Climate Change Action Plan

2020 - 2030

BASS COAST

Acknowledgement of Country

Bass Coast Shire Council acknowledges Aboriginal and Torres Strait Islanders as the first Australians and recognises that they have a unique relationship with the land and water. This Plan applies to the traditional lands of the Bunurong and Boon Wurrung, members of the Kulin Nation, who have lived here for thousands of years. We offer our respects to their elders past, present and emerging, and through them, all Aboriginal and Torres Strait Islander people.

Climate change is disproportionately threatening the cultures and health of Indigenous peoples globally, Australia is no exception. In many parts of the country Indigenous Australians are using their intimate knowledge of Country to lead the way in climate adaptation responses. We have a lot to learn and Bass Coast Shire Council is committed to working with the Bunurong and Boon Wurrung people of the Kulin Nation to restore a safe climate, connect with our community and with country.

contents

1. Executive summary 5
2. Introduction 13
3. Our Vision: Bass Coast in 2030 19
4. Bass Coast Climate Change Snapshot 21
5. Building on Strong Foundations 37
6. We all have a role to play 42
7. Community actions 53
   - 7a. Community actions: Households 56
   - 7b. Community actions: Businesses and organisations 70
   - 7c. Community actions: Farming and agriculture 80
   - 7d. Community actions: Other contributions 90
8. Bass Coast Shire Council actions 94
   - 8a. Bass Coast Shire Council actions: supporting community 96
   - 8b. Bass Coast Shire Council actions: corporate 126
9. How this Plan was developed 142
10. Monitoring progress 154
11. Thank you 166
12. Glossary 170
13. Appendix 1: Community Groups and Organisations 173

1. Executive summary

In September 2019, Bass Coast Shire Councillors joined a growing movement of councils leading the nation in declaring a climate emergency, recognising the serious risk that climate change poses to safety of the entire Bass Coast community, that immediate and urgent action is required to reduce our emissions, build community resilience against the local impacts of climate change and ultimately reverse global warming.

Bass Coast Shire is committed to doing everything it can to solve the challenge of climate change. It is critical that rapid action is taken to protect our natural assets, to maintain Bass Coast's unique environment and secure a liveable and healthy future for our community.

The purpose of this Climate Change Action Plan (the Plan) is to:

- Commit a strong, local contribution to the global effort
- Set a pathway to help us (Council and community) get to zero net emissions by 2030
- Strengthen Council support for our local community to take climate change action
- Drive a transformation within Council to embed climate emergency considerations across all operations and decisions
- Guide Council investment that will protect and enhance our natural environment and public infrastructure to ensure it is resilient
- Improve transparency, ensuring Council can monitor and report on progress

This Plan recognises the role of both Council and the community and includes recommended actions for Council, households, business, industry and the agricultural sector.

Together, the community and Council have set a strong vision for Bass Coast. It targets a more resilient and connected community, with a shared target of zero net emissions by 2030.

Policy Context

Climate change is already having a very real impact on Bass Coast. In July 2020, the time of writing, foreshore erosion is threatening infrastructure and the natural environment at Inverloch and Cowes East. Internationally, the Paris Agreement is to strengthen the global response to the threat of climate change by keeping global temperature rise this century well below 2 degrees Celsius. While the Federal Government is yet to set a target date and pathway for reaching zero net emissions, Victoria has recognised the social economic and environmental opportunities that arise from decisive action and have set a state-wide target of zero net emissions by 2050. As the level of government closest to the people, local government and their communities are at the forefront of impact and leading change. Responding to the global need for urgent emissions reduction, but also commencing the process of adapting to local impacts.

Local context

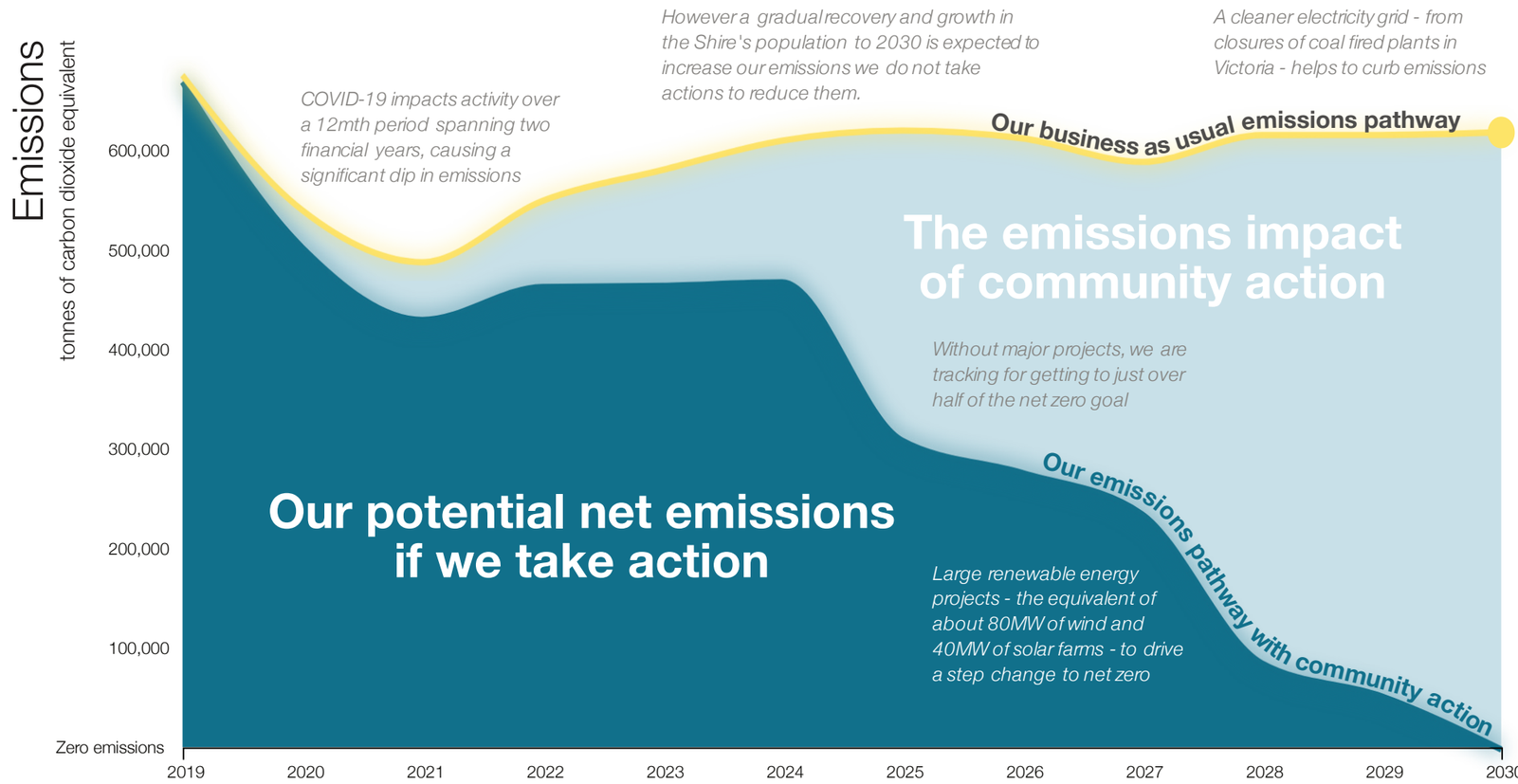
Emissions profiles were developed for both the community and for Council operations. In 2019, our community's greenhouse gas emissions were an estimated 675,300 tonnes of CO2-e, stationary energy is the largest source of emissions in Bass Coast (39.8%). Transport (29.7%) and Agriculture (26.7%) also dominate the Shire's emissions profile. The land sector provides a net carbon sink with forestry and vegetation activities in the shire estimated to draw down 0.7% of gross emissions (i.e. emissions prior to crediting activities).

In 2018/19 Council operations emitted an estimated 4,163 t CO2-e. This excludes the emissions from the Grantville landfill facility which takes waste from the whole community and emitted an estimated 9,678 t CO2-e.

Responding to the Climate Emergency requires us to not only understand the source and scale of emissions and how to rapidly reach net zero, but to also understand and respond to the impacts already being felt and those projected in the future. The climate change hazards identified for the Bass Coast region include:

- Increased average temperatures and solar radiation
- Increased extreme heat days
- More extreme storm events
- Decreased annual rainfall
- Rising sea levels and ocean acidification

These hazards will result in very real impacts on health and human services, the physical environment, transport, the local economy, natural environment, and water in Bass Coast. The Plan recognises these impacts as the driver of adaptation planning.



Bass Coast Community 'business as usual' and zero carbon trajectories

The Plan

In Bass Coast – community groups, businesses, organisations, households and Council have already taken steps to reduce emissions and prepare to meet the challenges of a changing climate. We have a strong foundation from which to scale up our collective action to achieve the shared vision.

Council, individuals, families, businesses, farms, community groups and other organisations throughout the Shire will need to consider their impact, how they can reduce carbon emissions and adapt to the local impacts of climate change, how they can work with others, as well as where they can go for help or support. Three categories of action have been developed:

- Foundational: Actions that don't have a direct emissions reduction or adaptation impact but lay the essential ground work to ensure action happens and scales up
- Emissions reduction: Actions that reduce greenhouse gas emissions and contribute to the zero net emissions target
- Adaptation: Actions that will support a resilient local environment, infrastructure and communities in the face of climate change impacts

The adaptation planning recognises that to build adaptive capacity, individuals, institutions and communities must simultaneously build five types of capital; human, social, natural, infrastructure and financial capital.

Community Action

Households taking action can help us reach 50% of our zero net target and become more resilient households. As part of the Plan, 15 Actions have been identified for households:

- Buy less. Recycle and reuse more to achieve zero waste
- Reduce energy use. Switch to all-electric and zero carbon energy
- Improve homes to make them sustainable and climate resilient
- Switch to more sustainable transport like walking, cycling, ride sharing and electric vehicles
- Support the natural environment by planting gardens
- Buy local. Support sustainable and regenerative agriculture
- Connect with, support and share information with networks – friends, neighbours, colleagues and family
- Advocate for stronger climate change action by State and Federal governments

Businesses and organisations taking action can help us reach 25% of our zero net target. As part of the Plan, 8 Actions have been identified for businesses and organisations:

- Practice sustainable purchasing, including buying and collaborating with other local businesses
- Share, recycle, reuse more to achieve zero waste
- Reduce energy use. Switch to all-electric and zero carbon energy
- Improve buildings and infrastructure to make them sustainable and climate resilient
- Switch to more sustainable transport
- Connect with, support and share information with networks
- Advocate for stronger climate change action by State and Federal governments

Taking action on **farms** can help us reach 21% of our zero net target. As part of the Plan, 6 Actions have been identified for farms.:

- Protect and enhance our natural environment, through planting trees and modifying agricultural practices
- Adapt to a changing climate – improving resilience to drought, bushfire and environmental issues such as invasive species
- Collaborate and learn with other local farmers to support sustainable and regenerative agriculture
- Reduce energy use, switching to zero carbon energy
- Advocate for stronger climate change action by State and Federal governments

To reach zero net emissions 2030, a number of significant actions are required that are largely outside of the control of Council or the local community. These include the development of utility-scale wind and or solar PV projects as well as the delivery of carbon targets by other organisations operating in the community, such as water authorities.

The combined action of households, businesses, farmers and others can deliver zero net emissions and a more resilient community by 2030.

Council Action

Council will use this plan to both drive community-wide climate emergency response and improve its operational response to climate change. A number of priority actions have already commenced or will be rapidly implemented to reflect the urgency of climate emergency action:

- Embed the Climate Emergency into all staff roles and responsibilities, and performance planning
- Integrate climate risk into financial decision making
- Integrate climate emergency into Council reporting processes
- Strengthen planning policy and practice
- Deliver the Biolinks project
- Asset vulnerability assessment project
- Power Council with 100% renewable energy
- Promote financial solutions and incentives to support our community

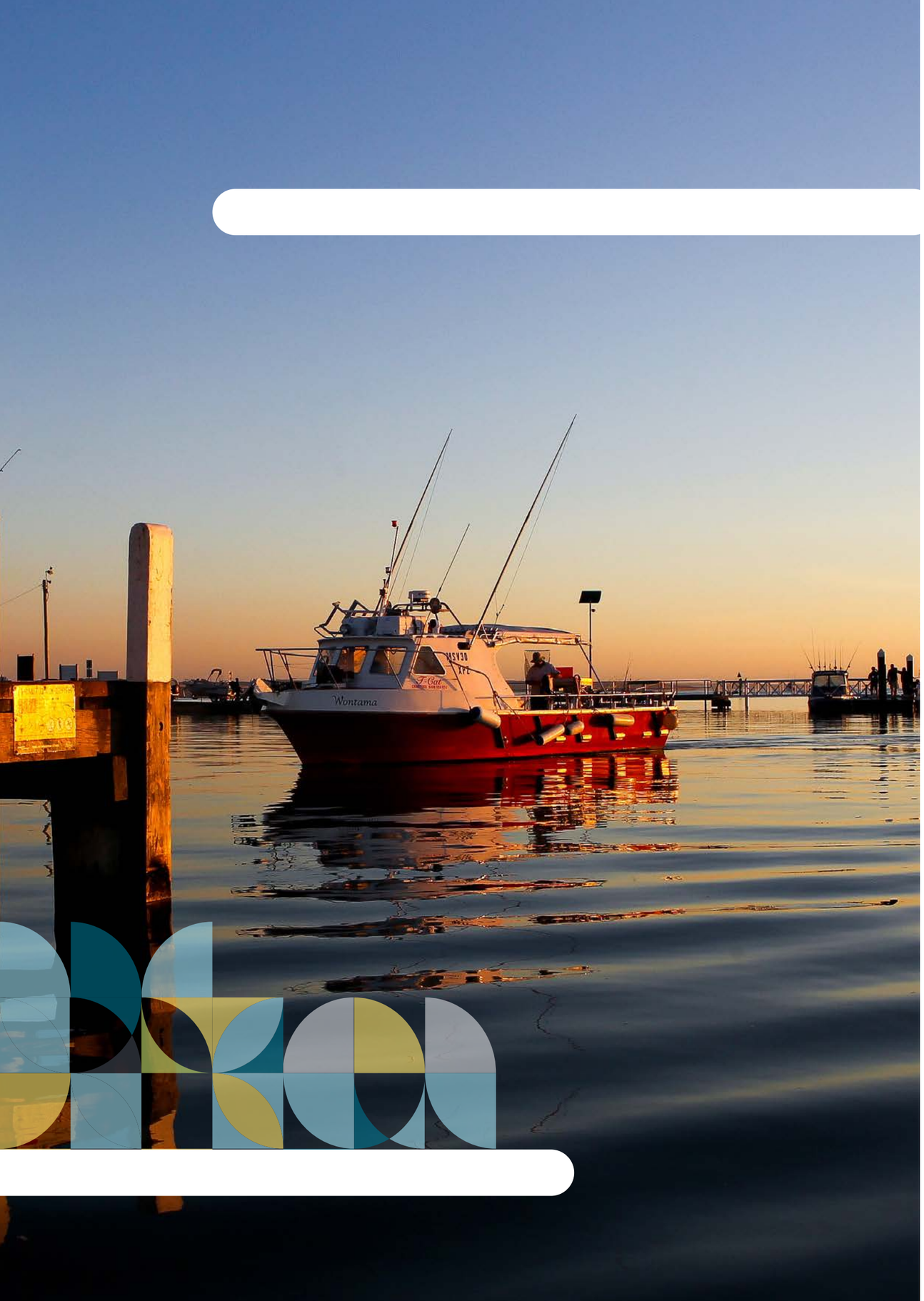
As part of the operational response, the suite of actions is focused on reducing Council's corporate emissions to zero by 2030. The pathway to zero net emissions comprises several key elements which include:

- Procuring 100% renewable energy
- Transitioning the vehicle fleet to low emissions
- Driving energy efficiency improvements
- Expanding the municipal solar program
- Transitioning street lighting to the most energy efficient
- Offsetting residual emissions through the Biolinks project

The scale and urgency of the climate emergency mean that Bass Coast Shire and the community need to be well-informed, flexible and prepared to adapt or capitalise on opportunities as they emerge. Transparent, timely monitoring and reporting on progress is critical to understanding effectiveness of the activities and ultimately delivering on the ambition.

Our collective pathway

Globally and locally, there is no doubt - we are in a climate emergency. Collectively, we have a lot of work to do to restore a safe climate that will maintain the special landscapes and lifestyles unique to Bass Coast. Extensive research, engagement and analysis undertaken has demonstrated a viable pathway for Bass Coast to achieve zero net emissions by 2030 and to respond to climate impacts already being felt and projected in the future. Implementation requires us to come together to all play our part.



2. Introduction

In September 2019 Bass Coast Shire Councillors joined a growing movement of councils leading the nation in declaring a climate emergency, recognising the serious risk that climate change poses to safety of the entire Bass Coast community.

Immediate and urgent action is required to reduce our emissions, build community resilience against the local impacts of climate change and ultimately reverse global warming.

Bass Coast Shire is committed to doing everything it can to solve the challenge of climate change. As a region renowned for its natural beauty and productive land, it is critical that rapid action is taken to protect our natural assets, to maintain Bass Coast's unique environment and secure a liveable and healthy future for our community.

A target of zero net emissions by 2030 is now in place for Council operations as well as the wider community.

The purpose of the Climate Change Action Plan (the Plan) is to:

- Commit a strong, local contribution to the global effort
- Set a pathway to help us (Council and community) get to zero net emissions by 2030
- Strengthen Council support for our local community to take climate change action
- Drive a transformation within Council to embed climate emergency considerations across all operations and decisions
- Guide Council investment that will protect and enhance our natural environment and public infrastructure to ensure it is resilient
- Improve transparency, ensuring Council can monitor and report on progress

Mitigation and adaptation: what are they?

Adaptation: Imagine you are on a ship sinking due to a leak. To stay afloat, you must act. You grab a bucket and pour water out as it gushes through the hole. This response is adaptation – addressing the effect (the water in the boat), but not the cause of the problem (the hole).

The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as "the process of adjustment to actual or expected climate and its effects." It is doing what we can to live with and minimise the destruction and suffering caused by climate change.

Adaptation occurs locally as a response to local impacts.

Mitigation (emissions reduction): Back aboard our sinking ship, if adaptation is pouring water out to stay afloat, sealing the leak to stop more water coming in is mitigation. Mitigation is addressing the root cause of the problem rather than dealing with its impacts.

The IPCC describes, mitigation is "human intervention to reduce the sources or enhance the sinks of greenhouse gases".

In this Plan we use the term "emission reduction" when referring to actions that will help to mitigate climate change.

Emissions reduction occurs locally too, but is a contribution to a global effort that requires others to act too.

A dual pathway is needed

We've reached a point where no single path will get us to a just and liveable future. As the IPCC made clear: "Many adaptation and mitigation options can help address climate change, but no single option is sufficient by itself. Effective implementation depends on policies and cooperation at all scales and can be enhanced through integrated responses that link mitigation and adaptation."

Responding to the climate emergency requires our whole community to play a part so this Plan includes recommended actions for Council, households, business, industry and the agricultural sector.

