitchell Shire

Climate change impacts agricultural yields through changes in temperature, rainfall patterns, and extreme weather events. The agricultural sector is also a significant source of emissions in the region, predominantly in the form of methane produced by enteric fermentation in livestock. The natural environment is both at risk from climate change and part of the solution to mitigating it by sequestering carbon and providing diverse ecosystems.

The actions in Table 4 will help to protect and enhance the Shire's natural environment and support a more sustainable and resilient agricultural industry.

Key Indicators

By 2025

Mitchell Shire Council has established a Land Management Officer position to increase sustainable agriculture and land management knowledge and practices on private land.

Mitchell Shire Council has adopted a biodiversity strategy that identifies, protects, and enhances biodiversity corridors (biolinks) within the Shire.

Table 4 Actions to protect the environment and support climate resilient agriculture

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
A1	Advocate for research into and application of feed alternatives that reduce methane production in livestock (e.g. asparagopsis, an algae feed additive).	Advocacy	Medium 	Low 	$ 
A2	Support research into and application of soil carbon sequestration opportunities in the Shire.	Influence	Medium 	Low 	$$ 
A3	Partner with community groups to actively monitor key habitat and native vegetation along Council managed roadsides and reserves for introduced and invasive species.	Directly responsible	Long 	Medium 	$ 
A4	Develop a biodiversity strategy that identifies, protects, and enhances biodiversity corridors (biolinks) within the Shire, and promotes this information within the community.	Directly responsible	Short 	Medium 	$$ 
A5	Protect and enhance forests, woodlands, grasslands, including state forests, and encourage and enable revegetation on public and private land by promoting sustainable land management incentives and investigating targeted sustainable land management incentives. For example, investigate a one tree for every child program.	Directly responsible/ advocacy	Medium 	Medium 	$$ 
A6	Advocate to Agriculture Victoria to provide dedicated regional support to farmers and landowners to access regional and state government programs.	Advocacy	Short 	High 	$ 

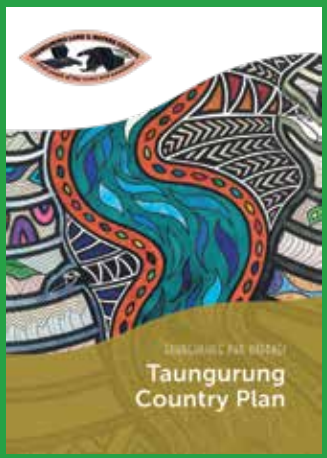
#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
A7	Introduce a Council Land Management Officer role to increase sustainable agriculture and land management knowledge and practices on private land, including biodiversity, whole of property planning, AgTech, precision agriculture, nutrient budgeting, and other emerging practices, including working with local and regional education partners.	Directly responsible	Short	Low	$
A8	Work with Traditional Owners in Mitchell, to document ecological and cultural knowledge and support Traditional Owner natural resource and land management projects.	Influence	Short	Medium	$
A9	Identify and provide greater protection for existing canopy trees and biodiversity assets to prevent them from being removed. *Action to be implemented through Urban Forest Strategy.*	Directly responsible/ influence/ advocacy	Short	Medium	$
A10	Support the preservation and propagation of indigenous, native, and climate resilient seed stock.	Influence/ advocacy	Short	Medium	$

Did you know

At no time did Taungurung People cede their intrinsic rights and obligations to care for Country, Culture and People. Today, descendants of Taungurung Clans are continuing their Ancestors' fight to maintain connection to Country, Culture, Language and People.

Nganga-ngala biik-nganjin yaraga-ngala burndap gerr ngarrnga buk wilanja-nganjin

"We look after our country because we have an intimate relationship like thousands of generations before us had".



Russula clelandii found in Monument Hill Reserve, Kilmore. Photo by Alison Pouliot

Goal 4: Support Mitchell Shire residents, businesses and community groups to reduce emissions

As a major source of the community's emissions, residents, businesses, and community groups have a significant role to play in achieving Mitchell Shire's emissions reduction targets. Measures to reduce emissions also present opportunities for considerable cost savings, as households and businesses become less reliant on grid electricity. By undertaking the actions in Table 5, Council will support Mitchell Shire residents, businesses and community groups to implement emissions reducing activities.

The actions in Table 4 will help to protect and enhance the Shire's natural environment and support a more sustainable and resilient agricultural industry.

Key Indicators

By 2027

Mitchell Shire Council has developed and delivered a community education campaign on the opportunities and benefits of electrifying residential gas systems and appliances.

By 2030

Mitchell Shire Council has supported the establishment of a Renewable Energy Buying Group for commercial and industrial businesses.

Table 5 Actions to support residents, businesses and community groups reduce emissions

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
R1	Investigate opportunities to facilitate or support a solar electricity systems and battery installation program for businesses, community groups and households by providing low interest loans, to be paid back through rates.	Influence	Long	High	$
R2	Identify opportunities to facilitate Renewable Energy (power purchase agreement - PPA) Buying Groups for commercial and industrial businesses.	Influence	Short	Low	$
R3	Implement buy/support local campaigns to assist in reducing supply chain emissions and provide incentives for business undertaking sustainability measures.	Influence	Short	Low	$
R4	Advocate for more ambitious minimum ESD standards in the Planning Scheme and National Construction Code.	Advocacy	Medium	Medium	$
R5	Advocate to State Government to facilitate a process to enable agreements between landlords and tenants for the installation of solar electricity systems on rental properties.	Advocacy	Short	Medium	$
R6	Advocate to State Government for solar and other ESD upgrades on social and affordable housing.	Advocacy	Short	Medium	$
R7	Support and develop education campaigns to increase awareness of opportunities to eliminate gas in electricity grid connected households.	Influence	Short	Medium	$$

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
R8	Support subsidies for residential gas equipment replacement for low-income households.	Influence	Short 	High 	$$ 
R9	Engage with key emitters in the Shire to support them in understanding and reducing their major emissions sources, e.g., provide education and support to cement manufacturers about alternative solutions to Portland cement .	Influence	Medium 	Low 	$$ 

WHAT COUNCIL IS DOING
Forming partnerships

Mitchell Shire Council is working together with our neighbouring Councils through the **Goulburn Murray Climate Alliance (GMCA)** to establish a panel of trusted installers for rooftop solar and batteries, heat pump and other appliances that will assist the transition towards electrification.

GOULBURN MURRAY CLIMATE ALLIANCE

Thermal imaging camera available to borrow from Mitchell Shire libraries along with Home Energy and Water Efficiency Toolkits

Goal 5: Accelerate the transition to more sustainable transport solutions in Mitchell Shire

The transport sector is the second largest contributor to Mitchell Shire's total emissions, the majority of which is due to car trips. By using more sustainable ways to get around such as active transport and electric vehicles, the Shire has an opportunity to reduce emissions, improve air quality, and enhance the wellbeing of its community. Table 6 includes actions designed to accelerate the transition to more sustainable modes of transport.

Key Indicators

By 2027

Mitchell Shire Council has an established network of fast electric vehicle charging stations across the Shire, with public fast chargers available in every town.

By 2030

Mitchell Shire Council has expanded its cycling infrastructure and active transport network and developed a municipal-wide Integrated Transport Strategy.

Table 6 Actions to accelerate the transition to more sustainable transport solutions

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
T1	Advocate for increased public transport (more services running more frequently), both within and between townships.	Advocacy	Short 	Low 	$ 
T2	Educate residents on the benefits and availability of Public Transport in the Shire.	Influence	Short 	Medium 	$ 
T3	Install cycling infrastructure (bike lanes, bike parking), widen footpaths, shared user paths, reduce speed limits, traffic calming measures, including as part of road upgrades.	Directly Responsible	Medium 	Medium 	$$$ 
T4	Support eScooter and eBike share schemes in urban areas of the Shire.	Influence	Short 	Low 	$ 
T5	Educate residents on benefits and availability of active transport in the Shire.	Influence	Short 	Low 	$ 
T6	Use capital works programs and town planning mechanisms to improve connectivity and ensure the provision of close and accessible local services, including streetscapes and infrastructure that support safe walking and cycling.	Directly responsible/ advocacy	Long 	Low 	$ 
T7	Prepare a municipal-wide Mitchell Integrated Transport Strategy.	Directly Responsible	Medium 	Low 	$$ 

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
T8	Encourage the installation of EV charging stations at public facilities (e.g. shopping centres, sports clubs, hospitals, schools, hotels).	Influence	Short	High	$$
T9	Host or support an EV education program, including demonstration days, information on cost and range, public charging availability.	Influence	Short	High	$
T10	Facilitate the installation of carshare infrastructure within the Shire, including EV options.	Advocacy	Medium	Medium	$

CASE STUDY
Cycling infrastructure

In December 2022, Council endorsed an action plan to guide cycling-oriented infrastructure spending during the next five years. Developed in conjunction with cycling stakeholders through a Cycling Consultative Forum, the plan will support improved access to active transport across the Shire.

North Central Review, Cycle path in Mitchell Shire

WHAT COUNCIL IS DOING
Installing EV Chargers

Council has installed three public EV fast charging stations Mitchell Shire, in partnership with the Victorian Government and Evie Networks. Located in Broadford, Kilmore and Wallan and powered by 100% renewable energy, these charging stations are also helping to open up the Shire to new tourism potential as tourists linger and shop or dine while their vehicle is charging.

In nine months of operation, the charging stations in Broadford and Kilmore averaged more than 70 charging sessions monthly, collectively preventing 3.17t CO-2-e of emissions.

For a comprehensive list of all charging stations visit the PlugShare website.

An electric vehicle charging up in Broadford

Goal 6: Empower the Mitchell Shire community to take meaningful action in response to the Climate Emergency

Climate change is a complex global challenge that requires collective action and collaboration. Through education, partnerships and support, communities can be empowered to take the meaningful action to protect themselves from its worst effects. Council will empower the Mitchell Shire community to take action by implementing the actions in Table 7.

Key Indicators

By 2025

Mitchell Shire Council has developed a climate change outreach program and increased engagement with Mitchell Shire residents and youth on climate change impacts and solutions

By 2027

A community run re-use and repair cafe and tool library has been established in Mitchell Shire with the support of Mitchell Shire Council.