The Council and the community actions in this Plan have been developed through a detailed assessment process to ensure they are technically feasible, economically beneficial and socially desirable and cover the period 2020 to 2030. The context of the climate emergency dictates that the work starts immediately, with foundational and high impact actions prioritised.

How Council will use this Plan

Council will progressively implement this plan over the next ten years with regular review. Council will use this Plan to guide internal decision making about operational priorities, investment, budgets and resource allocations.

The Council actions listed in this Plan are specific, time-bound and resourced. They ensure that Council is maximising its sphere of influence, delivering results on the ground locally, advocating for strong action at a state and federal level, and supporting the community to do their part.

We will also use the plan to monitor and report on progress towards our shared goals, ensuring a transparent model of accountability to the community.

How our community can use this Plan

This Plan has been designed to help you and other members of our community identify and prioritise your actions based on individual needs and situations.

In section 7, Community Actions you will find recommended actions for households, business/ industry and farms/agriculture. You are encouraged to consider which of the recommended actions you could implement immediately and which you can plan for in the future, noting some actions may not suit your individual circumstances, but all are proven, tangible measures that will positively impact either emissions or assist in responding to climate change impacts.

For the sake of brevity and because personalised advice is important, the Plan doesn't provide advice on how to implement the actions. Council, along with expert local community groups and organisations are already providing programs and support to help you on your climate action journey. Through the life of this Plan support programs will grow and evolve to respond to the changing needs of the community and leverage new technology and funding opportunities.

Connect with local groups and services through the list in Appendix 1 or sign up for Council updates at basscoast@basscoast.vic.gov.au or via the website www.basscoast.vic.gov.au

About Bass Coast

Our unique natural environment is one of our most valuable assets, and is the foundation for our lifestyles and economic prosperity. While people visit for the environment, they stay because of the tight-knit communities that are passionate about protecting natural assets, growing sustainable business opportunities, and creating safe and supportive townships.

One of the fastest growing municipalities in regional Victoria, Bass Coast offers a unique and affordable lifestyle in beautiful natural surrounds. Located only 90 minutes south east of Melbourne, Bass Coast is home to a population of 36,320[1]. By 2036, the population for Bass Coast Shire is forecast to increase to over 47,000, at an average annual change of 1.7%.

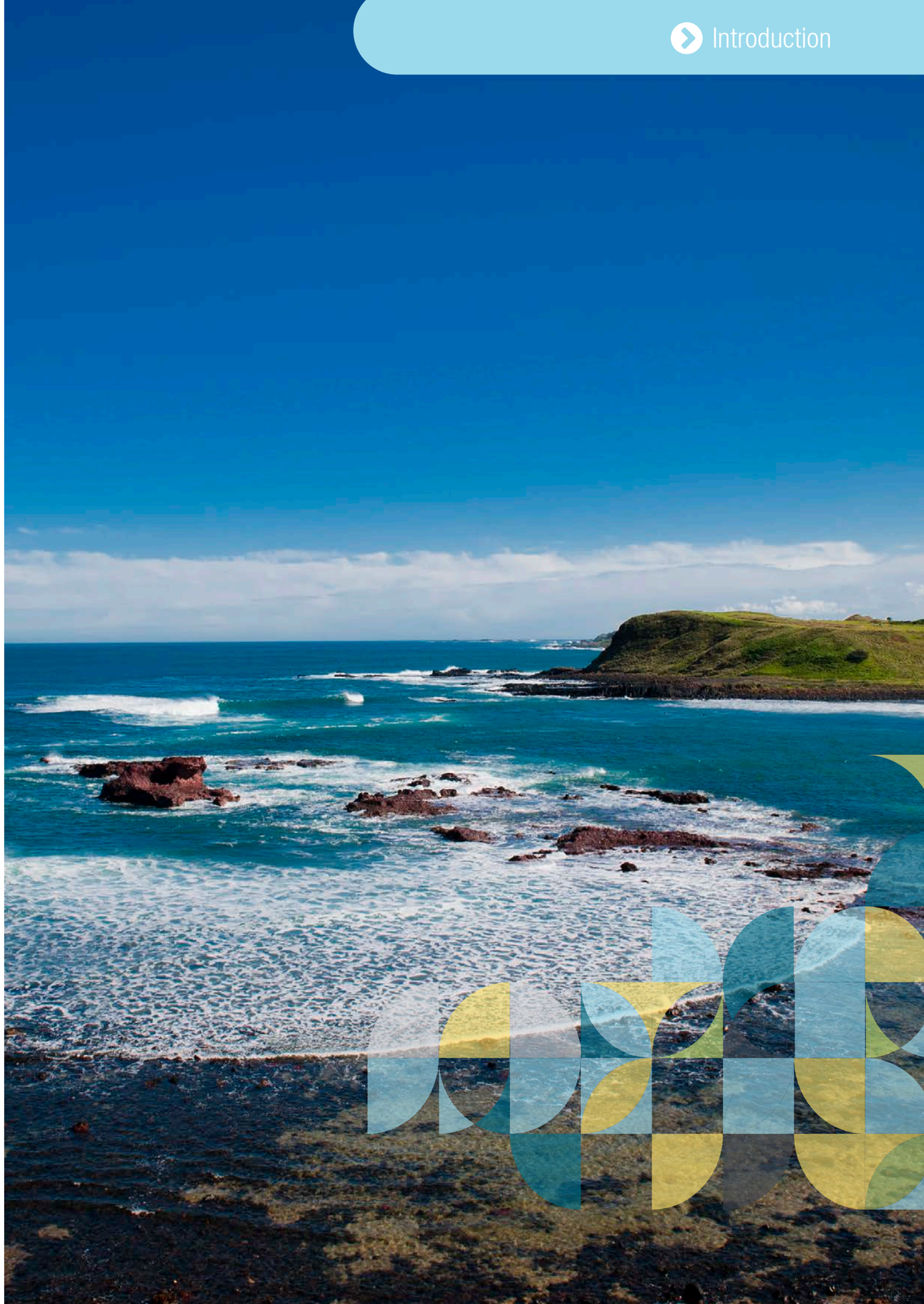
The Shire encompasses a total land area of 865 square kilometres, including extensive coastal areas. With agricultural land making up 90% of the Shire, Bass Coast has potential to become a valuable food bowl for Victoria, especially as shires on our northern border are increasingly developed.

Bass Coast is home to many small coastal or agricultural villages, with some larger townships scattered amongst them. There are a plethora of local businesses, a thriving arts community and a range of active community groups and organisations that contribute to the economy, quality of life and local sustainability.

Quick stats: our people[2], our economy[3]

- We have a lower proportion of children (under 18) and a higher proportion of persons aged 60 or older compared to Regional Victoria more broadly
- 0.9% of our population identify as Aboriginal and/or Torres Strait Islander
- 4.8% of people speak a language other than English at home
- 8.0% of households earn a high income ($2,500 per week or more) and 27.9% are low income households (less than $650 per week)
- 67% of households have a mortgage or fully owned their home, 20.9% are renting privately, and 2.1% are in social housing
- Health Care and Social Assistance, Retail Trade, and Accommodation and Food Services are our top three employment sectors
- 12,533 of us are employed, 50% employed full-time and 48% part-time
- 23.1% of us have a vocational qualification, 9% have a Diploma and 13.3% have a tertiary qualification
- Bass Coast Shire's Gross Regional Product is estimated at $1.53 billion, which represents 0.34% of the state's Gross State Product

1. profile.id.com.au/bass-coast/
2. profile.id.com.au/bass-coast/highlights-2016
3. economy.id.com.au/bass-coast



Bass Coast Climate Action Network proudly gives Council its Climate Emergency petition with over ONE thousand signatures

3. Our Vision: Bass Coast in 2030

Our Vision for Bass Coast in 2030 is:

- ***Bass Coast is a connected, zero carbon community***
- ***The community of Bass Coast is actively leading the just transition to our zero-carbon future***
- ***Our diverse natural world is our most precious asset***
- ***We learn from First Nations people and share a deep connection to country, traditional culture, practices and heritage***
- ***Our energy is renewable***
- ***Our homes, buildings and infrastructure are comfortable, efficient and resilient to the impacts of climate change***
- ***We work and travel sustainably. Our economy is healthy, regenerative and resilient***
- ***We look after each other, our community and our environment. We work together***

Our Creating the vision:

Community surveys and workshops were used to capture local priorities and the language reflected in the Vision.

The Vision was also tested and found to be well aligned with the broader community aspirations in 'Bass Coast Towards 2030':

- To be recognised as a foodbowl for Victoria
- A window on the history of Victoria
- A celebration of natural assets
- A village in a technology world

Ultimately this Action Plan will support the delivery of these aspirations. You can read the full 2030 aspirational statements in full on the Bass Coast Shire website.

Primary School students learn about protecting the environment at the Sustainable Schools Expo

We are in a climate emergency

In a response to a 1,000 strong community petition, Bass Coast Shire Council declared a climate emergency in September 2019.

The declaration acknowledges that climate change poses serious risks to Bass Coast and Australia and requires immediate and urgent action to reverse global warming.

Bass Coast Shire Mayor, Cr Brett Tessari said declaring a climate emergency will affect all residents, businesses and visitors of Bass Coast.

"We understand that to protect the region from the impacts of climate change, we need to work closely with our community to identify actions at an accelerated pace," Cr Tessari said.

As of July 2020, 1,737 government jurisdictions in 30 countries, representing 820 million citizens have declared a climate emergency. In Australia, nearly 100 Councils have made the declaration and support continues to grow at a rapid pace.

4. Bass Coast Climate Change Snapshot

Locally, we must understand the current state to determine the scale of emission reduction needed and the key focus areas for climate change adaptation specific to the local context.

Climate change is already having a very real impact on Bass Coast. In July 2020, the time of writing, foreshore erosion is threatening infrastructure and the natural environment at Inverloch and Cowes East. Australia is still recovering from unprecedented fires that cast smoke haze over much of Victoria, impacting human health, vast areas of bushland, property and economies across the State.

This section of the plan provides the 'jumping off point' for a focused, local plan, and a line in the sand with which to measure our progress over time.

Global, National and State Context

Responding to climate change is a global responsibility. In 2015, Parties to the United Nations Framework Convention on Climate Change (UNFCCC) came together to accelerate climate action, formalised in what we know as the Paris Agreement.

The central aim of the Paris Agreement is to strengthen the global response to the threat of climate change by keeping global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit temperature increase even further to 1.5 degrees Celsius. As a signatory, Australia has agreed to a target of 26%-28% reduction in emissions below 2005 levels by 2030, however no target date for zero net emissions exists at the Federal level.

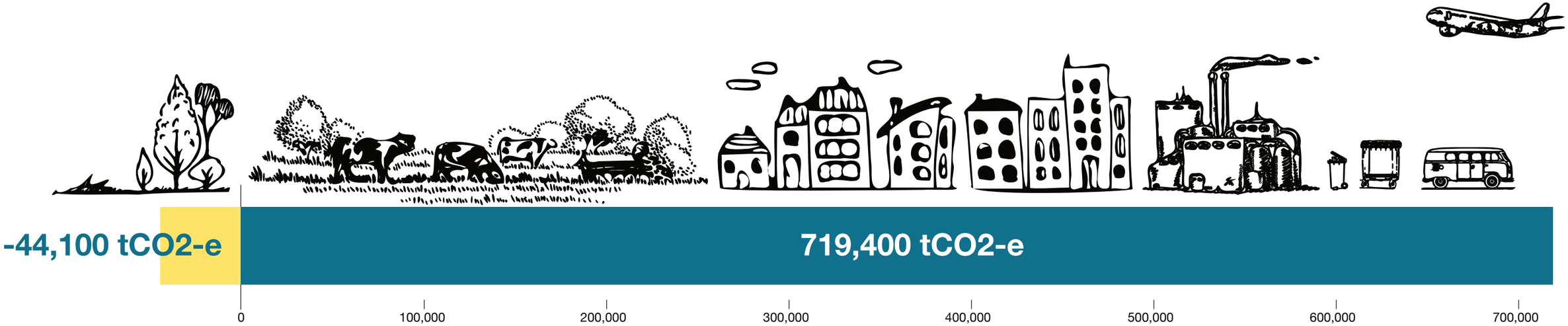
Within Victoria, The Climate Change Act 2017 sets the legislative foundation to manage climate change risks, maximise the opportunities that arise from decisive action and drive the transition to a climate resilient community and economy with zero net emissions by 2050. At the time of writing, State interim emissions targets for 2030 were postponed due to the impact of COVID-19, however are likely to be between 45 % to 60% reduction over the next decade.

Due to the cumbersome nature of international, federal and state legislators, the responsibility of delivering immediate climate action is being assumed by local governments, who are more aligned with the communities' ambition to see transformational change. This Climate Change Action Plan aims to do just that, by translating community desire into real, tangible action to mitigate and adapt to the challenges faced by climate change.

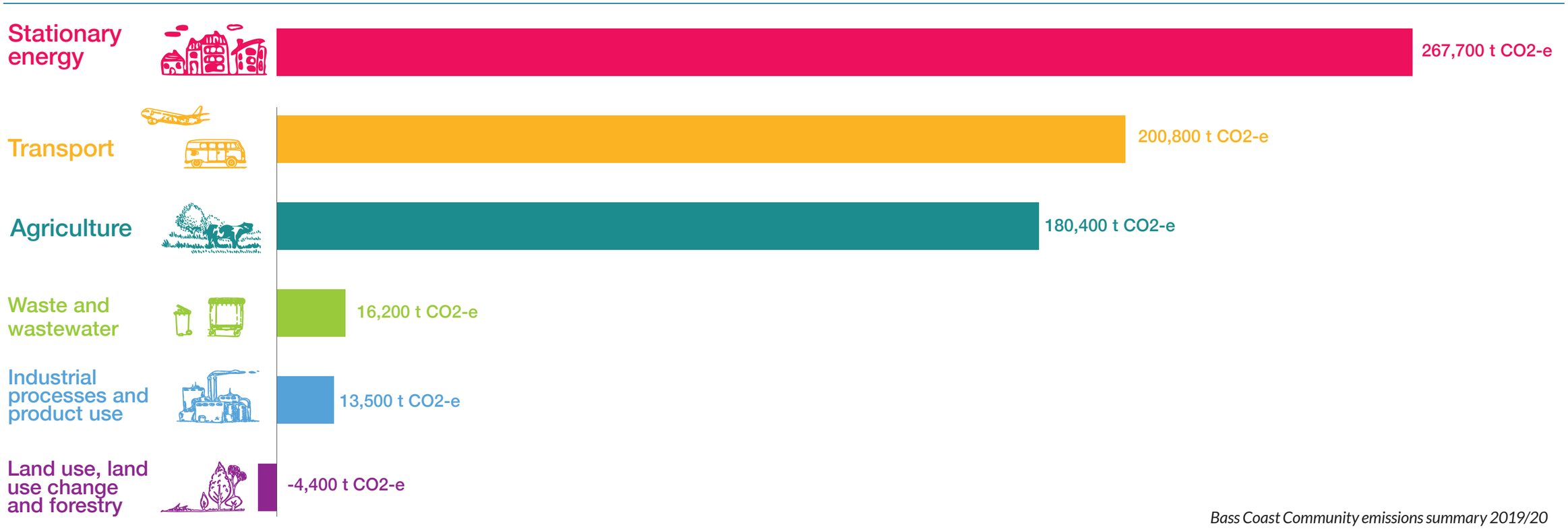
Bass Coast Community Emissions

In 2019, our community's greenhouse gas emissions were an estimated 675,300 tonnes of CO2-e .

Bass Coast emissions equate to an estimated 18.6 t CO2-e per person every year. This is slightly higher than the Victorian average of 17.1 t CO2-e and lower than the national average of 21.1 t CO2-e per person, per year. We have significantly higher per capita emissions from agriculture and transport, and lower from stationary energy, industrial processes and product use. These differences are expected and largely reflective of life in regional areas.



Bass Coast Community emissions summary 2019/20



About our emissions sources

To provide consistency and prevent double counting, there are standards that set out what gets counted where in an emissions profile. Below is a summary of what's included in the different emissions sources in the Bass Coast emissions profile.

- **Stationary energy:** Includes electricity, LPG bottled gas, mains gas and firewood. It accounts for renewable energy generated and exported to the electricity grid (e.g. from the wind turbines that can be seen along the coastline near Wonthaggi).
- **Transport:** The emissions profile for transport shows the communities transport emissions, including their trips outside of the Shire and flights. It does not include travel by tourists. Heavy/commercial vehicle movement from outside traveling in or through the municipality is also excluded.
- **Agriculture:** Includes emissions generated by activities such as enteric fermentation that occurs in the stomach of cattle and sheep, grazing and manure management and crop residues.
- **Waste:** Includes emissions generated by waste management, such as municipal solid waste, construction and demolition waste, commercial and industrial waste, disposal of waste water to sewers and septics, and agriculture waste water.
- **Industrial processes and product use:** Includes emissions generated by refrigerant leakage from air conditioning, fridges and freezers and heat pumps, along with emissions from materials production and manufacturing.
- **Land use, land use change and forestry:** Includes emission sequestration from forest regrowth, revegetation, soil and water. And, emissions associated with primary land conversion and land clearing.

Emissions by source

Due to the predominance of fossil fuels (mainly coal) used to generate electricity, stationary energy is the largest source of emissions in Bass Coast (39.8%). 37.5% of this comes from electricity, 3.3% from LPG bottled gas and 1.2% from mains gas.

Transport (29.7%) and Agriculture (26.7%) also dominate the Shire's emissions profile.

The land sector provides a net carbon sink with forestry and vegetation activities in the shire estimated to draw down 0.7% of gross emissions (i.e. emissions prior to crediting activities).

BASS COAST

Emissions by Economic Sector

When we look at emissions by 'economic sector' we can see that the Residential Sector is responsible for the largest source of emissions (44.1%) followed by the Farming sector (33.3%) and Commercial (16.7%) and Industrial (6.1%) sector emissions.

The Municipal sector includes all Council emissions, public land (including the land sector) and other emissions unable to be allocated from source data. Municipal sector is a net sink as includes existing and historical revegetation, such as the current Biolinks project.

EXPLORE OUR COMMUNITY EMISSIONS PROFILE

To assist understanding within the community about where we are at and how we might get to zero net emissions, an interactive graphic was developed. Visit basscoast.vic.gov.au/services/environment/climate-change-taking-action to explore the interactive emissions profile and understand our pathway to zero carbon by 2030.