Table 7 Actions to empower the community to take meaningful action

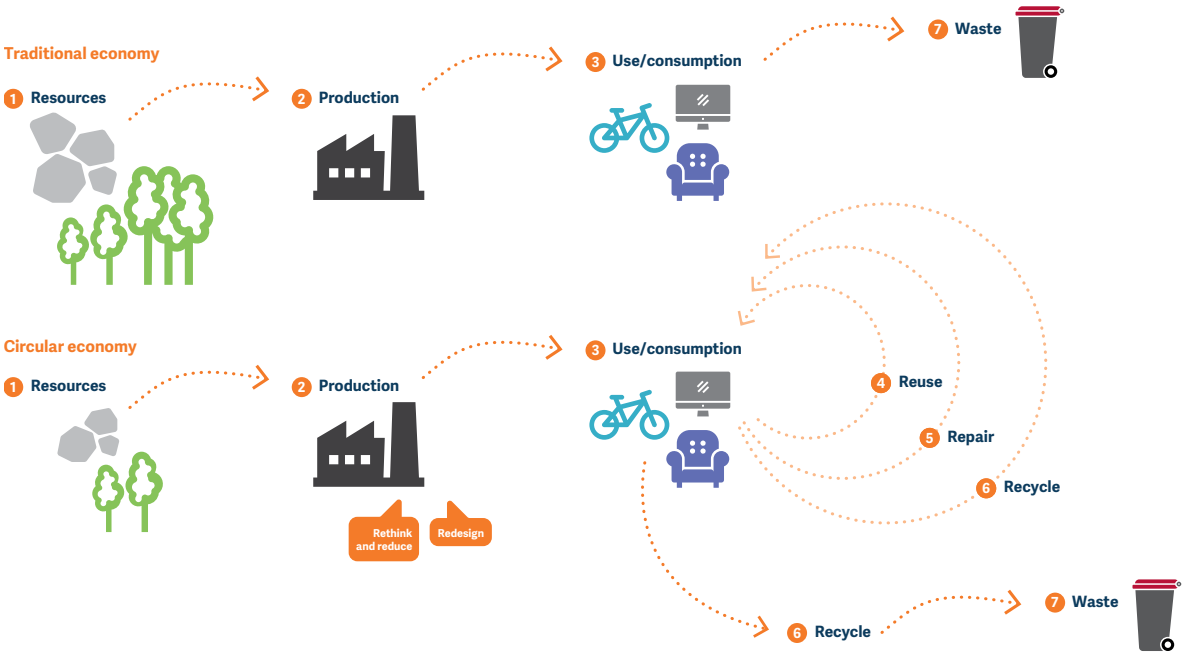
#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
C1	Provide education on the transition to a circular economy and how the community can participate, including using FOGO services (when available), reducing single use plastic products, and generating less waste.	Influence	Short	Low	$
C2	Support the community to establish a re-use and repair cafe or tool library.	Directly responsible	Short	Low	$$
C3	Develop a climate change outreach program to improve communication and engagement with residents on climate change impacts and solutions.	Directly responsible	Short	Medium	$$
C4	Improve access to reliable, easy to understand climate change data and projections to inform community planning and action.	Influence	Short	Medium	$
C5	Development of community climate change hubs – a dedicated place for residents and businesses to find up to date information on adapting to and mitigating climate change.	Influence	Short	Medium	$$

'Turbulent waters' by Wendy Skala. hArt23 'Climate Solutions' exhibition entrant

#	ACTION DESCRIPTION	COUNCIL ROLE	TIME-FRAME	IMPACT/ REACH	COST
C6	Continue to support existing and emerging Mitchell Shire Environment and Sustainability focused community groups to expand their outreach and engagement.	Influence	Short	Medium	$$
C7	Support and involve youth in climate and environmental leadership.	Directly responsible	Short	Low	$
C8	Advocate to State and Federal governments to improve support for the transition to net zero emissions and to establish their own more ambitious emissions reduction.	Advocacy	Short	High	$

What is a repair café?

A repair café is a place you can bring broken things to fix up and give a new lease on life, reducing waste and encouraging sustainability. They have tools, materials and volunteers to help you make repairs on appliances, clothes, toys, furniture, bicycles, crockery and more. Repairing and re-purposing reduces waste going to landfill and also reduces the energy and raw materials needed to replace broken things, both of which reduces the release of greenhouse gas emissions.



Opportunities for beyond zero emissions – carbon drawdown

One pathway to achieve net zero emissions is to purchase and retire Australian Carbon Credit Units (ACCUs). Each ACCU represents one tonne of carbon dioxide equivalent that has been stored or avoided by an eligible project under the Emissions Reduction Fund (ERF). These credits can be used to offset emissions within Mitchell Shire. The cost of doing this is dependent on the ACCU spot price on the Australian carbon market, which is expected to increase significantly over the coming years as the economy decarbonises. Carbon credits can also be purchased from international carbon markets, known as Verified Carbon Units (VCUs).

An alternative to relying solely on purchasing carbon credits to achieve net zero is for Council to establish its own carbon sequestration projects in partnership with the community. This would provide a degree of financial stability to Council's net zero strategy by reducing exposure to the volatility of carbon markets. As the cost of carbon credits increase, the business case for carbon drawdown opportunities will also become more viable.

Table 8 outlines carbon drawdown opportunities for Mitchell Shire. These projects may be led by Council or the community, with financing options including grants, CEFC loans, external investors, and self-funding from within the community. Any ACCUs generated by these projects that aren't retired to offset emissions in Mitchell Shire can be sold on the carbon market for additional revenue.

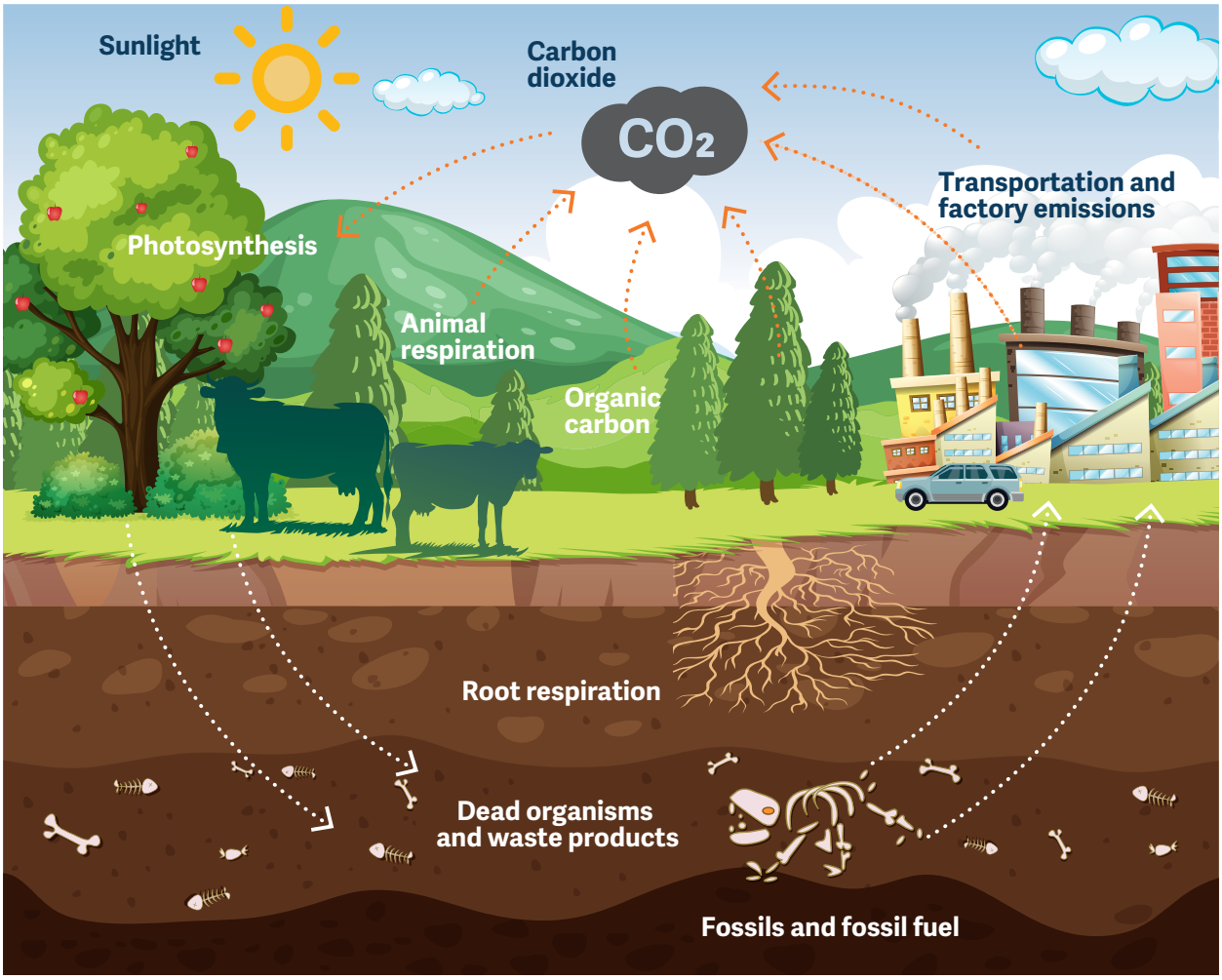


Figure 14 The Carbon cycle

Whilst carbon sequestration and offsets are commonly used to achieve net zero emissions, they should not be used to replace real action to reduce emissions.

Mitchell Shire Council and the Mitchell Shire community should focus efforts on the actions presented in this Action Plan to decarbonise and only use carbon sequestration as the last step to reach net zero emissions where there are no viable emissions reduction options.

Table 8 Opportunities for renewable energy and carbon drawdown in Mitchell Shire – Council and Community

OPPORTUNITY	DESCRIPTION	ELIGIBILITY UNDER THE ERF
Local renewable energy generation	Renewable energy generation located within the Shire on council or private land. Could be established in partnership with community, financed through grants and investors, with income generated by selling electricity to community.	Can be used to offset grid electricity consumption by creating large-scale generation certificates (LGCs).
Reforestation and afforestation	Permanent planting of forest trees on previously agricultural land to sequester and store carbon from the atmosphere.	Can generate ACCUs if trees are planted to achieve forest cover (having 20 percent crown cover at a tree height of at least two metres across an area of at least 0.2 hectares).
Divert waste from landfill	Projects that divert inert and recyclable materials from landfill, such as increasing the recovery of recyclable resources and recycling of construction and demolition waste.	Can generate ACCUs.
Biochar facility	Biochar facilities use pyrolysis to convert biomass into a stable, carbon-rich form of charcoal that can be added to soil increase its long-term carbon content. Biochar can be sold to local landowners to improve soil fertility, water holding capacity and crop productivity.	Not currently eligible under the ERF. Recognised under international carbon credit schemes.

Measuring and reporting

Council will start implementing the Action Plan in partnership with the community in 2023–24. Key achievements, challenges and insights on its progress will be shared with the community through Council's Annual Reporting process.

hArt23 'Climate Solutions' exhibition entrant. 'Wilbur's message' by Lisa Dall'est

Key indicators developed for each goal will be measured as part of this reporting process. As part of this monitoring, Council will review the uptake and effectiveness of each action and update indicators as progress is made. This will allow Council and the community to ensure that resources are used effectively to achieve the best outcome, and remain in step with the broader regional, state, and national context.