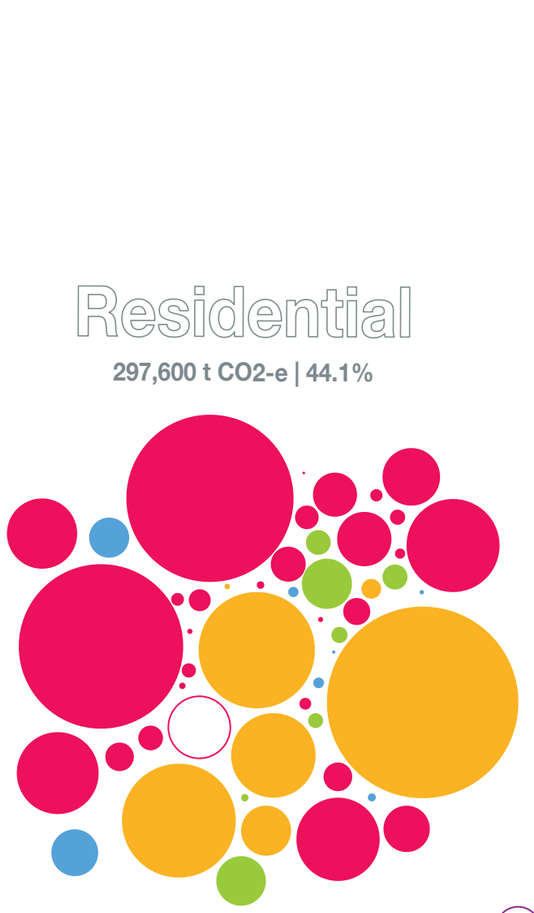
Building on the Z-NET approach

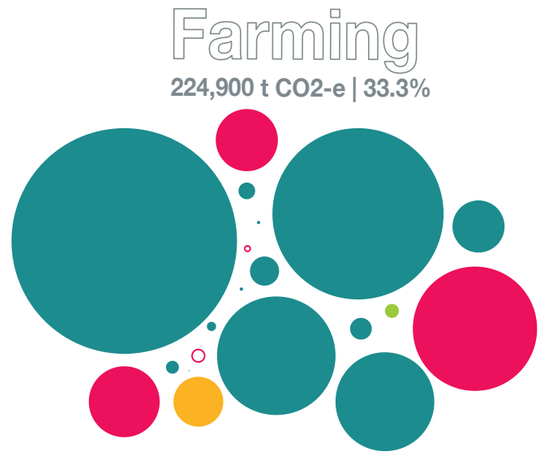
The emissions modelling and pathway for the Bass Coast community builds on the Z-NET Blueprint Model.

The Z-NET Model is a highly detailed and best practice approach developed under a creative commons license to allow rural towns, villages and regions to design a pathway to achieve and then exceed zero net emissions. It sets out the approach taken, the logic and principles applied in assessing options and the framework used for developing the implementation plan.

The original Z-NET Blueprint was funded by the NSW Office of Environment and Heritage and was created in partnership with the community of Uralla in NSW. The Blueprint has since been significantly expanded as part of the Z-NET Hepburn Shire work thanks to funding from Sustainability Victoria, Hepburn Shire Council, Hepburn Wind, Samsø Energy Academy and Diversicon Environmental Foundation.

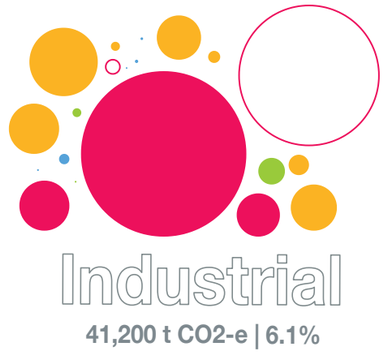
For more information about the Z-Net Model visit the z-net.org.au





A look at our community emissions activities

Each of these circles or 'bubbles' represents an emissions activity that was modelled to breakdown and understand our 2018/19 community emissions profile. Solid bubbles represent an emissions sources, while clear bubbles ares emissions sinks. The size of each bubble is representative of the size of the emissions source or sink, and each activity has been colour coded into six emission sectors: **Stationary energy,** **Transport energy,** **Waste and wastewater,** **Industrial processes and product use,** **Agriculture** or **Land use, land use change and forestry.**



Bass Coast Community emissions summary 2019/20

Bass Coast Council Emissions

Council's overall operating emissions are included in the total Bass Coast Community Emissions Profile above. However, it is important to distinguish the emissions council is responsible for in order to develop specific pathway for Council operations to acheive zero net emissions.

In 2018/19 council operations emitted an estimated 4,163 t CO2-e. This excludes the emissions from the Grantville landfill facility which takes waste from the whole community and emitted an estimated 9,678 t CO2-e.

Electricity makes up 71% of the corporate profile (excluding. landfill emissions), primarily from public streetlighting and operating buildings and facilities. Fossil fuel powered transport is the next biggest sector with waste, office and other supplies contributing to the remainder.

EMISSIONS SECTOR	EMISSIONS SOURCE	AREA	EMISSIONS	
			tCO2-e	%
Stationary Energy	Electricity	Public streetlighting	1,510	11%
		Buildings and facilities (Council managed)	809	6%
		Buildings and facilities (not Council managed)	340	2%
	Natural gas	Buildings and facilities	0	0%
Transport	Petrol	Business travel (claimed)	40	0%
		Council fleet	192	1%
		Council fleet (off road and equipment)	0	0%
	Diesel	Council fleet	919	7%
		Council fleet (off road and equipment)	139	1%
	LPG	Council fleet	18	0%
Waste	Landfill	Council operations waste	99	1%
		Grantville landfill (ex. Council waste)	9,678	70%
Industrial product use	Refrigeration	Refrigerant leakage	50	0%
Other	Supply chain	Water supply	52	0%
		Office paper	11	0%
		Total gross emissions	13,857	100%
		Credits from exported solar	-16	
		Total net emissions (inc. Grantville landfill)	13,841	
		Total net emissions (ex. Grantville landfill)	4,163	

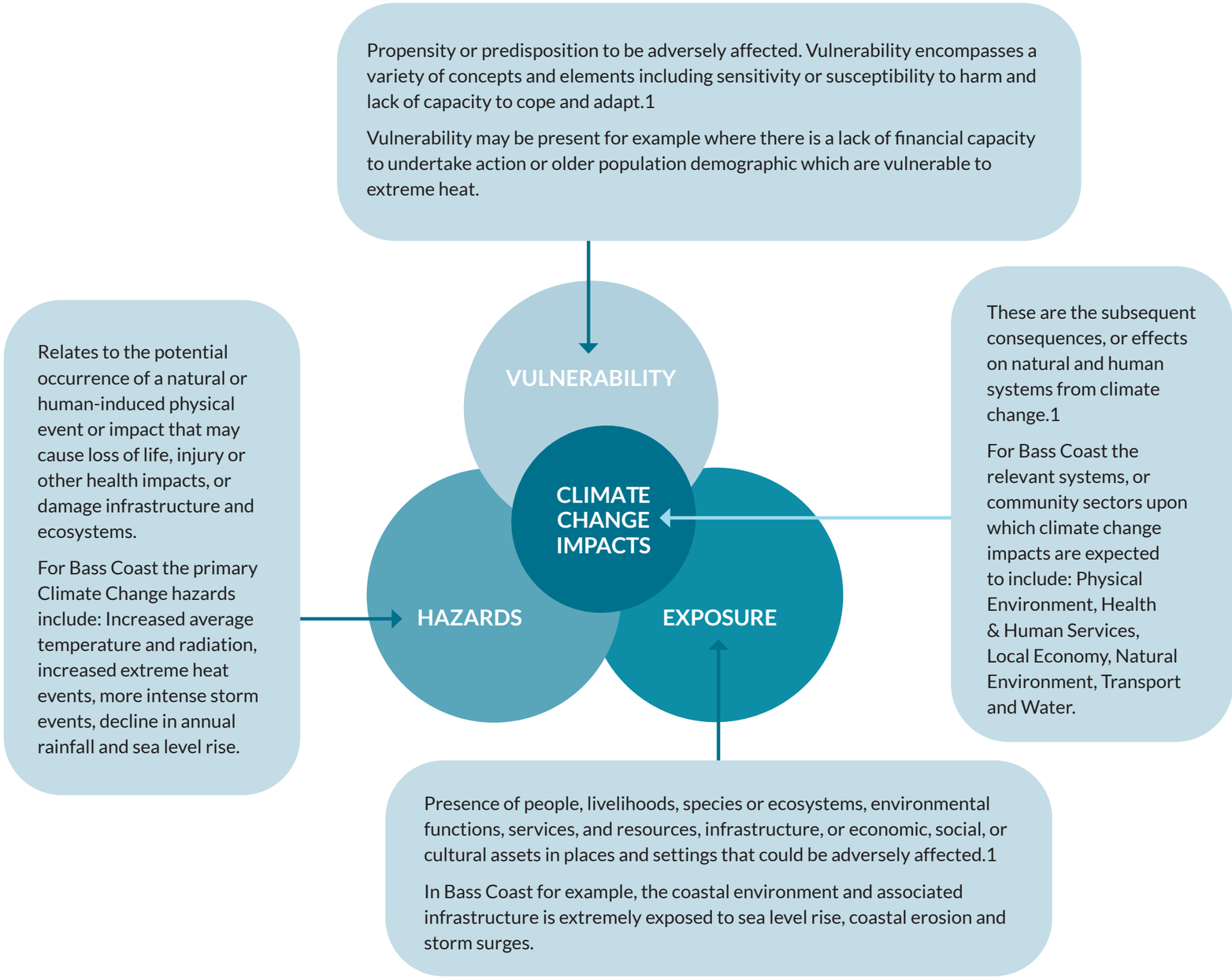
Bass Coast Shire summary of baseline (2018/19) emissions, including Grantville landfill facility

Climate Change Imapcts

Responding to the Climate Emergency requires us to not only understand the scale of emissions and how to rapidly decarbonise our community, but to also understand and respond to the impacts already being felt and those projected in the future.

Climate Adaptation is the process of responding to actual or expected climate change impacts with the aim to moderate or avoid harm, and where possible deliver other benefits.

Understanding the relationship of climate hazards to local impacts (see diagram to the right) ensures that adaptation strategies are designed to complement the strategies being implemented to reach zero net emissions.



The risk of a climate change impact is largely determined by the severity of the hazard, what is exposed to the hazard, and the vulnerability of those exposed.

Bass Coast Hazards

The climate change hazards expected for the Gippsland region through to 2090 for moderate (RCP 4.5) and high (RCP 8.5) greenhouse gas emissions scenarios as identified by the Victorian Government and CSIRO in the recent Victorian Climate Projections report (VCP19) are:

- Increased average temperatures and solar radiation
- Increased extreme heat days
- More extreme storm events
- Decreased annual rainfall
- Rising sea levels and ocean acidification

Increased average Temperatures and solar radiation[1]: Between 1910 and 2018 Victoria's average temperature increased by just over 1°C. This increase is expected to continue (and with it an increase in solar radiation), largely dependent on global GHG emissions.

Scenario modelling shows that temperatures will increase in the range of 1.0-2.9°C by 2050.

Increase in extreme heat[1]: In addition to average temperature, the daily maximum temperature is also expected to increase, bringing with it extreme and extended heat events and bushfire risk.

Scenario modelling shows a likely increase from 11 days over 35°C in the Gippsland region to up to 32 days in 2090 according to the highest emissions scenario.

Decreased annual rainfall[1]: Annual rainfall across the Southern Slopes and Gippsland region has generally experienced a negative trend since the 1970's. This decline expected to continue however it should be noted that rainfall has been identified as particularly variable.

More severe weather events: While rainfall overall is expected to slightly decrease, the intensity of weather and storm events in general (such as flash flooding and storm surges) is expected to increase.[2]

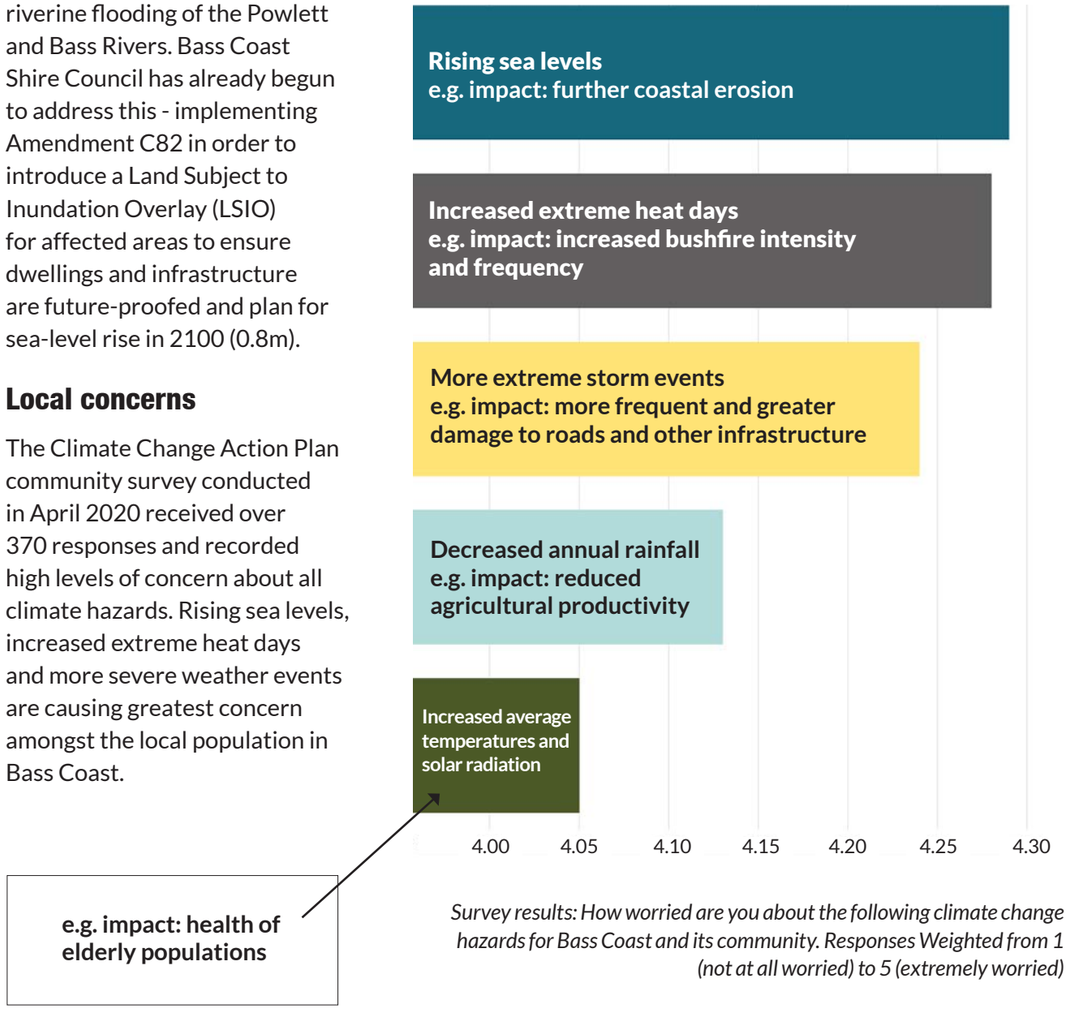
An older report on the Climate Impacts expected for the Western Port region identified that 261 dwellings within Bass Coast would be exposed during a 1 in 100 year storm surge in 2070. The report also calculated 15.3 kilometres of roads, and 18 kilometres of sewer and water drainage infrastructure will be at risk of the same event.[3]

Rising sea levels[4]: From 1966 to 2009 the sea level (around Australia) rose by 2.1mm/year, however between 1993 and 2009 this rate increased to 3.1mm/year and is expected to accelerate due to thermal expansion from heating (in addition to causing ocean acidification), and additional water from melting glaciers. Scenario modelling shows an expected rise is sea level of 7-16cm by 2030 and by up to 81cm by the end of the century.

As a coastal municipality Bass Coast is at risk from rising sea levels and storm surges, and riverine flooding of the Powlett and Bass Rivers. Bass Coast Shire Council has already begun to address this - implementing Amendment C82 in order to introduce a Land Subject to Inundation Overlay (LSIO) for affected areas to ensure dwellings and infrastructure are future-proofed and plan for sea-level rise in 2100 (0.8m).

Local concerns

The Climate Change Action Plan community survey conducted in April 2020 received over 370 responses and recorded high levels of concern about all climate hazards. Rising sea levels, increased extreme heat days and more severe weather events are causing greatest concern amongst the local population in Bass Coast.



Survey results: How worried are you about the following climate change hazards for Bass Coast and its community. Responses Weighted from 1 (not at all worried) to 5 (extremely worried)

1. DELWP & CSIRO (2019) Gippsland Climate Projections 2019
2. Australian Gov. & CSIRO (2015) Southern Slopes Cluster Report, Climate Change in Australia Projections for Australia's Natural Resource Management Regions.
3. Kinrade, P & Preston, B (2008) Impacts of Climate Change on settlements in the Western Port Region. People, Property and Places, June 2008
4. NCCARF & Monash University (2013 What would a climate-adapted settlement look like in 2030? A case study of Inverloch and Sandy point

Bass Coast Impacts

The hazards faced in Bass Coast will result in very real impacts on health and human services, the physical environment, transport, the local economy, natural environment, and water in Bass Coast:

The actions developed in Section 7 and 8 are a direct response to these impacts, acknowledging what is within the control of Council and community to influence.

Health and human services impacts

- Cumulative mental health stressors, exacerbated by multiple climate events
- Increased cost and access to fresh food
- More heat-related deaths among elderly (65+) and disadvantaged
- Increased energy usage via higher demand for AC/cooling etc
- Increase of insect borne pathogens
- Stress and demand on energy and communication networks
- More stress on health and emergency services
- Increased incidence of domestic violence
- Mental health impacts associated with loss of property/ life
- Water scarcity
- Health impacts associated with reduced water quality

Physical environment impacts

- Failure of cooling infrastructure to perform on extreme heat days
- Increased damage and maintenance costs of buildings
- Increased damage and maintenance costs of infrastructure
- Loss of usable land - land subject to inundation in 1/100 yr event to increase (potentially by 63% by 2070)
- Insurance costs increase and coverage decrease
- Infrastructure and buildings impacts due to drying soils vulnerable to degradation and structural failure
- Rises in coastal ocean levels may reduce the capacity of the waterways and stormwater drains to discharge runoff
- Potential loss / more regular damage to coastal assets (buildings & roads)

Transport impacts

- Increased maintenance due to faster deterioration of transport assets (e.g. roads)
- Increased maintenance costs
- Inability to access essential services or commute to place of employment
- Loss of escape routes from natural disasters
- Short term isolation of communities
- Coastal roads suffer more regular damage - may need to be modified / rerouted

Local economy impacts

- Increased cost of business inputs
- Loss of business continuity to extreme weather events
- Changed distribution of pests and diseases and in pasture growth
- Loss of habitat related to major tourism infrastructure e.g. penguins
- Farm business affected by bushfire
- Crop loss due to sun damage
- Farm business affected by flooding and soil runoff
- Distribution affected by closure to transport corridors
- Damage to tourism infrastructure
- Reduced water security
- Increased costs for asset managers, reduced service quality and availability
- Reduced water quality affecting agricultural, ecological, amenity and recreational values in region
- Fish species migrate south for cooler water, with ecological, social and economic impacts
- Coastal changes to beach width and profile
- Changes to sediment availability for bar formation impacting on surf quality

Natural environment impacts

- Loss of biodiversity through habitat reduction
- Damage to popular environmental sites
- Wider distribution of invasive species
- Due to bushfire risk, increase prescribed burning and subsequent costs
- Increased bushfires impact recovery of carbon stocks
- Environmental damage to waterways and vegetation from more intense storm events
- Reduced flow into local waterways hindering water quality and biodiversity
- Lower runoff and waterway flow increase risk of Algal blooms
- Amplification of existing threats to flora and fauna
- Increased threat to significant wetlands
- Changes to phenology, natures timeline (i.e. Phillip Island penguin)
- Coastal erosion and accretion of sand in waterways and bays
- Impacts to cultural heritage connections to sites and country
- Dune erosion impacting coastal vegetation (i.e. Coast Banksia)
- Erosion of dune systems impacting Avifaunce (coastal birds)
- Acidification leading to reduced protection from resilient and functional reefs and impact on reef-building corals and local fish species
- Fish species migrate south for cooler water, with ecological, social and economic impacts
- Coastal changes to beach width and profile and sediment availability for bar formation impacting on surf quality

Water impacts

- Greater evaporation leading to further loss of water supplies
- Intense fire events can damage surrounding water quality and biodiversity quality
- Damage to water quality and infrastructure
- Decreased potable supply and associated increased cost of potable water
- Increased pressure on water supply and security for irrigators
- Impact on groundwater resources, particularly shallow aquifiers
- Saline intrusion into surface and groundwater

Bass Coast Council set to be 100% renewable

From 2021 Council will be powered by 100% renewable energy.

Council has partnered with City of Darebin and 48 other Councils to procure renewable energy as part of a Local Government Power Purchase Agreement. The Agreement gives Councils significant purchasing power and lower pricing.

Importantly, the Agreement is flexible. It allows Council to reduce the amount of power it purchases as more on-site renewable energy is generated through new rooftop solar or if energy from local renewable energy projects is available.

5. Building on Strong Foundations

In Bass Coast – community groups, businesses, organisations, households and Council – we have already taken steps to reduce emissions and prepare to meet the challenges of a changing climate.

We have a strong foundation from which to scale up our collective action to achieve the shared vision.

Bass Coast Shire Council Achievements

Council has already installed over 150 kilowatts of solar panels on Council buildings with many more investments to come. The introduction of a Food Organics and Garden Organics bin in 2017 has resulted in an impressive 77% reduction in kerbside waste going to landfill. The successful capture and flaring of landfill greenhouse gases is abating 6,800 tonne of CO2-eq every year.

The Council Plan has committed to increasing rural vegetation cover by 1.5 % each year. This is largely delivered by the Bass Coast Biolinks program – providing connectivity in the landscape by linking remnant patches of indigenous vegetation using biolinks or wildlife corridors. The project aims to revegetate 180 hectares per year, improve the adaptive capacity of biodiversity, provide cultural heritage services, and engage with community networks and an additional 100 volunteers for community-led riparian re-vegetation days. In 2018, 397,500 plants were planted in identified biolinks across the Shire by all groups (Council, PINP, WPW, BC Landcare).

In 2017 the Victorian Government's Department of Environment Land, Water and Planning (DELWP) commissioned a review of Victorian local governments to explore how climate change was considered in their corporate documents ranked Bass Coast Shire Council as 'Advanced' in both Asset Management and Adaptation Planning – reporting that Climate change is well considered and includes responses to direct and indirect impacts. These key strengths are areas to be built upon during the ten years of implementing this Climate Change Action Plan.

In partnership with the South East Councils Climate Change Alliance (SECCCA), Bass Coast Shire is involved in an Asset Vulnerability Assessment project to further detail how our buildings, roads and drainage will be impacted by climate change; how this will impact Councils income and expenditure; and how Council can appropriately plan for identified changes. This information will be used to support decision making and create prioritised, costed works plans to improve asset resilience.

Erosion in Bass Coast

In mid-2018 the multi-agency Inverloch Coastal Erosion Working Group was formed in order to foster a united response to the shared issue of erosion across land management boundaries. The group consists of DELWP, Parks Victoria, Council, Regional Roads Victoria and the West Gippsland Catchment Management Authority. The group has worked together to coordinate works to protect two important public assets under immediate risk from erosion, these being the Inverloch Surf Life Saving Club building and a section of the Cape Paterson - Inverloch Road. The Working Group also planned and advocated for works to respond to future erosion and inundation at Inverloch.

In November 2019 the Victorian Government provided $700,000 to form a Regional and Strategic Partnership (RaSP), the first under the new Marine and Coast Act 2018. This project has since commenced and outcomes will include a Local Coastal Hazard Assessment. This significant investigation will enable a better understanding of the coastal processes and other factors contributing to erosion and inundation at Inverloch. The assessment will inform a Community Resilience Planning project. This will lead to strategic, long-term future planning decisions on how we respond to future erosion and inundation scenarios at Inverloch.

As a coastal land manager, Bass Coast Shire Council has completed and is undertaking a number of initiatives in response to current coastal erosion and future inundation. Public assets have been protected at locations including Cowes Main Beach, Cowes East and the Inverloch foreshore. A variety of techniques have been applied to suite the specifics of each location, including sand renourishment, structures such as wet-sand fencing and seawalls made from sand-filled geotextile containers and boulders. Council has supported the monitoring of shoreline and coastal change through surveying, including imagery from drones and offshore bathymetric survey. Much of the drone survey has been obtained by community volunteers.

Council has been successful in advocating State and Federal Governments for additional funding to respond to erosion. Council has nearly $2.5 million in coastal protection works being planned for locations including Cowes Main Beach, Cowes East, Jam Jerrup, Kilcunda and Inverloch.

The South Gippsland Agriculture Climate Resilience Project was a joint research project between South Gippsland and Bass Coast Shires with funding from the Victorian Government's Department of Environment Land, Water and Planning (DELWP). The project aimed to build knowledge, networking and enhance resilience in regard to climate change and adaptation for agricultural land owners in the region.

Programs such as 'Good Sort' encourage behaviour change in the community around waste management and recycling.

Working together to reduce waste

Landfill waste - particularly of organic content - emits greenhouse gases as it decomposes. In September 2017 Council introduced a leading new system which allowed food waste to be composted through Garden Organics (green) bin.

Thanks to this new system, and the diligence of our community to improve their waste practices, the Grantville Landfill faculty saw an impressive 21.7% reduction in waste between 2017 and 2018 financial years, and then a further 2.1% reduction in 2019.

Community Achievements

There is a strong, experienced network of community groups, organisations, and business leaders driving action across Bass Coast, many of whom have been involved in developing this plan and will be critical implementation agents for the Plan.

A huge number of climate action projects have been delivered by local community groups, organisations and businesses, some of which are showcased on this page.

See Appendix 1 for a list of local community groups taking action on climate change.

Totally Renewable Phillip Island (TRPI) have a charter to achieve carbon neutrality across Phillip Island by 2030.

Having run many community energy events, school incursions and workshops, TRPI have commenced work an feasibility study to determine how all of Phillip Island can be powered by 100% renewable energy.

Bass Coast Climate Action Network (BCCAN) is a non-profit community group taking action in Bass Coast to minimise the impacts of climate change and protect our environment for future generations.

Members engage with the local community, and regional, state, national and international groups to increase understanding of the need for urgent action to achieve a rapid and just transition toward a zero emissions future.

Energy Innovation Co-operative has established a revolving fund for community solar and energy efficiency upgrades. Their Old Energy-New Energy project at Wonthaggi State Coal Mine installed 91 kW of solar and 41 kWh battery storage will produce renewable energy equivalent to taking 37 petrol cars off the road annually. The Co-op has delivered workshops, audits and energy projects across Bass Coast and South Gippsland Shires.

Bass Coast Landcare Network (BCLN) is leading Growing Southern Gippsland project (GSG), in partnership with South Gippsland Landcare Network, Bass Coast Shire, RMIT University, Federation University Australia and DELWP.

GSG supports farmers to develop their own climate adaptation plans through a web portal designed to provide information, resources and share learnings. Online tools will be supported with a series of field days, case studies and practical workshops.

Phillip Island Nature Park (PINP) protects landscapes that house over 330 native plant species, penguins, seals, kolas and coastal birds. A certified ecotourism destination, profits generated by attractions are invested into conservation, research, environmental and educational initiatives within the Parks.

PINP have commenced the journey to become carbon, water and waste neutral. Their food and beverage outlets are single use plastic free and solar PV has been installed.

South Gippsland Conservation Society led the Inverloch Coastal Resilience Project, a 12-month investigation into the coastal erosion sequence at Inverloch and the value of the vegetated dune systems that are under threat. The project also explored the ecological, cultural and economic value of the coastline and puts forward recommendations for further research and protection of the coastal assets.

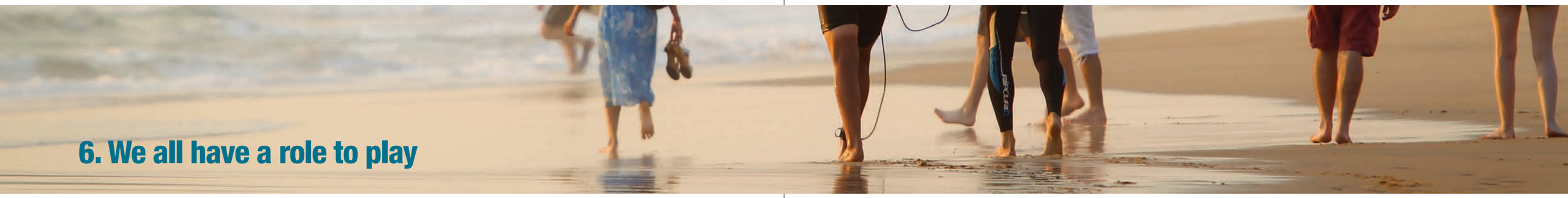
Wonthaggi Seed Bank & Nursery works to conserve, create & restore landscapes within the Bass Coast & South Gippsland Shires with indigenous seed collection & propagation.

The all-volunteer group provides seeds and propagated tube stock used for local restorative projects for farmers, Landcare and other local community groups.

Extinction Rebellion Southern Gippsland is the local extension of the global Extinction Rebellion movement located in Bass Coast and South Gippsland. The group aims to exercise non-violent resistance to protect against climate breakdown, biodiversity loss, and the risk of human extinction and ecological collapse, while providing an online forum for information sharing and discussion on climate action.

Phillip Island Landcare Group encourages sustainable agricultural land-use, business practices and lifestyles, and promotes the conservation and restoration of native biodiversity on Phillip Island and throughout Victoria. Within the 33 year history the group has planted approximately 85,000 plants, hosted over 100 field days / workshops, and protected or enhanced 150 hectares of remnant vegetation.

BASS COAST



6. We all have a role to play

Globally and locally, there is no doubt. We are in a climate emergency. Collectively, we have a lot of work to do to restore a safe climate that will maintain the special landscapes and lifestyles unique to Bass Coast.

Extensive research and data analysis undertaken to develop this Plan has demonstrated a viable pathway for Bass Coast to achieve zero net emissions by 2030 and respond to climate impacts already being felt and projected in the future.

This Plan outlines a pathway for a zero net Bass Coast and to build our adaptive capacity to respond to climate change impacts – but implementation requires us to come together and all play our part.

Council, individuals, families, businesses, farms, community groups and other organisations throughout the Shire will need to consider their impact, how they can reduce carbon emissions and adapt to the local impacts of climate change, how they can work with others, as well as where they can go for help or support.

The climate emergency response must not leave anyone behind. We all have a different contribution to make and a different capacity to act. For example, renters may not be in a position to install solar PV but purchasing Greenpower from their energy retailer may be a viable alternative for some households. Some residents and households will be additionally exposed to climate risks and will receive extra support to act, this includes low socio economic and vulnerable households.

Council and local community groups will be partnering with a broad range of technology and finance providers to implement scalable solutions that accelerates our transition, help us keep each other safe and contribute to the global emissions reduction challenge.

Action for everyone

Everyone is invited to play their part in implementing this Plan and in committing to take action for a safe climate. Over the next ten years, individually and collectively, our community will:

- Protect and enhance our natural environment
- Advocate for stronger climate change action by State and Federal governments
- Buy less. Recycle and reuse more to achieve zero waste
- Buy local. Support sustainable and regenerative agriculture
- Reduce the amount of energy we use. Switch to all-electric and zero carbon energy
- Build and retrofit homes, buildings and infrastructure to make them sustainable and climate resilient
- Switch to more sustainable transport like walking, cycling, ride sharing and electric vehicles
- Connect with, support and share information with our networks – friends, neighbours, colleagues and family

Funding and financing

Funding and financing climate action for community is critical, but a number of options are available to community members who are willing to take action, but which are constrained in being able to afford an up-front capital cost. Council is committed to promoting and investigating financing options which may be available for the community. This includes demystifying State and Federal rebates available to households, businesses and farmers and linking vulnerable households with dedicated funding for upgrades when available.

Additionally, investments such as solar which have predictable paybacks can be financed either through a traditional lender (bank) or directly through solar installation businesses. Whilst individuals need to be comfortable with specific loan arrangements, the savings available are often greater than the loan repayments if the finance period is appropriate.

For farmers - partnerships with Landcare for example could help support revegetation efforts.

Learning from Traditional Owners

With intimate knowledge of Country, Indigenous Australians are leading the way to actively adapting to the challenges of climate change, finding opportunities for new initiatives and alliances to strengthen cultural practices. The Traditional Owners here on the Bass Coast – the Bunurong and Boon Wurrung people of the Kulin nation – and other first nations people, have a lot to teach us. We look forward to the opportunity to work together to develop projects to deliver on country.

Action from other levels of government

Even working together, Council and the local community cannot directly control all of the sources of greenhouse gas emissions within our Shire, and there are barriers to action.

It is critical that State and Federal Governments implement a wide range of policy reforms and legislative changes to remove barriers, unlock and accelerate investment in the transition to zero net emissions.

Council is committed to advocating for these changes and will seek to work with the community and other stakeholders to strengthen their voice.

Bass Coast Zero Net Emissions by 2030

The Bass Coast Council and community have confirmed a shared target of zero net emissions by 2030. With concerted effort, this is an achievable goal.

Zero net emissions refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere. The emissions that are produced through human activities must be offset by processes that take those emissions out of the atmosphere, such as planting new forests and other carbon sequestration methods.

The Bass Coast 'business as usual' pathways (see over page) clearly demonstrates that we will not reach anywhere near zero net emissions without collective action.

The background technical work has however confirmed a suite of economically beneficial, technically feasible, socially desirable actions which if undertaken as a suite across a staged ten year period can deliver zero net emissions for the community.

Every emissions source will need to be addressed, with very different emissions reductions options for us to consider. These are limited by structural barriers such as home ownership, many are also limited by technology maturity and cost.

BASS COAST

"Old Energy New Energy" launch at State Coal Mine, Energy Innovation Co-operative Ltd

How will we get to zero net emissions in Bass Coast?

A Marginal Abatement Cost Curve (MACC) has been developed to demonstrate the most feasible way to zero net emissions by 2030 .

Actions to get to zero are shown in the MACC, with actions positioned left to right in order of 'least cost', so the cheapest actions to reduce emissions are to the left. The vertical position and height of each block represents its 'marginal cost of abatement'. This is how much it costs to reduce a tonne of carbon by taking that action. Actions with a negative cost appear below the horizontal (x-axis). These are actions that actually produce a net financial benefit to those that take them.

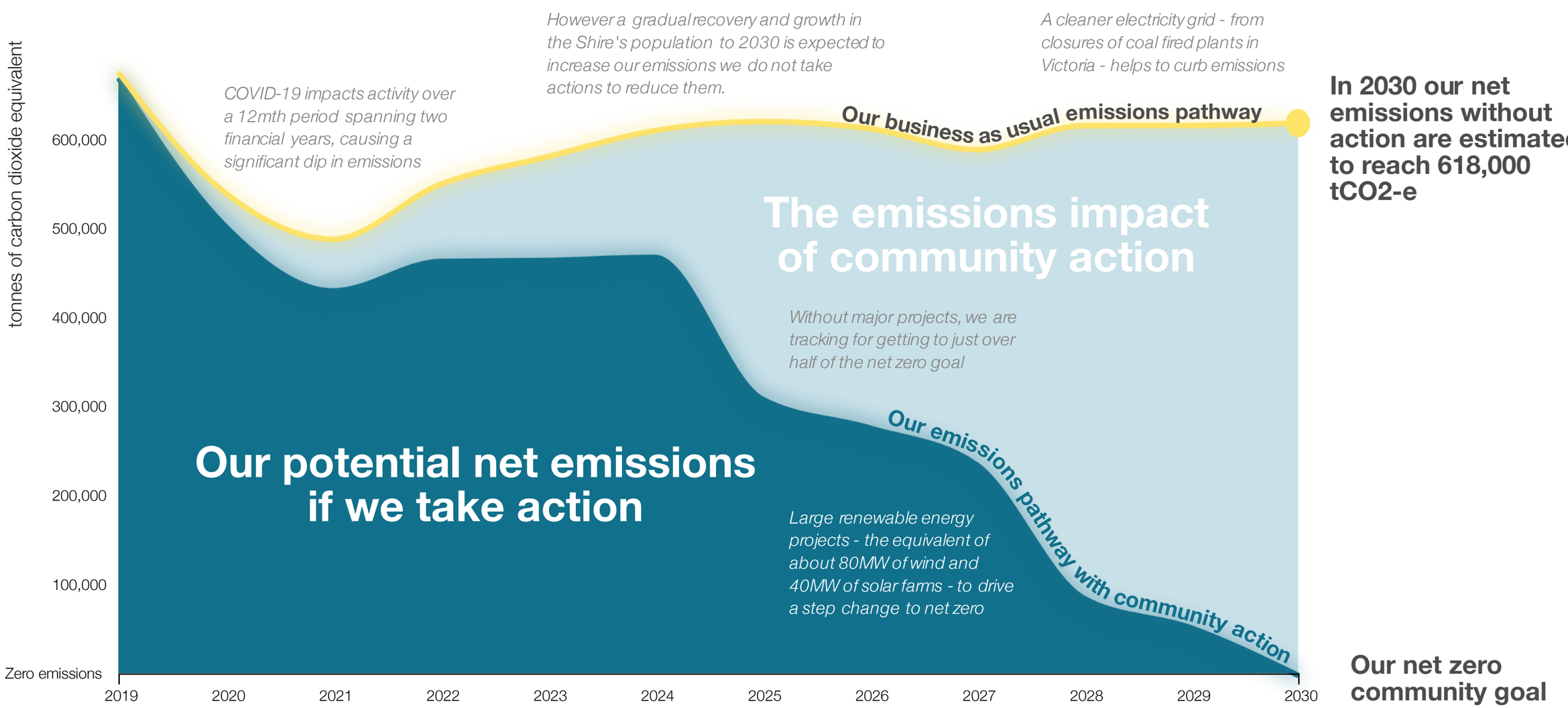
Each action is colour-coded by type and their total impact can be found by looking at their combined width. The combined (weighted) average cost can be used to estimate the average financial benefit or cost of abatement!

It is important to realise that cost curves are a simple comparison tool that comes with limitations. For a start, the MACC you see represents the annual impact at a point in time, in this case at 2030.