This Action Plan will be reviewed in 2026 and updated based on the success of programs implemented over the next three years. This update will also take into account Federal and State Government policy, funding opportunities, technology accessibility and other collaborative opportunities.

Table 9 Key indicators of the CEAP

GOAL	KEY INDICATORS
Council corporate emissions reduction 	**By 2025** • Energy efficiency assessments have been conducted at all large council sites. • Council has completed a feasibility assessment of additional rooftop solar capacity on council buildings. • Council has developed and adopted a plan detailing the transition to a fully electric council fleet. • Council has introduced a kerbside FOGO collection service. **By 2027** All street lights in Mitchell Shire have been upgraded to LEDs.
Reduce the impact of extreme heat across Mitchell Shire 	**By 2030** • Mitchell Shire has increased overall tree canopy cover across Shire townships. • At least 80% of Mitchell Shire Council owned extreme temperature respite facilities (e.g. libraries, community centres) have been assessed and upgraded to accommodate the Shire's most vulnerable residents.
Improve Mitchell Shire's preparedness to climate change related emergency 	**By 2027** • All key Mitchell Shire Council emergency management plans and documents, such as the Municipal Emergency Management Plan, Fire Management plan and Flood Management Plan, have been updated to account for projected climate change impacts. **By 2030** • Climate risk and vulnerability assessments have been conducted for at least 80% of Mitchell Shire Council owned or managed critical infrastructure.
Protect and enhance the natural environment and support a climate resilient agricultural sector in Mitchell Shire 	**By 2025** • Mitchell Shire Council has established a Land Management Officer position to increase sustainable agriculture and land management knowledge and practices on private land. • Mitchell Shire Council has adopted a biodiversity strategy that identifies, protects, and enhances biodiversity corridors (biolinks) within the Shire.
Support Mitchell Shire residents, businesses and community groups reduce emissions 	**By 2027** • MSC has developed and delivered a community education campaign on the opportunities and benefits of electrifying residential gas systems and appliances. **By 2030** • MSC has supported the establishment of a Renewable Energy Buying Group for commercial and industrial businesses.

GOAL	KEY INDICATORS
Accelerate the transition to more sustainable transport solutions in Mitchell Shire 	**By 2027** • Mitchell Shire Council has an established network of fast electric vehicle charging stations across the Shire, with public fast chargers available in every town. **By 2030** • Mitchell Shire Council has expanded its cycling infrastructure and active transport network and developed a municipal-wide Integrated Transport Strategy.
Empower the Mitchell Shire community to take meaningful action in response to the Climate Emergency 	**By 2025** • Mitchell Shire Council has developed a climate change outreach program and increased engagement with Mitchell Shire residents and youth on climate change impacts and solutions. **By 2027** • A community run re-use and repair cafe and tool library has been established in Mitchell Shire with the support of Mitchell Shire Council.

'Broadford Community Garden Concept' by Dylan Curwood. hArt23 'Climate Solutions' exhibition entrant

Appendix A: What you can do

This is a checklist of actions an individual or group can take to reduce their climate impacts and in turn help reduce emissions in the Shire. The potential impact of each action to reduce emissions has been indicated by the number of ticks. The more ticks the higher the likely impact.

GOAL	IMPACT
Goal 1 Reduce the impact of extreme heat across Mitchell Shire	
☐ Plant and maintain existing vegetation, particularly large canopy trees.	✓✓✓
☐ Consider the urban heat island effect when building or renovating, for example by choosing light coloured roof and paving products.	✓✓✓
☐ Support other community members who are particularly vulnerable to heat.	✓✓✓
☐ Reduce your water use.	✓✓
Goal 2 Improve Mitchell Shire's preparedness to climate change related emergency events	
☐ Develop and maintain personal preparedness plans for bushfires, floods and storm events.	✓✓✓
☐ Keep up to date with best practice fire prevention and risk minimisation advice.	✓✓✓
☐ Get to know your neighbours and welcome new residents.	✓✓
Goal 3 Protect and enhance the natural environment and support a climate resilient agricultural sector in Mitchell Shire	
☐ Landowners can explore opportunities to improve sustainability of land management and farming.	✓✓✓
☐ Community groups partner with Council and state government to protect nature reserves and biodiversity corridors.	✓✓✓
☐ Protect and enhance biodiversity values on private land.	✓✓
☐ Enjoy more fruits, vegetables, legumes, and nuts – especially from local and sustainable agricultural sources.	✓✓

GOAL	IMPACT
Goal 4 Support Mitchell Shire residents, businesses and community groups to reduce emissions	
☐ Choose energy efficient appliances.	✓✓
☐ Electrify your home and business (heating, cooking, hot water) and shift away from fossil fuels such as natural gas.	✓✓✓
☐ Install rooftop solar panels and switch to 100% GreenPower.	✓✓✓
☐ Support local businesses that implement sustainability measures.	✓
☐ Make small changes to make your home more sustainable, such as changing light globes, stopping draughts, and using timers.	✓
Goal 5 Accelerate the transition to more sustainable transport solutions in Mitchell Shire	
☐ Purchase low emissions vehicles, including electric vehicles (EVs), e-bikes and smaller cars.	✓✓✓
☐ Use public transport, cycling or walking for shorter trips when possible.	✓✓✓
☐ Advocate for improvement to public transport and cycling and walking paths.	✓✓
☐ Carpool where possible.	✓
Goal 6 Empower the Mitchell Shire community to take meaningful action in response to the Climate Emergency Community	
☐ Advocate to governments and service providers for a safe climate.	✓✓✓
☐ Seek accurate information from credible sources.	✓✓✓
☐ Utilise available Council resources.	✓✓✓
☐ Participate in community engagement events and connect with others though community groups.	✓✓✓
☐ Support those less fortunate than yourself where possible.	✓✓
☐ Collect friends and experiences, not just things.	✓✓

Appendix B: Climate risk summary

The following table summarises the Extreme and Very High climate risks expected to be faced by the Mitchell Shire community in 2050. Actions that help to reduce the impact of these risks have been prioritised in the development of the CEAP.