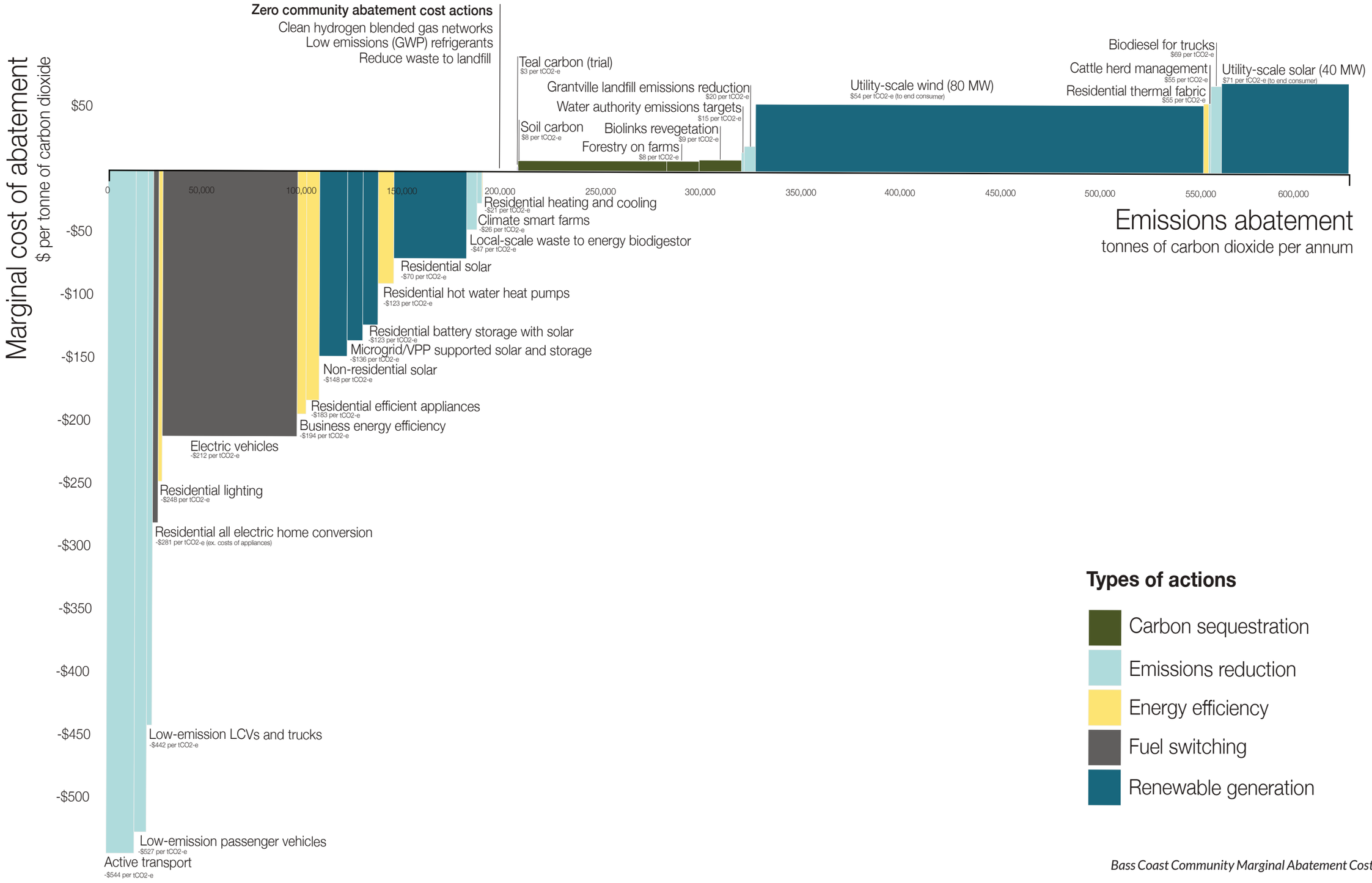
It might be tempting to simply prioritise actions according to 'least cost' but this is certainly not the most effective way forward. Instead the MACC has been used to consider how actions complement and work together to reach our zero net emissions target. The bottom line is that these actions taken together are delivered at an average benefit of approximately $30 per tonne.

The MACC analysis is only one of many mechanisms used to support the development of the actions that are presented in this Plan (for more information please see section 9 How this Plan was Developed).

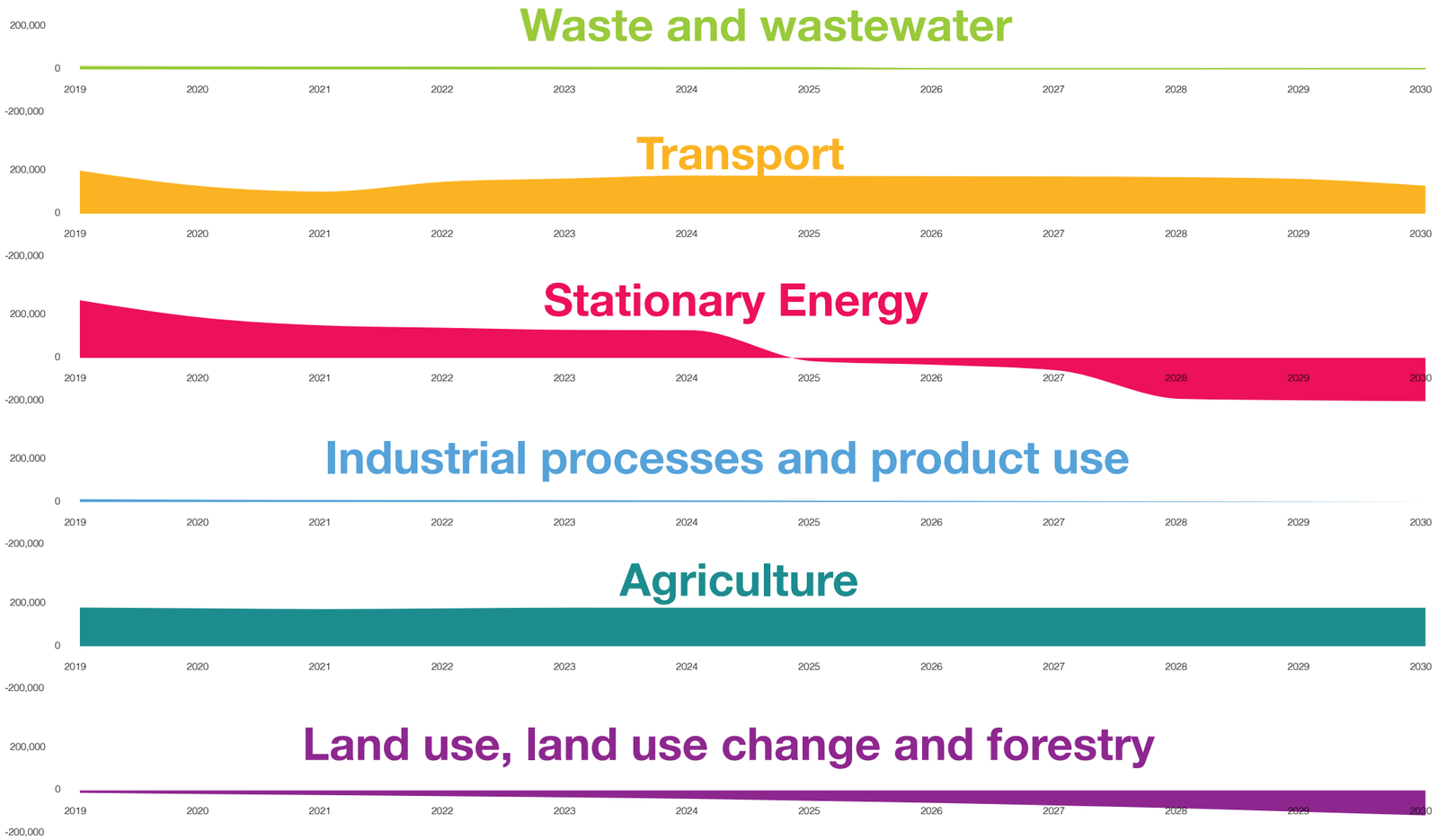
A highly detailed excel based model sits behind the emissions pathway and is available from Council on request.



Bass Coast Community 'business as usual' and zero carbon trajectories



Bass Coast Community Marginal Abatement Cost Curve



Changes in Emissions over time

The pathway to zero net emissions is not linear. The pathway also acknowledges that some emissions sources are more difficult to address than others.

Under the pathway proposed to 2030, transport and agriculture in particular remain significant emissions sources. These remaining emissions however are offset by significant investments in forestry and renewable energy allowing Bass Coast to become a net exporter of renewable energy. The actions outlined in Section 7 directly map back to this zero net emissions trajectory.

BASS COAST

This Solar system, installed on Ventor home, generates clean energy and stops money being spent on costly electricity bills

7. Community actions

This section of the plan talks to the role community plays in climate action. Tailored priority actions have been designed for all parts of our community:

- 7a. Households
- 7b. Businesses and organisations
- 7c. Farming and agriculture

The actions will help you and other members of our community identify and prioritise appropriate actions based on your unique situation and capacity.

Please read and consider the set of actions relevant to you. There are actions you can take immediately and actions you can plan for in the medium-term.

As well as taking actions yourself, it's important that we all talk with our friends, neighbours, family and colleagues about climate change and how they can get involved in our local movement to achieve zero net emissions by 2030.

Action Categories

Each action contributes to one or more categories, indicated in the action tables using the icons below:

Foundational:
Actions that don't have a direct emissions reduction or direct adaptation impact but lay the essential ground work to ensure action happens and scales up.

Emissions reduction:
Actions that reduce greenhouse gas emissions and contribute to the zero net emissions target.

Adaptation:
Actions that will support a resilient local environment, infrastructure and communities in the face of climate change impacts.

7. Community actions

The impact of our actions

Detailed modelling and technical assessment has been undertaken to determine the impact and co-benefits of each action outlined in this Plan. An impact summary is included for each action. The impacts for adaptation and emissions reduction are different and are therefore described differently.

Emission reduction impacts

Emissions reductions impacts are described quantitatively through reduced carbon emissions.

Each emissions reduction action is linked to its emissions source

- Transport
- Waste
- Stationary Energy
- Agriculture
- Industrial process and product use
- Land use, land use change and forestry

The impact of the action is described as a contribution to the economic sector (residential, farming, commercial, municipal or industrial), as well as the overall contribution to achieving zero net emissions.

Adaptation impacts

It is nearly impossible to measure the impact of adaptation actions quantitatively because adaptation occurs within a complex system. Instead, qualitative measures are used to consider the impact of actions in building adaptive capacity and addressing key impact areas. Adaptation actions are noted as mitigating the impact areas (see page 14 for more details on adaptation impact areas) the action is directly responding to:

- Physical environment
- Health and human services
- Local economy
- Natural environment
- Transport
- Water

Further, to build adaptive capacity, individuals, institutions and communities must simultaneously build five types of capital:

- **Human capital:** The skills, capacity and education of individuals that work or live in Bass Coast. For example, knowledge of best practice climate adaptation for coastal settlements.

Image: The 5-capitals framework is a useful tool to explore a communities adaptive capacity (Source: NCCARF)

- **Social capital:** Collaboration, governance, social relationships and community - the ability to work together to overcome shared challenges.
- **Natural capital:** The productivity of the natural environment and actions to sustain natural systems to maintain and enhance land, water and ecological resources.
- **Infrastructure capital:** Infrastructure, equipment and improvements in resources. For example, new buildings and infrastructure that can enable increased climate resilience.
- **Financial capital:** The level, variability and diversity of income sources, and access to other financial resources, both for Council and community (or in partnership).

For Foundational and Adaptation actions, the impact summary also describes these impacts to the 'five capitals',

Assumed uptake

The number of people who take action is also important in understanding impact. To consider and model the collective impact of the actions in this Plan, a target uptake has been described for each action.

7a. Community actions: households

Households taking action can help us reach 50% of our zero net target[1]

Households were responsible for 44% of emissions in Bass Coast in 2019. Our homes and people are exposed to the threats of climate change, particularly as a coastal municipality.

But, we also have the power to make a big and positive difference. Our community has strong social connections and we have well established community groups and organisations that are supporting our transition to zero net emissions and improving our resilience.

Households can:

- Buy less. Recycle and reuse more to achieve zero waste
- Reduce energy use. Switch to all-electric and zero carbon energy
- Improve homes to make them sustainable and climate resilient
- Switch to more sustainable transport like walking, cycling, ride sharing and electric vehicles
- Support the natural environment by planting gardens
- Buy local. Support sustainable and regenerative agriculture
- Connect with, support and share information with networks – friends, neighbours, colleagues and family
- Advocate for stronger climate change action by State and Federal governments

The actions listed over page have been designed to help households combat climate change while taking advantage of our community strengths. Every household is different. For example, renter households have a different ability to act than owner-occupied households. Please review the set of actions and decide which actions are feasible for your household right now and what actions you can plan for in the future.

1. Assumes that utility-scale renewable energy has been developed within Bass Coast and that households are buying this as GreenPower (in addition to the actions listed over page being implemented at the take up rate indicated)

Case study: Caitlin and Dave

Originally a Sandy Point local, Caitlin purchased a 1920s house in Wonthaggi a few years ago. Now Caitlin, and her partner Dave, are expecting a baby and have been renovating their home in anticipation.

"We're conscious that a new baby will impact our energy use - all that nappy washing, spending lots of time at home, and needing to heat the house more often." said Caitlin.

With this in mind, and conscious of how climate change will impact their child, Caitlin and Dave have:

- Installed a solar system, taking advantage of the Victorian Government Solar PV Rebate
- Switched from an old hot water system to a new, highly efficient heat pump. The heat pump is set to heat their water during the day so it uses the free power generated by their solar system
- Upgraded to a newer, more efficient car
- Become a Grow Lightly collection point. Now, they are getting to know their neighbours who come to pick up veggie bags each week, and they get their fresh, seasonal, locally grown fruit and veg delivered right to their door
- Used online buy, swap and sell platforms, like Facebook Marketplace, to get most of their baby gear second hand. This has saved them a huge amount of money and is contributing to building our circular economy

7a. Community actions: Households

Household actions		Description	Rationale	When / Enablers*	Impact summary**
1	**Join your local community group**	Form or join a community group taking action to reduce carbon or the impacts of climate change.	Addressing climate change can often feel like a daunting and sometimes insurmountable task. Working together with a group of local, like minded people to tackle the challenge can help to avoid adverse mental health impacts associated with acknowledging the climate emergency such as the growing rates of 'climate grief'. In addition, leading or supporting the work of a group will usually lead to better outcomes than taking action in isolation.	**When to do it:** Immediately **Enablers:** Council action 2 and 3	**Primary | secondary impact areas:** Health and human services | Natural environment Contributes to Human, Social and Natural Capital
2	**Expand urban and rural gardens**	Plant additional trees and food gardens in around residential spaces including yards, verges and community spaces.	"Many households in Bass Coast have significant yard space. As trees and other woody biomass grow, they draw down carbon dioxide from the atmosphere. Revegetation activities also deliver ecosystem benefits including restoration of habitats, wildlife corridors and improved amenity. Exposure to nature also has proven wellbeing benefits for people, and if planting food gardens, additional benefits will stem from eating healthy, fresh food."	**When to do it:** Immediately and ongoing **Enablers:** Council action 23	**Primary | secondary impact areas:** Natural environment | Health and human services Contributes to Natural Capital
3	**Improve the resilience of your household**	Use the Climate Resilience Toolkit (supplied by Council) to help you plan and implement household actions to: • Make your home more resilient to climate change impacts (for example extreme heat, more intense rainfall events) • Maximise the potential benefits from your yard and garden (for example, increasing permeability, drought proofing, climate resilient species selection) • Acknowledge and address climate related anxiety and mental health issues • Look after each other, within your household, your neighbourhood and other social networks • Reduce carbon emissions	Climate change is increasing the likelihood and severity of extreme weather events and the threat of climate change is taking a psychological toll on many people. To preserve communities and human life, it is essential that households have a well established response plan.	**When to do it:** Templates to support this action will be available via Council in 2021. **Enablers:** Council action 4	**Primary | secondary impact areas:** Health and human services | Physical Environment Contributes to Human and Social capital

* The Enablers field indicates where Council is delivering an action that could support your household to act. ** See 'The impact of our actions', p47 for an explanation of the Impact summary

7a. Community actions: Households

Household actions		Description	Rationale	When / Enablers*	Impact summary**
4	**Upgrade of energy efficient heating and cooling system**	Homes with highly inefficient electric space heaters should upgrade to a reverse cycle air conditioning (RCAC) unit.	Heating and cooling accounts for 40% of household energy use, making it the largest energy user in the average Australian home (yourhome.gov.au/energy). Upgrading to a high-efficiency reverse cycle air conditioner (RCAC) will reduce household energy consumption and costs during summer and winter. Utilising a RCAC for heating as well as cooling can also displace gas heaters and wood burning both of which disturb the natural environment and ecosystems. Reverse cycle air conditioners provide an addition benefit as a 'smart' device that can be connected to home energy systems and used as Distributed Energy Resource (DER) that can participate in smart grid marketplaces (sometimes known as Virtual Power Plants). These smart devices can be managed as a 'fleet' to contribute to a more flexible and secure electricity grid.	**When to do it:** 2021-2024 **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 80% of households 0.3% estimated contribution to community residential sector emissions 0.1% estimated contribution to community zero net target
5	**Upgrade residential lighting to LED**	Replace old incandescent or halogen lighting to LED.	Approximately 29% of all occupied and non-occupied households in Bass Coast still have not switched to LED . Older lighting fixtures (e.g. halogen, incandescent and fluorescent lights) are energy intensive and can be replaced with efficient LED lighting to reduce emissions, household energy consumption and costs.	**When to do it:** Immediately **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 29% of households 1.8% estimated contribution to community residential sector emissions 0.3% estimated contribution to community zero net target
6	**Insulate your home**	If your home is poorly insulated, upgrade to R4 ceiling insulation. During planned renovations to your building envelop, insulate walls and under floors.	An estimated 70% of all occupied homes have inadequate ceiling insulation. Installing insulation or 'thermal fabric' upgrades reduces heating and cooling loads and costs. It also helps homes stay warmer in summer and cooler in winter.	**When to do it:** 2021-2024 (ceiling insulation) During planned renovation (wall and under floor insulation) **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 50% of households 2.3% estimated contribution to community residential sector emissions 0.4% estimated contribution to community zero net target
7	**Upgrade hot water systems**	Upgrade hot water systems to replace existing electric storage hot water systems with more efficient systems at the end of their life. The most efficient (and 'clean') system is to pair a heat pump with solar PV.	"Heat pump hot water systems are electric and can easily replace existing hot water systems. Using technology similar to reverse cycle air conditioners, they are generally the most efficient technology for heating water. Water heating is the largest source of greenhouse gas emissions from an average Australian home. It accounts for about 23% of the household greenhouse gas emissions[1]. Heat pumps reduce the overall energy demand and can shift the load for heating water (including off-peak heating and using solar power), helping to manage and contribute to a more flexible electricity grid.	**When to do it:** Immediately **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 73% of households 7.0% estimated contribution to community residential sector emissions 1.3% estimated contribution to community zero net target

1. yourhome.gov.au/energy/hot-water-service

7a. Community actions: Households

Household actions		Description	Rationale	When / Enablers*	Impact summary**
8	**Upgrade to energy efficient appliances**	Transition large appliances to newer, energy efficient ones (e.g. fridges, washing machines, freezers, TV and electronics). The energy star rating system can help you choose a more efficient, appropriately sized appliance. You could also choose to install an in-home energy display linked to your smart meter to monitor usage and help you to change your energy use behaviour.	There are significant and ongoing improvements to the Minimum Energy Performance Standards (MEPS) and manufacture innovation which means newer appliances are more efficient and reduce household energy consumption and costs. Newer appliances are often "smart", meaning the can be connected to home energy systems via WIFI and can than be easily controlled, monitored and managed more effectively.	**When to do it:** End of life of current unit **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:**50% of households 5.8% estimated contribution to community residential sector emissions 1.1% estimated contribution to community zero net target
9	**Switch to all-electric at home**	Switch from using mains or bottled gas to electric for all goods and appliances (e.g. heating, hot water and cooking). Households are encouraged to purchase GreenPower or install solar PV to ensure their home is powered by renewable electricity (refer to Action 10).	Electric appliances are generally more energy efficient (and continue to improve) and can be powered by renewable or zero emission electricity.	**When to do it:** End of life of current unit or during renovations **Enablers:** Council action 2, 3, 5	**Emissions source:**Stationary energy **Assumed uptake:** 50% of households 2.4% estimated contribution to community residential sector emissions 0.4% estimated contribution to community zero net target
10	**Install solar PV**	Install rooftop solar PV to help power your home.	"Rooftop solar PV enables households to generate electricity to meet their own needs while the sun is out; and to sell excess generation to their retailer as renewable energy. Solar PV generates carbon neutral energy and reduce electricity bills. On site renewables reduce dependence on grid electricity and are part of a shift to decentralised energy system that is less reliant on large power plants. This type of system is more resilient to failures and shocks to electricity transmission, including those caused by storms, lightning, and bushfires. However, because solar PV usually also feeds energy into the grid, distribution networks service providers (DNSPs) need to carefully plan and manage their physical network infrastructure to ensure the local grid has the capacity to accommodate ""two-way"" connections to the grid."	**When to do it:** 2021-2024 **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 60% of households 32.5% estimated contribution to community residential sector emissions 5.9% estimated contribution to community zero net target

7a. Community actions: Households

Household actions		Description	Rationale	When / Enablers*	Impact summary**
11	**Install solar PV with battery storage**	Install a battery storage system at the same time as installing rooftop solar PV.	Solar PV paired with batteries enables households to generate, store and use their own electricity during the day or night. By installing batteries, households get more value from using the energy they generate onsite rather than receiving a low feed-in tariff when they sell excess energy back to their retailer. On site renewables reduce dependence on grid electricity and are part of a shift to decentralised energy system that is less reliant on large power plants. This type of system is more resilient to failures and shocks to electricity transmission, including those caused by storms, lightning, and bushfires. However, because solar PV usually also feeds energy into the grid, distribution networks service providers (DNSPs) need to carefully plan and manage their physical network infrastructure to ensure the local grid has the capacity to accommodate ""two-way"" connections to the grid.	**When to do it:** 2025-2030 Batteries are commercially available now for early adopter households with available funds **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 60% of households 6.8% estimated contribution to community residential sector emissions 1.2% estimated contribution to community zero net target
12	**Reduce waste to landfill**	Use circular economy thinking to reduce waste through buying less, smarter purchasing decisions, re-using, re-purposing and recycling. This includes using the green bins supplied by Council for food and other organic waste or home composting options.	Landfill waste emits greenhouses gases (carbon emissions) as the waste decomposes. This is a no or low-cost action that everyone can participate in. The benefits of reducing landfill extend beyond emission reduction. There are inherent risks of leakage of illegally dumped hazardous or toxic materials into the soils and groundwater. The increasing pressure on the physical capacity of existing landfill sites means that unless we significantly reduce our waste, new landfill sites will be required, consuming land that could otherwise serve a higher value.	**When to do it:** Immediately and ongoing **Enablers:** Council action 12	**Emissions source:** Waste **Assumed uptake:** All households achieve 10% reduction in waste to landfill 9.5% estimated contribution to waste sector emissions^ 0.2% estimated contribution to community zero net target^
13	**Switch to low or no carbon transport**	Replace solo car trips with car pooling or public transport. For shorter journeys, use active transport such as walking or cycling.	This is a no or low-cost emissions reduction action that many people can participate in. While potentially more challenging in regional areas such as Bass Coast, active transport has considerable added health benefits for those able to participate. With more widespread uptake, increased foot and cycling traffic can increase local social and economic activity. Ride sharing can also improve social cohesion from more interactions in the community.	**When to do it:** Immediately and ongoing **Enablers:** Council action 17, 28	**Emissions source:** Transport **Assumed uptake:**95% of population to increase short trips by active transport and 20% reduction through car share to work 6.2% estimated contribution to transport sector emissions 2.3% estimated contribution to community zero net target

^ Data presented includes households, business and organisations, and farming emissions

7a. Community actions: Households

Household actions		Description	Rationale	When / Enablers*	Impact summary**
14	**Purchase more efficient passenger vehicles**	At end of life of current vehicle, purchase a smaller capacity, more efficient passenger vehicle (e.g. replace an older 6 cylinder vehicle with a newer 4 cylinder vehicle). If personal finances allow, the purchase of an electric vehicle is strongly preferable (see action 15), even if this means you have to wait another year or two before you upgrade your vehicle. Note: Responsible disposal of end of life vehicles (i.e. as scrap and re-used parts and recycled materials) plays an important role in the overall environmental impact of a vehicle, and should also be considered in new vehicles (i.e. their durability, use of recycled materials and design for recyclability).	Larger vehicles cost more to run and create significant carbon emissions. Purchasing the smallest possible vehicle sufficient for household needs will reduce emissions and save money. New vehicles also have less environmental impacts as they generally adopt lower impact refrigerants and emit less air pollution as manufacturer standards improve.	**When to do it:** Immediately **Enablers:** Council action 17, 28	**Emissions source:** Transport **Assumed uptake:** 90% vehicle turnover 2.7% estimated contribution to transport emissions^ 1% estimated contribution to community zero net target^
15	**Purchase an electric vehicle (EV)**	Switch passenger to EVs. Households wishing to achieve zero emissions will also need to purchase GreenPower or install solar PV.	In Bass Coast, passenger vehicles account for 62% of all transport emissions. 2020 EV models have an average battery range of 480km[1], with ranges improving rapidly. EVs are more efficient than standard combustion engines. EVs convert over 77% of energy to power at the wheels whereas combustion engine vehicles only convert 12–30% of the energy stored in the fuel[2]. While charging EVs with renewable energy is preferred, even when powered by the standard grid electricity, EVs reduce carbon emissions, noise and tailpipe pollution, improving public health and reducing ecological damage. They also provide energy storage potential which could support future energy grid flexibility.	**When to do it:** End of life of current vehicle or sooner if capital cost is manageable **Enablers:** Council action 17, 28	**Emissions source:** Transport **Assumed uptake:** 80% vehicles 29.9% estimated contribution to transport emissions^ 10.9% estimated contribution to community zero net target^

1. electricvehiclecouncil.com.au/about-ev/myth-busting
2. fueleconomy.gov/feg/evtech.shtml

^ Data presented includes households, business and organisations, and farming emissions

2020 Lobster Festival Waste Warriors

Why switch from gas to all-electric?

All-electric homes smooth the way for a home to become zero emissions and will save households money over the long-term, especially given the rising prevalence of rooftop solar.

All-electric households stop paying ever-rising prices for gas and instead have the opportunity to power their home with renewable energy. Old appliances can be switched from gas to electric on failure or during a major renovation, so that no upfront capital is wasted in the changeover.

2020 EV models have an average battery range of 480km

Range anxiety has long been a concern for people considering purchasing an electric vehicle (EV). The new breed of EVs overcomes this barrier, offing an average range of 480KM.

The continued improvement of battery ranges, uncertainty in fuel pricing, the growth of public charge points and a downward curve in purchase price, the appeal of EVs continues to grow.

Can't install solar?

If you're unable to install solar panels on your roof, whether that be because of the condition (orientation, over shadowing) of your roof, or if you don't own your home (I.e. renting) you can still access renewable energy!

The GreenPower Program is a government managed scheme that enables Australian households and businesses to displace their electricity usage with certified renewable energy, which is added to the grid on their behalf. The majority of energy retailers offer certified GreenPower, which costs on average an additional 5-8c per KWh equating to a few extra dollars a week. The zero net emissions target relies on local consumption of utility scale wind and / or solar.

7b. Community actions: Businesses and organisation

Businesses and organisations taking action can help us reach 25% of our zero net target[1]

Commercial and industrial processes were responsible for 23% of emissions in Bass Coast in 2019. Our business are exposed to the physical and financial threats of climate change. Our community has strong, established and diverse industries, underpinned by our unique natural environment.

Businesses and organisations can:

- Practice sustainable purchasing, including buying and collaborating with other local businesses
- Share, recycle, reuse more to achieve zero waste
- Reduce energy use. Switch to all-electric and zero carbon energy
- Improve buildings and infrastructure to make them sustainable and climate resilient
- Switch to more sustainable transport
- Connect with, support and share information with networks
- Advocate for stronger climate change action by State and Federal governments

The actions listed over page have been designed to help ensure long-term prosperity for local businesses and organisations, despite some inevitable climate change impacts.

The best actions for your business or organisation will depend on the nature of your business. Please review the set of actions, confirm the actions that are feasible to do right now, and which you could plan for in the future.

1. Assumes that utility-scale renewable energy has been developed within Bass Coast and that households are buying this as GreenPower (in addition to the actions listed over page being implemented at the take up rate indicated)

Case study: A Maze'n Things

A Maze'N Things is an award-winning tourist attraction on Phillip Island. They are working to reduce carbon emissions as much as possible. So far, they have installed 264 solar panels on their roof and have now run out of space. The solar supplies about half of their electricity needs. When asked about their solar system the said they get more than just power out of their solar system – it makes them feel good and they get the satisfaction of paying smaller power bills.

They also have a big focus on reducing waste. They try to minimise take away cups and plastic bags. Ground staff go through the rubbish at the end of the day to separate waste into compostables, soft and hard plastics, paper and landfill waste. This approach is not only good for the environment, it also reduces expenses as they can dispose of recycling waste for free whereas waste to landfill attracts a charge.

"We recognise that the Natural environment is a major part of the appeal of living here and also the marketing of Phillip Island. It is essential that all Phillip Island businesses are seen to be supporting the environment because in the long-term, all our businesses and credibility rely on it." Said Geoff, owner of A Maze'N Things.

7b. Community actions: Business and organisations

Business and organisation actions		Description	Rationale	When / Enablers*	Impact summary**
1	**Improve the resilience of your business**	Use the Climate Resilience Toolkit (supplied by Council) to help you plan and implement business actions to: • Make your business premises more resilient to climate change impacts (e.g. extreme heat, more intense rainfall events) • Maximise the benefits from open space around your building (e.g. increasing permeability, drought proofing, climate resilient species selection) • Acknowledge and address climate related anxiety and mental health issues • Look after each other within your employee group and local business networks • Reduce carbon emissions	Climate change is increasing the likelihood and severity of extreme weather events and the threat of climate change is taking a psychological toll on many people. To build local resilience, preserve communities and human life, it is essential that businesses have a well established response plan.	**When to do it:** Templates to support this action will be available via Council in 2022. **Enablers:** Council action 2, 3, 4, 7, 27	**Primary | secondary impact areas:** Health and human services | Physical Environment **Target uptake:** 30% of businesses and organisations Contributes to Human and Social capital
2	**Collaborate and share resources with other local businesses**	Investigate opportunities to develop and strengthen collaboration with other local businesses, including: • Sharing resources • Sharing success stories • Supporting local supply chains	Maintaining our local economy and maximising the value of our collective resources will support long-term resilience for individual businesses and the community as whole. Bass Coast has a strong and connected community which creates a solid foundation for deeper collaboration.	Immediately and ongoing **Enablers:** Council action 27	**Primary | secondary impact areas:** Local Economy | Health and human services Contributes to Social, Infrastructure, Financial Capital
3	**Upgrade business energy efficiency**	Common electricity consumption areas to consider upgrading includes lighting, HVAC and building management systems, however specific business and industries are likely to have more energy intensive equipment like boilers, large refrigerators, pumps etc. Once you have done the basics, a professional energy assessment will help to identify the most viable opportunities through understanding an individual business' operations and the types and age of their equipment.	Improving energy efficiency reduce emissions, energy consumption and costs for businesses. Many energy efficiency actions have short payback periods of under two years. Energy efficiency reduces the demand for energy which can alleviate pressure on localised areas of the grid with limited capacity, in turn this helps avoid costly grid upgrades that impact the price we all pay for electricity. Reducing local pressure on the grid can increase grid stability, potentially creating additional opportunities for more solar PV to be connected to the grid locally.	**When to do it:** Immediately **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 80% of businesses and organisations 11.3% estimated contribution to community business emissions 0.7% estimated contribution to community zero net target

* The Enablers field indicates where Council is delivering an action that could support your household to act. ** See 'The impact of our actions', p47 for an explanation of the Impact summary

7b. Community actions: Business and organisations

Business and organisation actions		Description	Rationale	When / Enablers*	Impact summary**
4	**Install rooftop Solar PV**	Install on-site solar PV.	Solar PV enables businesses to generate electricity to meet their own needs while the sun is out; and to sell excess generation to their retailer as renewable energy. Solar PV generates carbon neutral energy and reduces electricity bills. On site renewables reduce dependence on grid electricity and are part of a shift to decentralised energy system that is less reliant on large power plants. This type of system is more resilient to failures and shocks to electricity transmission, including those caused by storms, lightning, and bushfires. However, because solar PV usually also feeds energy into the grid, distribution networks service providers (DNSPs) need to carefully plan and manage their physical network infrastructure to ensure the local grid has the capacity to accommodate "two-way" connections to the grid.	**When to do it:** 2021-2024 **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 25% of businesses and organisations 35.3% estimated contribution to community business emissions+ 2.3% estimated contribution to community zero net target+
5	**Reduce waste to landfill**	Use circular economy thinking to reduce waste through buying less, re-using, re-purposing and recycling. This includes using the green bins supplied by Council for food and other organic waste or home composting options.	Landfill waste emits greenhouses gases (carbon emissions) as the waste decomposes. This is a no or low-cost action that everyone can participate in. The benefits of reducing landfill extend beyond emission reduction. There are inherent risks of leakage of illegally dumped hazardous or toxic materials into the soils and groundwater. The increasing pressure on the physical capacity of existing landfill sites means that unless we significantly reduce our waste, new landfill sites will be required, consuming land that could otherwise serve a higher value.	**When to do it:** Immediately **Enablers:** Council action 12, 27	**Emissions source:** Waste **Assumed uptake:** All businesses and organisations achieve 10% reduction in waste to landfill 9.5% estimated contribution to community waste emission^ 0.2% estimated contribution to community zero net target^
6	**Purchase efficient passenger and light commercial vehicles**	At end of life of current vehicle, purchase a smaller capacity, more efficient passenger vehicle (e.g. replace an older 6 cylinder vehicle with a newer 4 cylinder vehicle). If business finances allow, the purchase of an electric vehicle is strongly preferable (see action 7), even if this means you have to wait another year or two before you upgrade your vehicle. Note: Responsible disposal of end of life vehicles (i.e. as scrap and re-used parts and recycled materials) plays an important role in the overall environmental impact of a vehicle, and should also be considered in new vehicles (i.e. their durability, use of recycled materials and design for recyclability).	Larger vehicles cost more to run and create significant carbon emissions. Purchasing the smallest possible vehicle sufficient for household needs will reduce emissions and save money. New vehicles also have less environmental impacts as they generally adopt lower impact refrigerants and emit less air pollution as manufacturer standards improve.	**When to do it:** At end of life of current vehicle or planned upgrade until 2025 (following 2025 vehicles purchased should be EVs)	**Emissions source:** Transport **Assumed uptake:** 80% old small to new small, 30% other to new small, 90% old large to new small, 70% new large to new small and 67% of light commercial vehicles, non-freight, rigid and articulated trucks. 3.9% estimated contribution to community transport emissions^ 1.4% estimated contribution to community zero net target^

+ Data presented includes business and organisations, and farming emissions
^ Data presented includes households, business and organisations, and farming emissions

7b. Community actions: Business and organisations

Business and organisation actions		Description	Rationale	When / Enablers*	Impact summary**
7	**Purchase an electric vehicle**	A transition of passenger and light commercial vehicles to electric vehicles at the end of their current life.	In Bass Coast, passenger vehicles account for 62% of all transport emissions, while Light Commercial Vehicles account for roughly 27%. 2020 EV models have an average battery range of 480km[1], with ranges improving rapidly. EVs are more efficient than standard combustion engines. EVs convert over 77% of energy to power at the wheels whereas combustion engine vehicles only convert 12–30% of the energy stored in the fuel[2]. While charging EVs with renewable energy is preferred, even when powered by the standard grid electricity, EVs reduce carbon emissions, noise and tailpipe pollution, improving public health and reducing ecological damage. They also provide energy storage potential which could support future energy grid flexibility.	**When to do it:** End of life of current vehicle or sooner if capital cost is manageable **Enablers:** Council action 17, 28	**Emissions source:** Transport **Assumed uptake:** 80% of new passenger and light commercial vehicles 29.9% estimated contribution to community transport emissions^ 10.9% estimated contribution to community zero net target^
8	**Switch to biodiesel for trucks**	Transition diesel trucks to B20 Biodiesel (i.e. Blended 80% diesel and 20% biodiesel).	Diesel trucks of all types account for 29% of all transport emissions in Bass Coast. Biodiesel is a near zero emission alternative to regular diesel that can be used in most existing diesel vehicles. Although biodiesel is made from organic matter, consideration should be given to how that organic matter is farmed (i.e. its land use implications and whether agricultural or native land is sacrificed). Examining this trace of origin can be a difficult task particularly as biodiesel is commoditised and distributed widely via petroleum retailers however there are also examples and trials of local biodiesel production using feedstocks such as food waste, algae, used cooking oils etc.that are more localised and utilise waste products.	**When to do it:** After 2025 (depending on local availability of biodiesel)	**Emissions source:** Transport **Assumed uptake:** 70% light commercial vehicles and non-freight trucks and 50% rigid and articulated trucks 2.4% estimated contribution to community transport emissions 0.9% estimated contribution to community zero net target

1. electricvehiclecouncil.com.au/about-ev/myth-busting
2. fueleconomy.gov/feg/evtech.shtml

^ Data presented includes households, business and organisations, and farming emissions

Carbon Neutral Businesses

Businesses that are looking to go that extra mile and become carbon neutral have an increasing suite of options to help them do so.

As mentioned earlier, GreenPower can be purchased from most Australian energy retailers at a small price premium of traditional power and ensures the electricity consumed is offset by renewable generation. Energy Efficiency Audits can also be conducted by a certified consultant to help identify shortfalls and improvements to reduce energy use. An energy auditor will usually:

- evaluate your businesses energy use
- identify where wastage is occurring
- recommend improvements
- estimate the costs and savings
- help you understand energy bills
- map out various energy efficiency projects.

Businesses seeking to formally certify their business as carbon neutral can reduce emissions as much as possible and then purchase offsets for the rest - through the Federal Climate Active certification program.

Environmental Upgrade Finance

Environmental Upgrade Finance (EUF) is an agreement where a building owner borrows money for environmental building upgrades from a financier and makes the repayments through the local council rates system, with the repayments referred to as Environmental Upgrade Charges (EUC).