RISK ID	COUNCIL AREA	HAZARD	RISK SUMMARY	RISK DESCRIPTION	RISK ASSESSMENT AT 2050		
					CONSEQUENCE	LIKELIHOOD	RISK RATING
RID034	Public health and wellbeing	Extreme Heat	Loss of life and heat related health issues, particularly for vulnerable groups including elderly and low-socio economic groups	An increase in hot and very hot days, warm nights (nights above 22˚C) and longer heat waves could lead to a greater number of heat related health issues, including dehydration, heat exhaustion and respiratory and cardiovascular problems. Groups with pre-existing health conditions, the elderly and lower socio-economic groups with lower quality housing are particularly vulnerable to these impacts.	Critical	Almost certain	Extreme
RID013	Public health and wellbeing	Bushfire	Loss of life	Increased frequency and severity of bushfires prose a greater risk to life within the Shire, particularly as bushfire intensity increased and behaviour changes with climate change, for example fronts moving faster or continuing to run overnight as was seen during the Black Summer fires in 2019–20.	Critical	Likely	Extreme

RISK ID	COUNCIL AREA	HAZARD	RISK SUMMARY	RISK DESCRIPTION	RISK ASSESSMENT AT 2050		
					CONSEQUENCE	LIKELIHOOD	RISK RATING
RID049	Public health and wellbeing	Riverine Flooding	Loss of life	Higher intensity rainfall events could lead to more flash flooding or rapid onset flood events, which could lead to a greater loss of life as people are caught unaware or unprepared.	Critical	Likely	Extreme
RID001	Assets and infra-structure	Bushfire	Damage and loss of assets and infrastructure	Increased frequency and severity of bushfires may cause greater damage and loss of infrastructure and assets, particularly in township near forested areas.	Major	Likely	Very high
RID003	Com-munity develop-ment	Bushfire	Population displacement to evacuation centres	Increased frequency and severity of bushfires coupled with population growth may lead to greater demand for emergency evacuation centres within the Shire.	Major	Likely	Very high
RID004	Com-munity develop-ment	Bushfire	Property damage and loss	Increased frequency and severity of bushfires may result in increased loss and damage of private property, particularly as bushfire intensity increases.	Major	Likely	Very high
RID010	Environ-ment and parks	Bushfire	Habitat and biodiversity loss	Impact of bushfire on areas of high conversation value could be significant with increased frequency and severity of bushfires. More frequent bushfires can impact the environment's ability to regenerate, and more severe fires can have a critical impact on flora and fauna.	Major	Likely	Very High

RISK ID	COUNCIL AREA	HAZARD	RISK SUMMARY	RISK DESCRIPTION	RISK ASSESSMENT AT 2050		
					CONSEQUENCE	LIKELIHOOD	RISK RATING
RID016	Economic develop-ment	Drought	Loss of agricultural produce	Increased frequency and severity of drought is likely to lead to higher input costs for farmers (including feed and irrigation costs) and higher levels of loss of agricultural produce. Severe droughts could reduce the viability of many farmers and result in more farmers leaving the land.	Major	Likely	Very high
RID018	Environ-ment and parks	Drought	Habitat & biodiversity loss	Increased frequency and severity of drought is likely to lead to greater stress on local ecosystems, potentially leading to diebacks and habitat loss	Major	Likely	Very high
RID021	Public health and wellbeing	Drought	Food security impacts	Increased frequency and severity of drought is likely to lead to greater food insecurity due to lost production, economic losses from farms and downstream businesses and lost household produce.	Major	Likely	Very high
RID041	Assets and Infra-structure	Riverine flooding	Damage and loss of assets and infrastructure	Higher intensity rainfall events could increase the frequency and severity of significant flood events leading to greater of loss and damage of public assets and infrastructure leading to greater disruption of services and repair and maintenance costs to Council.	Major	Likely	Very high

RISK ID	COUNCIL AREA	HAZARD	RISK SUMMARY	RISK DESCRIPTION	RISK ASSESSMENT AT 2050		
					CONSEQUENCE	LIKELIHOOD	RISK RATING
RID042	Community development	Riverine flooding	Damage and loss to private property	Higher intensity rainfall events could increase the frequency and severity of significant flood events leading to greater of loss and damage of private property. More frequent flood events, even of lower-level flood events, could lead to cumulative and compounding impacts that increase long term negative impacts.	Major	Likely	Very high
RID043	Community development	Riverine flooding	Population displacement to evacuation centres	Higher intensity rainfall events could increase the frequency and severity of significant flood events leading to greater levels of displacement as flood waters inundate the townships more frequently and for longer periods of time.	Major	Likely	Very high
RID046	Economic development	Riverine flooding	Damage to private sector economic assets	Higher intensity rainfall events could increase the frequency and severity of significant flood events leading to greater loss and damage of private sector assets, including production and manufacturing equipment and tools, resulting in economic losses and flow on impacts to the community.	Major	Likely	Very high
RID047	Economic development	Riverine Flooding	Damage to agriculture	Higher intensity rainfall events could increase the frequency and severity of significant flood events leading to greater of loss and damage of crops and livestock.	Major	Likely	Very high
RID017	Economic development	Drought	Increased irrigation	Increased frequency and severity of drought is likely to lead to greater demand for irrigation to support farms.	Major	Likely	Very high