The program is available for businesses (who own the building or have a long tenancy agreement in place) and homes within select Victorian councils. Loans start at $15,000, with ownerships and maintenance remaining with the building owner and contracts between 4-20 years in duration. New legislation has included homeowners, and costs can be shared with tenants (given adequate communication), with finance transferred at property sale – remaining within the council rate system until repaid. Eligible environmental performance upgrades under the program include: renewable energy generation, energy or water efficiency, waste reduction and climate change adaptation improvements.

As part of this Plan Council will investigate introducing EUF to support Bass Coast businesses make environmental building upgrades.

7c. Community actions: Farming and agriculture

Taking action on farms can help us reach 21% of our zero net target[1]

Farming was responsible for 33% of emissions in Bass Coast in 2019. Given their reliance on our natural environment, our farms are highly exposed to the physical and financial threats associated with climate change. Significant local work has already been undertaken to understand how farmers can best contribute to climate change action and future proof their farms.

Farming communities can:

- Protect and enhance our natural environment, through planting trees and modifying agricultural practices
- Adapt to a changing climate – improving resilience to drought, bushfire and environmental issues such as invasive species
- Collaborate and learn with other local farmers to support sustainable and regenerative agriculture
- Reduce energy use, switching to zero carbon energy
- Advocate for stronger climate change action by State and Federal governments

Please review the set of actions over page and decide which actions are feasible for your farm right now and what actions you can plan for in the future. Preparing your farm for the changing climate can increase productivity, improve the resilience of your business and contribute to a stronger local economy for the benefit of our whole community.

1. Assumes that utility-scale renewable energy has been developed within Bass Coast and that households are buying this as GreenPower (in addition to the actions listed over page being implemented at the take up rate indicated)

Case study: Bimbadeen

A 340 acre farm on Phillip Island, Bimbadeen has been owned and operated by the Davie family since 1955. The farm was first used for dairying and pig production before beef cattle were introduced in 1968. Bimbadeen has become renowned for its award winning premium quality beef and innovative environmental achievements:

- Carbon neutral since 2014
- All water pumps are powered by wind or solar
- The house has solar PV and hot water is delivered by a highly efficient heat pump
- 30,000 trees have been planted in partnership with Landcare and the local community. Tree canopy covers 17% of Bimbadeen
- Ongoing practice of carbon farming, the impact of which is regularly tested with assistance from Landcare and Westernport Water.
- Recycled water is used for irrigation on carbon crops
- Emissions audited annually

7c. Community actions: Farming and agriculture

Farming and agriculture actions		Description	Rationale	When / Enablers*	Impact summary**
1	**Farm Climate Adaptation Plan**	Develop your Farm Climate Adaptation Plan via the Growing Southern Gippsland web portal, which will help you: • Identify and fill key knowledge gaps • Access regenerative agriculture education and training • Integrate trees and other vegetation • Adapt agricultural practices to lower rainfall and higher temperatures, and integrate regenerative practices • Control the greater proliferation of invasive species • Manage erosion exacerbated by higher intensity rainfall events • Develop a water budget • Design storage and irrigation to maximise collection given the increase of short but intense rainfall events • Update bushfire management practices to cater for extended and more intense bushfire seasons • Connect to Landcare and other farmers to learn and share practical knowledge	Undertaking adaptation actions will support the ongoing viability of individual farms. Generally, it is more economically viable to prepare in advance than it is to respond after the incident or when the issue is embedded. By working together across the Bass Coast farming community, the essential local food bowls and agricultural economy will be better protected from the inevitable shocks and stressors of climate change. This will support local food security.	**When to do it:** Immediately **Enablers:** growingsoutherngippsland.org.au and Council action 1	**Primary | secondary impact areas:** Natural environment | Water **Target uptake:** 50% of farms targeted Contributes to Human, Social, Financial, and Natural Capital
2	**Install solar PV on your farm**	Install on-site solar PV, either on rooftops or ground mounted.	Solar PV enables farms to generate electricity to meet their own needs while the sun is out; and to sell excess generation to their retailer as renewable energy. Solar PV generates carbon neutral energy and reduce electricity bills. Installing solar on agricultural land (where capacity is not limited by roof space) also allows farmers the opportunity to use their land for new and diversified revenue generating activities. On site renewables reduce dependence on grid electricity and are part of a shift to decentralised energy system that is less reliant on large power plants. This type of system is more resilient to failures and shocks to electricity transmission, including those caused by storms, lightning, and bushfires. However, because solar PV usually also feeds energy into the grid, distribution networks service providers (DNSPs) need to carefully plan and manage their physical network infrastructure to ensure the local grid has the capacity to accommodate “two-way” connections to the grid.	**When to do it:** 2021-2030 **Enablers:** Council action 2, 3, 5	**Emissions source:** Stationary energy **Assumed uptake:** 25% of farms 35.3% estimated contribution to community business emissions+ 2.3% estimated contribution to community zero net target+

* The Enablers field indicates where Council is delivering an action that could support your household to act. ** See ‘The impact of our actions’, p47 for an explanation of the Impact summary ^ Data presented includes business and organisations, and farming emissions

7c. Community actions: Farming and agriculture

Farming and agriculture actions		Description	Rationale	When / Enablers*	Impact summary**
3	**Climate Smart Farms**	Livestock and crop commodity farms implement a holistic suite of emissions reduction and sequestration actions including: improving energy efficiency, installing solar PV (see action 2), reducing animal (enteric) emissions via feed stock and capturing carbon in trees and soils through regenerative agriculture practices and technologies (see action 4). An energy or greenhouse gas assessment can help to develop tailored actions for your farm.	In additional to reducing carbon emissions, improving farm productivity and animal practices, carbon smart farms strengthen the economic sustainability of the farming sector. This will also include local food security. The transition to climate smart farms drives innovation that can encourage related industries to become more deeply involved in the local economy (e.g. AgTech). There is strong local knowledge and examples of climate smart farms that have achieved financial success and ongoing viability.	**When to do it:** Immediately with progress to continue to 2030 **Enablers:** Council action 1, 2, 3	**Emissions source:** Agriculture **Assumed uptake:** 30% of farms targeted 1.4% estimated contribution to community farming sector emissions 0.4% estimated contribution to community zero net target
4	**Soil carbon sequestration**[1]	Use regenerative farming practices to store (sequester) carbon in the soil on cropping, grazing and pasture land through: • Shifts within an existing cropping or mixed enterprise system, such as: – Rotation to eliminate fallow with a cover crop[2] to keep soil covered – Rotation to increase the proportion of pasture to crops and pasture[2] (integrate livestock) – Rotation pasture cropping and organic matter and other off-site additions[2] (living roots year round) – Minimise soil disturbance[3] • Shifts within an existing pastoral system: Increasing productivity through irrigation or fertilisation, rotational grazing and shifts to perennial species[2], maximising crop diversity • Shift to different system: – Conventional to organic[2] or regenerative[3] farming system – Cropping to pasture system[2] – Retirement of land and restoration of degraded land[2] • Feed plot to protect soils during prolonged wet periods or droughts[3]	Well managed soil can draw down carbon dioxide from the atmosphere, which offsets local carbon emissions. Benefits of soil organic matter (SOM) (and soil organic carbon (SOC)) include improvement of soil quality through increased retention of water and nutrients, less synthetic additives, resulting in greater productivity of plants in natural environments and agricultural settings, and savings on inputs. These ecological and productivity benefits contribute to more adaptive and resilient local environmental and economic systems. There is strong local knowledge and examples of soil carbon sequestration.	**When to do it:** Immediately with progress to continue to 2030 **Enablers:** Bass Coast Landcare and Council action 1, 2, 3	**Emissions source:** Agriculture **Assumed uptake:** 20.8% uptake by land (Ha) 41.2% estimated contribution to community farming sector emissions 12.0% estimated contribution to community zero net target

1. Larger scale farmers may also generate a financial co-benefit through the Federal Government Emissions Reduction Fund (ERF), which provides incentives in the form of "Australian carbon credit units" (ACCUs). Gold Standard or voluntary carbon offsets may also be available to some farmers.
2. Sanderman et al, 2010 for CSIRO cf cited from Kondinen, 2015
3. Bass Coast Landcare

7c. Community actions: Farming and agriculture

Farming and agriculture actions		Description	Rationale	When / Enablers*	Impact summary**
5	**Agriculture: Herd Management For Beef Cattle**[1]	Improve the herd management of cattle to reduce the emissions intensity of production. Types of practices that could be adopted include: • Establishing higher quality, varied pasture • Providing a feed supplement all year round • Improving weaning percentage by culling unproductive cows • Installing fences to control herd movements and improve joining practices • Expanding watering points to allow cattle to graze more widely and make better use of available pasture • Increased biosecurity measures as pathogens move with changes to climate[2] • Shelter from extreme weather events; cold, hot, wet[2] • Appropriate stocking rates to maintain health of stock and soil[2]	Beef cattle emit methane when digesting feed and nitrous oxide from their dung and urine (both methane and nitrous oxide are counted in the Bass Coast emissions profile as equivalent carbon emissions). Better herd management practices for beef cattle can reduce the emissions intensity of beef production.	**When to do it:** Immediately with progress to continue to 2030 **Enablers:** Bass Coast Landcare and Council action 1, 2, 3	**Emissions source:** Agriculture **Assumed uptake:** 50% of beef cattle 0.6% estimated contribution to community farming sector emissions 0.2% estimated contribution to community zero net target
6	**Forestry and revegetation of farms**	Integrate trees and other vegetation on farm land for: • Afforestation where trees are planted in areas where there was historically no tree coverage[3] • Reforestation where trees are planted in areas that were once native forests[3] • Silvopasture to increase SOC, provide shade and shelter, increase nutrient cycling and productivity	Permanent forestry projects provide new carbon sinks. As trees and other woody biomass grow, they draw down carbon dioxide from the atmosphere. Forestry and revegetation activities also deliver ecosystem benefits including restoration of habitats and wildlife corridors, improved amenity and quality, shade and shelter animal stock from adverse weather conditions.	**When to do it:** Immediately with progress to continue to 2030 **Enablers:** Council action 30	**Emissions source:** Land use, land use change and forestry **Assumed uptake:** 3.6% of grazing pasture 83.5% estimated contribution to community Land Sector emissions 2.6% estimated contribution to community zero net target

1. Larger scale farms may also generate a financial co-benefit through the Federal Government Emissions Reduction Fund (ERF), which provides incentives in the form of "Australian carbon credit units" (ACCUs). Under the "Beef Cattle Herd Management" method, crediting is based on emissions reductions achieved through efficiency gains, where emissions are reduced while beef production is maintained or increased.
2. Not relevant for ERF
3. Larger scale farmers may also generate a financial co-benefit through the Federal Government Emissions Reduction Fund (ERF), which provides incentives in the form of "Australian carbon credit units" (ACCUs). Note that to receive credits there is a permanence obligation of either 25 or 100 years. Gold Standard or voluntary carbon offsets may also be available to some farmers.

What is regenerative agriculture?

While conventional agricultural practices that have evolved over the past 100-years have been successful in terms of increasing production yields, they have relied upon agrochemicals such as fertilizers, pesticides and herbicides. The extensive use of such interventions has decreased the quality of soils, leading to decarbonisation (fertility), erosion (leading to waterway contamination), and in extreme cases; desertification.

Regenerative Agriculture aims to re-empower natural forces to stabilise biodiversity and nutrient cycling, integrating them to create a more resilient form of food production at larger scales. There are 6 key principles within RA, which include:

- **Minimise soil disturbance:** Reduce tiling and disturbance to create a stable soil ecosystem and reduce soil carbon release
- **Maximise crop diversity:** Regularly rotating and co-locating crop varieties allows broader carbon penetration into the soil and maintains a natural balance of nutrients (i.e. nitrogen). This also includes habitat modification, where plant species may be planted for their defensive value, such as enticing a particular insect (or other organisms) to defend the neighbouring crop species.
- **Keep soil covered:** Bare soil loses its biological function and is more susceptible to water infiltration (and subsequent erosion) and soil carbon release. Strategies vary depending on crop location and slope, however ensuring soil is covered by biomass (which can be either slashed or rolled) to provide natural mulch and help protect and regenerate soil conditions.
- **Living roots year-round:** Living roots transfer 20-70% of their photosynthesis into the soil. This keeps the carbon cycle constantly stimulated and releases nutrients for the next crop.
- **Integrative livestock:** As a rule of thumb with integrating livestock; a third of the pasture is consumed by the animal, a third is trampled and a third remains. This stimulates growth through soil compaction, composting biomass (that is trampled and left behind) and manure which provides stable environments for micro-organisms which all contribute to soil health. A variety of animals can be incorporated at once to provide multiple benefits.
- **Integration of trees:** This provides wind and sun protection, while facilitating evapotranspiration that maintains a more humid environment the under sown crop varieties. Trees also provide an additional source of biomass (dropping leaves and branches), with root structures assisting with stabilisation on sloped sites.

BASS COAST

Teal and Blue Carbon Sequestration is an emerging strategy in reducing carbon in our atmosphere (Image: Geoff Russell)

7d. Community actions: Other contributions

Other Contributions

To reach zero net emissions 2030, a number of significant actions are required that are largely outside of the control of Council or the local community. This section highlights these actions, some of which are already in motion. Many of these actions are scaleable, in particular wind and solar which could provide significantly greater impact than what is modelled, but are reliant on external investment, favourable conditions relative to other regions and community support for utility scale renewable energy.

Utility-scale Wind: Wind power is one of the fastest growing and most cost-effective renewable energy sources. It has more than tripled in installed global capacity in the last decade, growing at an average rate of 12.6% p.a[1].

While wind farms require careful sighting (for wind conditions), they have potential to be installed on agricultural land to create diversified revenue streams for landholders. Wind installation and maintenance work can also help to stimulate a local renewable energy economy.

This action provides an aggregate impact of wind farm projects that might be installed across the Shire of (80 MW in total). The modelled electricity output assumes 2.5 GWh are produced each year, per MW of installed wind capacity. The estimated contribution of supply chain decarbonisation to the Bass Coast community emissions targets is 36.2%.

Utility scale solar PV farms: These 'farms' uses the same technology as rooftop solar panels, and can include both commercially and community owed projects . These larger projects are suited to regional locations with low population density but with close proximity to appropriate grid connections.

Solar farms can deployed at various sizes on most cleared lands, including agricultural land which can create diversified revenue streams for landholders.

This action provides an aggregate impact of various solar farm projects that might be installed across the Shire of (40 MW in total). The modelled electricity output assumes 1.42 GWh are produced each year, per MW of installed solar capacity. The estimated contribution of supply chain decarbonisation to the Bass Coast community emissions targets is 10.2%.

Further information about the potential for large scale renewble energy can be found in the Southern Gippsland Renewable Energy Roadmap https://www.energy.vic.gov.au/__data/assets/pdf_file/0030/464727/Roadmap-GippslandFinal.pdf

Water authorities carbon emissions targets: Westernport Water and South Gippsland Water have committed to zero net greenhouse gas emissions target by 2050. Actions being undertaken from water authorities include both their treatment processes and technologies, as well offsetting from projects like solar PV farms. Both Westernport Water and South Gippsland water are partners in Zero Emissions Water Project[2].

The estimated contribution of these targets to the Bass Coast community emissions targets are:

- 17.7% estimated contribution to community waste water emissions
- 0.2% estimated contribution to community zero net target

Council landfill: There is potential to explore whether the Grantville waste facility (operated by Bass Coast Shire) has any further plans or opportunities to set a reduced emissions target (by 2030). The estimated contribution of the landfill target to the Bass Coast community emissions targets are:

- 0.9% estimated contribution to community zero net target

1. 2010-2019, Global Wind Energy Council)
2. zew.org.au

Teal and blue carbon sequestration (Restored wetlands trial)[1]: Blue carbon projects focus on the conservation and restoration of coastal and marine ecosystems. Teal carbon projects are in this same family of projects that target inland, freshwater wetlands. Both of these ecosystems have potential for regulating greenhouse gas emissions, as they can sequester large quantities of 'blue' carbon as organic matter in the roots mangroves, tidal marshes and sea grasses, and the sediment below. Blue carbon practices are mostly in the trial and research phase but are a promising source of climate mitigation, particularly for Bass Coast.

Methods and practices for blue/teal carbon projects are less mature and recognised than both soil carbon and forestry. The current maturity of blue and teal carbon projects means that they are difficult to include in a plan to 2030. Accordingly, the modelling in this Plan is representative of a only a small trial and serves as a placeholder of increasing scale and refining assumptions in the future (represented as -5.9% contribution to land sector sink).

Council will continue to investigate opportunities for boosting biodiversity and capturing carbon in terrestrial, marine and coastal habitats through restoration and protection projects. These nature-based solutions have enormous potential to draw carbon out of the atmosphere, while also delivering real benefits for farm productivity, landscape amenity, waterway health and native wildlife throughout Bass Coast. As monitoring and verification methods are refined and carbon markets emerge, Council will actively partner with other local governments and stakeholders to leverage carbon offsets to support and accelerate habitat restoration projects locally.

Community Energy: When a community in a geographic region comes together to develop, deliver and benefit from sustainable energy project it is refereed to as 'community energy'. Projects can involve renewable energy installations and storage, community owned energy retailers, and energy reduction projects, such as energy efficiency and demand management.

Locally Totally Renewable Phillip Island and the Energy Innovation Co-Operative have beeninvestigating and developing community energy projects of different scales for many years. These projects are an important part of the solution for our community to become zero carbon by 2030.

Biodigester: A biodigester generates energy from organic materials using a biological process where bacteria breaks down material in an oxygen free (anaerobic) container. The process produces biogas (methane and carbon dioxide) that can be used for heat (e.g. combusted on site) or converted to electricity to power the facility or feed back into the grid. An anaerobic biodigester requires organic feedstock, which here is assumed to come from local waste to landfill.

Waste to energy also helps to reduce our impact on the environment by reducing the amount of waste being sent to landfill. The anaerobic process also produces useful fertiliser by-products such as digested solids that can be applied to cropland, and effluent water that can be used in agricultural land. Like all bioenergy projects however, careful consideration is required to size the plant according to an available, reliable and sustainable feedstock volume.

This action considers small-scale bioenergy project with a 216kW system which delivers 838 MWh of electricity per annum and a 854.8MWh heating load. The estimated contribution of the biodigester to the Bass

Federal Shadow Minister for Climate Change and Energy Mark Butler visiting the Energy Innovation Co-op's solar and battery array at the State Coal Mine (IMAGE: Energy innovation co-op)

Coast community emissions targets are:

- 0.3% estimated contribution to community stationary energy emissions
- 0.3% estimated contribution to community zero net target

Supply chain decarbonisation: Actions taken in the supply chain will impact community emissions as products and supply are changed 'passively' for end users. The estimated contribution of supply chain decarbonisation to the Bass Coast community emissions targets are:

- Low emissions (GWP) refrigerants: 2.5% estimated contribution to community zero net target
- Clean hydrogen blend gas networks: 0.1% estimated contribution to community zero net target

Microgrid / Virtual Power Plant: Community microgrids and Virtual Power Plants (VPP) help participants use distributed energy resources (DER) like solar and batteries more effectively. This ability to share resources improves the return on investment and penetration of renewables. In theory, VPPs (and microgrids) that are connected to the wider electricity network generate additional revenue by participating in energy markets and providing grid support. The business case for community microgrids and VPPs relies on participation, and is enhanced in areas where the grid is 'constrained' and able to benefit from grid support services.