RISK ID	COUNCIL AREA	HAZARD	RISK SUMMARY	RISK DESCRIPTION	RISK ASSESSMENT AT 2050		
					CONSEQUENCE	LIKELIHOOD	RISK RATING
RID024	Water	Drought	Water scarcity and supply issues	Increased frequency and severity of drought is likely to lead to water supply issues resulting in water restrictions.	Major	Likely	Very high
RID044	Corporate Services	Riverine Flooding	Disruption of services	Higher intensity rainfall events could increase the frequency and severity of significant flood events leading to greater disruption of council and community services due to access issues as well as diversion of council staff and resources to flood response and recovery.	Major	Likely	Very high
RID048	Leader-ship and gover-nance	Riverine Flooding	Reputational damage due to lack of preparedness and response.	Higher intensity rainfall events could increase the frequency and severity of significant flood events leading to greater impacts across the community. Perceived lack of preparedness by Council could lead to significant reputational damage and in some cases liability if events were found to be foreseeable.	Major	Likely	Very high

Appendix C: Electricity site list

Table 10 Council buildings and facilities recommended for energy efficiency improvements

BUILDING	FACILITY TYPE	CONTRACT TYPE*
Broadford Works Depot	Council Works Depot	Large
Greater Beveridge Community Centre	Community Buildings/Halls	Large
Hadfield Park	Parks and Reserves	Large
Kilmore Leisure Centre	Aquatic Centres	Large
Mitchell Shire Civic Centre Broadford	Civic/Municipal Centres	Large
Seymour Sports and Aquatic Centre	Aquatic Centres	Large
Wallan Multi-Purpose Centre	Recreation/Leisure Centres	Large
Basketball Stadium, Wandong	Stadiums	Small
Broadford Leisure Centre	Recreation/Leisure Centres	Small
Broadford Swimming Pool	Aquatic Centres	Small
Kilmore Library	Libraries	Small
Kilmore Maternal and Child Health Centre	Community Healthcare	Small
Mt Piper Kindergarten Broadford	Kindergarten/Pre-Schools	Small
Seymour Library	Libraries	Small
Seymour War Memorial Outdoor Pool	Aquatic Centres	Small
Tallarook Outdoor Pool	Aquatic Centres	Small
Wallan Early Learning Centre	Childcare Centres	Small
Wallan Library	Libraries	Small

* Large Market sites have high electricity demands and are under contracts that charge high fixed costs but reduced per kWh tariffs. Small market sites are under electricity contracts with higher per kWh tariffs but lower fixed costs. Whether a site is under a large or small market contract depends on negotiation with Council's electricity provider/s.

Council will work with and support groups with Funding and Service Agreements with Council (Committees of Management) to improve energy efficiency at Council-owned community-managed facilities.

Glossary

Adaptation: Adapting to climate change is adjusting to current or expected climate change and its effects. Adaptation helps individuals, communities, organisations, and natural systems to manage the impacts of climate change. It involves taking practical actions to adjust to the changing climate which protect and build our resilience.

Business-as-usual (BAU): BAU refers to the normal trajectory of emissions and/or the uptake of actions that impact or respond to global warming. This is what we expect will occur without additional action to reduce emissions.

Biodiversity: This is the biological variety and variability of all forms of life on earth. This includes the individual plants and animals that form our ecosystems, and the variation of these ecosystems.

Carbon credits: An instrument that represents ownership of one metric tonne of carbon dioxide equivalent that can be traded, sold, or retired. If a company is regulated under a cap-and-trade system, they most likely have an allowance of credits they can use toward their cap. If they use fewer emissions (credits) than they are allocated, they can trade, sell, hold, or do whatever they like with the credit. Please also see relevant information under carbon offsets below.

Carbon offsets: Offset units are used to compensate for emissions an organisation produces and to bring their carbon footprint down to zero. Offset units are generated by projects that reduce, remove or capture emissions from the atmosphere such as reforestation, renewable energy, or energy efficiency. Carbon credits and carbon offsets both represent the emission of a certain amount of carbon into the atmosphere. But carbon credits represent the right to emit that carbon, whereas carbon offsets represent the production of a certain amount of sustainable energy to counterbalance the use of fossil fuels. So a carbon offset derived from a third-party certified project usually generates a carbon credit.

Carbon sequestration: Also called carbon drawdown, this is the long-term storage of carbon in plants, soils, geologic formations, and the ocean.

Circular economy: A system in which all resources are highly valued and remain in the system through reuse, re-purposing, and recycling. A circular economy tends to focus on local production.

Climate emergency declaration: This is a response by governments worldwide to the catastrophic climate changes brought about by human activity that poses a dangerous threat to all life on the planet. This declaration is an acknowledgement that humanity is in a climate emergency and is a way to set priorities to mitigate and adapt to climate change.

Community emissions: Community emissions are the total sum of emissions produced by a city, region, or municipality. This includes emissions associated with all sectors present within a community such as transport, waste, agriculture, industry, commercial and residential. Community emissions are distinguished from a council's corporate emissions, which refer to emissions from the council's own operations such as the electricity used by council buildings.

CO_2-e: Also known as 'carbon dioxide equivalent', this is a measure used to quantify the emissions associated with various greenhouse gases on the basis of their global warming potential. CO_2-e is a measure that was created to make the effects of different greenhouse gases comparable because every gas has a different global warming potential.

Emissions abatement: The reduction of the amount of greenhouse gases that are produced when fossil fuels are burned or harvested. This reduction occurs due to the actions of our community and goes beyond a business-as-usual scenario.

Emissions reduction: Reducing the amount of greenhouse gases emitted into the atmosphere from human activities.

Emissions Reduction Fund (ERF): The ERF is a voluntary scheme that aims to provide incentives for a range of organisations and individuals to adopt new practices and technologies to reduce their emissions. It works by allowing participants to earn carbon credit units off these practices, which can then be sold to create income.

Energy efficiency: Using less energy to perform the same task. For example, energy efficient appliances such as refrigerators or air conditioners can perform the exact same function while using less electricity, which means greenhouse gas emissions and money can be saved.

Enteric fermentation: fermentation that takes place in the digestive systems of ruminant animals such as cattle, sheep, goats, and buffalo. Microbes in the digestive tract, or rumen, decompose and ferment food, producing methane as a by-product. This is a significant source of greenhouse gas emissions in the agricultural sector.

Environmental Upgrade Agreements (EUAs): Also known as Environmental Upgrade Finance, EUAs are a type of loan that are available to businesses and homeowners to make their properties more sustainable and climate resilient. The funding can be used for things such as energy efficiency upgrades or installation of home sprinklers for bushfire protection. Under these loans, lenders (financial institutions) provide finance to the property owner for the upgrade and the property owner repays the loan through council rates.

Environmentally Sustainable Design (ESD): Design of buildings and infrastructure that meets the needs of owners, occupants and the environment through high performance, energy, and resource efficiency. ESD aims to reduce impacts on the environment in the construction and use of buildings and improve the comfort of the inhabitants.

Extreme heat: Typically categorised as temperatures over 35 degrees Celsius, extreme heat refers to high temperatures that are much hotter or humid than average. Because average temperatures vary across the world, this is a relative measure.

Flood mitigation: Range of activities that can be undertaken to reduce the likelihood and severity of flood impacts, such as integrated water management, community awareness campaigns, ecological restoration along rivers and creeks, and ongoing update to the Flood Management Plan to account for projected climate impacts.

Fugitive emissions: The release of pollutants or gases into the atmosphere from various sources that are not part of the intended or controlled emissions. These emissions occur as unintended leaks, spills, or releases from industrial processes, equipment, or infrastructure.

Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (GPC): Created by a partnership of leading sustainability organisations, the GPC provides a robust framework for accounting and reporting community greenhouse gas emissions. It is a council's tool to calculate shire-wide greenhouse gas emissions and use this inventory to support climate action planning.

Greenhouse gas (GHG) emissions: These are emissions released by the process of consuming fossil fuels and the production of materials. Through the process of the greenhouse effect, these gases remain in our atmosphere and trap the sun's heat, increasing the temperature of the earth. Greenhouse gases refer to the seven gases that have direct effects on climate change: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

Intergovernmental Panel on Climate Change (IPCC): This body was established by the United Nations to provide policymakers with regular scientific assessments on climate change and its implications and future risks. As an authoritative global body, the IPCC also suggests various adaptation and mitigation options to reduce the impacts of climate change.

Mitchell Shire Planning Scheme: The Mitchell Planning Scheme applies to all land in the Shire, except for Puckapunyal as it is Commonwealth land. It contains state and local planning policies, zones and overlays and other provisions that affect how land can be used and developed in Mitchell Shire.

Mitigation: Climate change mitigation reduces or eliminates the causes of climate change. This includes actions that reduce emissions, such as improving the energy efficiency of buildings or switching to electric vehicles and include efforts to capture and sequester carbon from the atmosphere.

Net zero emissions: Refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions extracted from the atmosphere. Net zero emissions includes all greenhouse gases (methane, nitrous oxide, and others), not just carbon dioxide. This usually involves the purchase of carbon credits.

Net zero emissions target: A target date set by an emissions producing entity, by which point the organisation intends to achieve net zero emissions.

Power Purchase Agreement (PPA): An agreement between an independent power generator and a purchaser for the supply and sale of energy. Usually, this will be between a large organisation, such as a council or a company, and a renewable energy electricity supplier such as a local wind farm. PPAs ensure that all the electricity purchased comes from a specific source at an agreed price.

Renewable energy: This energy is collected from renewable sources that are naturally replenished or infinite. These sources include sunlight, wind, movement of water and geothermal heat. Energy can be harnessed from these on a small (residential), medium (community) or large (commercial) scale to provide energy that does not produce any emissions during generation.

Resilience: The capacity of an asset, individual or community to absorb the acute and built-up shocks and stresses associated with climate change. Resilience also includes our ability to 'bounce back' or respond to climate change.

Smart lighting: An intelligent lighting system that utilises advanced technologies, such as sensors, connectivity, and automation, to enhance the efficiency, functionality, and sustainability of street lighting infrastructure.

Solar PV: Solar photovoltaics are the rooftop solar panels you see on homes and businesses, producing electricity from solar energy (the sun) directly.

Sustainable Infrastructure Policy: A policy that requires Council's hard surface infrastructure projects to reduce environmental impact by reducing material demand, procuring products with low embodied emissions and using recycled materials (e.g. crushed glass and concrete).

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Notes

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'Diuris chryseopsis and Tetratheca ciliata'. Photo by Alison Pouliot

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