The estimated contribution of these targets to the Bass Coast community emissions targets are:

- 0.8% estimated contribution to stationary energy emissions
- 1.1% estimated contribution to community zero net target

1. thebluecarboninitiative.org and bluecarbonlab.org

8. Bass Coast Shire Council actions

Council has set an ambitious challenge to drive a community-wide climate emergency response within Bass Coast. This section sets out actions Council will deliver to support this ambition over the next 10 years.

A number of priority actions have already commenced or will be rapidly implemented to reflect the urgency of climate emergency action:

- Embed the Climate Emergency into all staff roles and responsibilities, and performance planning (action 32)
- Integrate climate risk into financial decision making (action 34)
- Integrate climate emergency into Council reporting processes (action 37)
- Strengthen planning policy and practice (action 24)
- Deliver the Biolinks project (Commenced. See action 30)
- Asset vulnerability assessment project (Commenced. See action 39)
- Power Council with 100% renewable energy (Commenced. See action 41)
- Promote financial solutions and incentives to support our community (action 5)

Action Categories

Each action contributes to one or more categories, indicated in the action tables using the icons below:

Foundational:
Actions that don't have a direct emissions reduction or direct adaptation impact but lay the essential ground work to ensure action happens and scales up.

Emissions reduction:
Actions that reduce greenhouse gas emissions and contribute to the zero net emissions target.

Adaptation:
Actions that will support a resilient local environment, infrastructure and communities in the face of climate change impacts.

Action Plan Implementation: A Partnership Approach

The community insights gathered to support the development of this Plan indicated a strong desire from individuals to work with local community groups to take climate change action. There was also a desire from individuals to collaborate with Council. Given this finding, Council is committed to delivering actions through the following mechanisms:

- Direct delivery by Council. Actions funded and delivered by Council
- Government partnerships: Council to deliver actions in partnership with other governments and associated entities (e.g. South East Councils Climate Change Alliance)
- Community partnerships: Council and community groups/organisations work in partnership to deliver actions
- Community funding: Council provides funding to community groups/organisations to deliver actions on their behalf

The exact delivery mechanism for each action will be determined as each action in planned, and in response to opportunities and funding that arise from State and National governments.

Funding Action

To fund climate action there are a range of approaches available to Council. This plan has been developed with an early focus on setting the foundations for improved decision making to respond to climate risk and act on emissions reduction opportunities. Many foundation actions require small financial investments, but are primarily driven using existing resources.

A further suite of actions contained within this plan have an initial capital cost which is quickly recouped through operational savings. The corporate emissions reduction model developed demonstrates these operational savings. For adaptation actions, most actions assist in avoiding a significantly higher future cost. Whilst the exact avoided costs are less tangible, studies estimate for example that adaptation action on public infrastructure has a benefit cost ratio of above 3:1 and delivers significant co-benefits.

For capital expenditure, borrowing represents a viable option where overall debt levels can be managed, especially in the climate of very low interest rates (less than 2%) and where future costs (e.g. maintenance upgrades, high energy bill) can be lowered. The ability to respond to State and Federal funding (grants etc) is also critical and is supported by a solid track record of investment in climate action.

8a. Bass Coast Shire Council actions: Supporting Community

Council Supporting Community

Foundational Actions: Council Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
1	**Expand the Future Farms, Homes and Festivals**	Expand the Future Farms, Homes and Festivals project in partnership with Landcare and other stakeholders. The Festival offers a series of workshops, talks and tours centred around the question: What would a comfortable home or profitable farm look like in 2040 and what will we have to do to get there?	As an existing project, the momentum behind the Future Farms, Homes and Festivals project can be leveraged and linked with the Toolkit and education action. The Festival provides opportunities for the community to experience climate change solutions first hand.	**When:** 2021-2030 **Budget:** $20,000 (2021), $45,000 (2022), budget beyond 2022 to be determined in line with evaluation **Lead | support:** Sustainable Environment | Economic Development, Social and Community Planning **External Lead:** Landcare	**Primary | secondary impact areas:** Local economy | Natural environment, Health and human services, Water Contributes to Human, Social, Infrastructure, Financial, and Natural Capital **Enables:** Farming actions 1, 4, 5
2	**Develop a climate change community portal**	Partner with community to develop a community portal to house locally relevant climate change information, including: • Overview of Council programs and information which can support community action (e.g Climate Resilient Toolkit) • Local climate indicators, monitoring and evaluation to track of the progress of this Plan (as established in the Monitoring Progress section of this Plan) • Links to community groups and projects that support climate action • 'Real life' case studies and tools to assist implementation • Links to free external advice resources (e.g. Sustainability Victoria, YourHome Manual)	Relevant, trusted, locally specific climate related information is an important enabler of community action. Community engagement has shown a strong desire from the community to work with local groups and some desire to work with Council. This action brings together many of these critical elements to support local action, including making connections to groups already taking action and pathways to advice for household, business and agriculture actions that can be taken.	**When:** 2021. Ongoing delivery **Budget:** $50,000 (development), $5,000 per year (maintenance) **Lead | support:** Sustainable Environment | Communications, Advocacy **External collaborators:** Community groups	**Impact areas:** Physical environment, Natural environment, Health and human services, Water, Transport Contributes to Human, Social Capital **Enables:** Household actions 1, 4, 5, 6, 7, 8, 9, 10, 11. Business and organisation actions 2, 4. Farming actions 2, 3, 4, 5

* The Enablers field indicates where Council is delivering an action that could support your household to act. See 'The impact of our actions', p47 for an explanation of the Impact summary

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
3	**Support the development of a local Climate Resilience Centre or hubs**	Investigate partnerships and support mechanisms to encourage the development of a physical local centre or hubs for climate resilience, focusing on: • Demonstration of key technologies • Education relating to climate resilience homes • Information and connection to local projects and community groups • Local food production and sourcing options • Links with primary, secondary and tertiary education and research opportunities • First peoples land management practices	Community engagement uncovered a strong desire for a physical centre/s for learning. It would be beneficial to 'ground' some of the community actions through face-to-face education and demonstration. This action explores partnership opportunities for the centre or centres, and would complement online information sources. Assessing physical local options and community needs through a detailed options paper would support initial stages. Note: Rather than owning the centre, Council could support others in the community to deliver	**When:** 2021-2026 **Budget:** Existing resources (additional budget to be considered when host/s is identified) **Lead | support:** Sustainable Environment | Economic Development **External collaborators:** Community groups and organisations, schools	**Primary | secondary impact areas:** Local economy | Natural environment, Health and human services, Water, Transport, Physical environment **Enables:** Household actions 1, 4, 5, 6, 7, 8, 9, 10, 11. Business and organisation actions 1, 3, 4. Farming actions 2, 3, 4, 5
4	**Deliver a climate resilience toolkit and campaign**	Develop a climate resilient homes, businesses and community groups toolkit (three separate modules) and deliver an campaign to support its adoption, including: • Improving knowledge within businesses and households to lower environmental impact and operating costs, increase climate resilience and create further community conversation on climate change • Empower community groups (such as sporting groups, business associations etc) to respond to climate impacts affecting their area of interest e.g. (drought proofing active open space, ensuring a sustainable ecotourism sector) • Links to relevant local trades and businesses • Ongoing communications, case studies and stories to educate and inspire deeper action • Equip residential, community groups and business owners to have and normalise climate change conversations with their networks	Online information or physical centres for learning and demonstration can risk servicing only 'the usual suspects' unless targeted communication is delivered to link community members with these resources. This action consolidates existing and develops further resources for climate change action capacity building in the community.	**When:** 2021 develop kit and campaign. Ongoing delivery. 2025 refresh **Budget:** $55,000 (development), $10,000 per year (delivery) **Lead | support:** Sustainable Environment | Social and Community Planning, Communications **External collaborators:** Community groups, schools	**Primary | secondary impact areas:** Health and human services | Local economy, Physical environment Contributes to Infrastructure, Human, Social Capital **Enables:** Household action 3, Business and organisations action 1

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
5	**Promote financial solutions and incentives**	Actively explore and facilitate financial assistance for sustainability upgrades for homes and businesses (e.g. Environmental Upgrade Finance, Solar Savers). Promote and encourage the take-up of sustainability incentives offered to households, businesses and farms by State and Federal Governments.	Due to lack of available finance or the need for additional motivation to act, some households and businesses will need financial support to upgrade buildings and infrastructure. An efficient way forward given Council's limited budget, is to capitalise on incentives and alternative financial models offered or supported by other levels of government, as well as leveraging partnership programs to deliver financial services to the community.	**When:** 2021 -2030 **Budget:** $15,000 per year **Lead | support:** Sustainable Environment | Finance, Social and Community Planning, Communications **External collaborators:** Community groups and organisations, social service organisations	**Primary | secondary impact areas:** Health and human services | Local economy Contributes to Financial, Infrastructure Capital **Enables:** Household actions 4, 5,6, 7, 8, 9, 10, 11. Business and organisation actions 3, 4. Farming action 2
6	**Climate emergency community funds**	Establish a Climate Emergency Community Grants category to support the initiatives of community groups and organisation. Update the existing Community Grants Assessment Criteria so that all applicants must consider and document how their initiative can contribute to a more sustainable future for Bass Coast.	Engagement outcomes showed a strong desire from individuals to work with local community groups to take climate action. This action recognises that all community organisations and groups can play a strong leadership role in normalising climate action. It provides resources for community groups and organisations to scale up their work in line with community demand.	**When:** 2021 - 2030 **Budget:** $40,000 per year **Lead | support:** Social and Community Planning | Sustainable Environment **External collaborators:** Community groups and organisations	**Impact areas:** Physical environment, Natural environment, Health and human services, Water, Transport Contributes to Financial, Human, Social Capital
7	**Expand the Climate Governance and Leadership program**	Extend the existing partnership program with Federation University to provide targeted training and advice to leaders of businesses and organisations within Bass Coast, focusing on improving decision-making in response to climate change.	As climate risk grows, and new fiduciary and legal responsibilities increase, it is critical that non-government organisations and businesses are equipped with well informed decision-making skills in response to climate related risks and opportunities. This actions supports businesses to prepare for climate change and therefore, supports the ongoing prosperity of the local economy.	**When:**2021 - 2025 **Budget:**Existing resources **Lead | support:** Sustainable Environment | Economic Development **External collaborators:** Federation University DELWP, West Gippsland Catchment Management Authority	**Primary | secondary impact areas:** Local economy | Physical environment, Natural environment, Health and human services Contributes to Human, Social, Financial Capital **Enables:** Business and organisation action 1
8	**Advocate for stronger climate action by State and Federal Governments**	Develop an endorsed Council position that articulates key asks for State and Federal Government to support the outcomes in this Climate Change Action Plan. Integrate outcomes into the existing Advocacy Strategy. Actively campaign with local councils, partners and the community to drive the desired advocacy outcomes.	Council's has delegated functions and powers under the Local Government Act. This delegation, along with limited budgets, means that Council does not have direct control over some areas necessary for the climate emergency response (e.g. public transport and some elements of the Victorian Planning Scheme). To achieve impact at scale, with speed and to represent local community needs, it is essential for Council to pro-actively advocate to State and Federal Government.	**When:**2021 priorities set. Ongoing delivery **Budget:** Existing resources **Lead | support:** Natural Environment and Advocacy | Executive Management Team, Communications and Engagement **External collaborators:** Bass Coast Community	**Impact areas:** Physical environment, Natural environment, Health and human services, Water, Transport, Local economy Contributes to Human, Social, Financial, Infrastructure, Natural capital

Foundation actions		Action description	Rationale	Details	Impact summary*
9	**Essential infrastructure working group**	Develop a multi-stakeholder local working group with a remit to future-proof essential infrastructure from climate impacts (e.g. drainage, water supply, transport, telecommunications, electricity). Focus on decisions that benefit from collaborative governance and knowledge sharing.	A multi-agency approach is essential to manage climate change impacts to critical infrastructure. Duplication of effort is reduced and adaptation efforts by one agency / stakeholder can be synergised with efforts by others.	**When:** 2022 **Budget::** Existing resources **Lead | support:** Asset Management **External collaborators:**	**Primary | secondary impact areas:** Physical environment | Natural environment, Water, Transport, Local economy Contributes to Human, Social, Financial, Infrastructure, Natural capital
10	**Refresh the Economic Development Strategy**	In the next scheduled update, ensure the Economic Development Strategy more strongly reflect the climate emergency, including: • Synergies between climate action and COVID-19 recovery • The economic benefit of adapting to climate change • Targeted projects and programs for a range of business sectors (tourism, hospitality focus initially) • Regional opportunities for innovation (for example the agricultural sector and sustainable tourism) • The transition to a circular economy	Climate change presents significant challenges, but also some opportunities for Bass Coast. This action targets an update to the Economic Development Strategy to highlight and deliver on some of the opportunities and respond to some of these challenges, highlighting business support mechanisms that assist the private sector to manage the transition. For example, what does a changing climate mean for horticulture, viticulture and the timeline of peak and shoulder tourism seasons.	**When:** 2021 and 2026 **Budget:** Existing resources **Lead | support:** Economic Development | Sustainable Environment **External collaborators:** Local businesses	**Primary | secondary impact areas:** Local economy | Natural environment Contributes to Social, Infrastructure, Financial, and Natural Capital
11	**Refresh the Visitor Economy Strategy**	In the next scheduled update, ensure the Phillip Island and San Remo Visitor Economy Strategy 2035 reflects local opportunities and challenges presented by climate change: • Ensure long-term resilience of natural assets (such as the Penguin Parade) to climate change impacts • Accommodate for the expected growth in electric vehicles • Drive leadership in genuine sustainable tourism • Link the 'Sustainable Tourism Accord' to individual tourism business action on climate change • Increased visitor numbers without increasing carbon emissions and exacerbating the impact of climate change • Progress on Global Sustainable Tourism Council (GSTC) Destination Certification	The Bass Coast tourism industry is a critical part of the local economy. Visitors have an increasing expectation of sustainable travel and connection to nature. This action ensures that Bass Coast tourism industry is positioned to capture this opportunity and position itself as a genuinely sustainable tourism destination.	**When:** 2021 and 2026 **Budget:** Existing resources **Lead | support:** Economic Development | Sustainable Environment **External collaborators:** Local businesses	**Primary | secondary impact areas:** Local economy | Natural environment Contributes to Social, Infrastructure, Financial, and Natural Capital
12	**Refresh the Waste Management Strategy with a circular economy lens**	Use circular economy thinking to develop a Waste Minimisation Strategy that will support reduced waste to landfill and increase reuse, recycling and sharing within Bass Coast community and Council operations, including: • A municipal wide general opportunity assessment for reducing the volume of waste to landfill • Infrastructure and services to make it easier to recycle, reuse and share resources (e.g. a tip shop) • Campaigns and programs to drive behavioural shifts	Landfill waste - particularly of organic content - emits greenhouses gases as waste decomposes. Through community education campaigns and waste infrastructure improvements, Council has had significant success in reducing waste in the past four years. This success can continue to be built upon.	**When:** 2021 **Budget:** Existing resources **Lead | support:** Waste | Sustainable Environment **External collaborators:** Waste contractors and service providers	**Primary | secondary impact areas:** Natural environment | Health and human services, Water Contributes to zero net emissions target, and to Social, Infrastructure, and Financial Capital **Enables:** Household action 12. Business and organisation action 5

The children of today are the future leaders of climate action (Image: PINP Wetlands)

Future thinking

The social, political and technological context we live in will change significantly over the 10-year life of this Plan.

A number of initiatives and technologies that are not quite market-ready were raised during the consultation processes for this Plan. Examples include kelp forests to sequester carbon, teal carbon and hydrogen vehicles.

Through its extensive government, community and academic networks and partnerships, Council is committed to staying abreast of climate action trends and opportunities, and to integrate new ideas as this Plan is updated. Council will also regularly consult with community to test for changing needs, expectations and opportunities. See section 10, Monitoring Progress for details about monitoring, reporting and planned updates.

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
13	**Partner to deliver whole of municipality coastal management**	Partner with government agencies, not-for-profits, community groups and other stakeholders to determine and deliver necessary long-term coastal management, including: • Clarification of governance arrangements for coastal management • Defining and communicating Council's role in coastal management • Understanding and sharing local community values of coastal areas including economic, social, cultural and environmental • Pathways for community involvement in coastal management (e.g. revegetate and undertake other measures to reduce erosion) • Ongoing identification and communication of erosion hotspots • Long-term impacts on the health of the Western Port RAMSAR site from climate change	Certainty over long-term management of Bass Coast's extensive coastline is critical. This action acknowledges the multi-stakeholder approach, the strong community interest and capacity, and the role of science in determining the most effective ways to manage coastal assets in response to climate change impacts.	**When:** Ongoing **Budget:** Existing resources **Lead | support:** Sustainable Environment| Strategic Planning, Economic Development **External collaborators:** DELWP, Phillip Island Nature Parks (PINP), Parks Victoria, West Gippsland Catchment Management Authority, community groups and organisations	**Primary | secondary impact areas:** Natural environment | Physical environment, Transport Contributes to Human, Social, Financial, Infrastructure, Natural Capital
14	**Contribute to Inverloch Foreshore Erosion response**	In partnership with DELWP and the local community, support the delivery of technically feasible, long-term solutions for the Inverloch Foreshore erosion issue, with consideration township impacts and maintaining healthy dune systems, commencing with: • The establishment of the Regional and Strategic Partnership (RaSP) that includes Council, DELWP and the community • The local coastal hazard assessment and other investigations undertaken through the RaSP to inform evidence based decision-making	The area covered by the RaSP is a climate change hotspot for Bass Coast. A strategic long-term, multi stakeholder approach to addressing short and long-term issues is required. The RaSP has been identified as the pathway for delivery.	**When:** 2021-22 **Budget:** Existing resources **Lead | support:** Sustainable Environment | Strategic Planning, Economic Development **External collaborators:** DWELP and the local community	**Primary | secondary impact areas:** Natural environment | Physical environment, Transport Contributes to Human, Social, Financial, Infrastructure, Natural capital **Enables:** Household action 15

* The Enablers field indicates where Council is delivering an action that could support your household to act. See 'The impact of our actions', p47 for an explanation of the Impact summary

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
15	**Contribute to Cowes East Foreshore erosion protection works**	Deliver new coastal protection infrastructure and sand renourishment as informed by Cowes East Foreshore erosion protection functional design (BMT 2020). Work with DELWP and Federal Government agencies to ensure adequate funding is available.	This action delivers critical erosion risk management essential for the wellbeing of the local community and environment.	**When:** 2022 **Budget:** Existing resources. (Given the partnership approach to coastal management, additional government funding is being sought.) **Lead | support:** Sustainable Environment | Infrastructure Delivery, Strategic Planning, Economic Development **External collaborators:** DWELP and the local community	**Primary | secondary impact areas:** Natural environment | Physical environment, Transport Contributes to Human, Social, Financial, Infrastructure, Natural capital
16	**Participate in Regional Climate Adaptation Planning**	Partner with DELWP and other stakeholders to develop and help deliver the regional Gippsland Climate Adaptation Plan.	The development of the Gippsland Climate Adaptation Plan is led by DWELP. DELWP coordinates a number of adaptation efforts across the region, and whilst the vast majority of adaptation actions are locally specific, there is an identified need for regional collaboration to reduce effort and share learnings.	**When:** 2021-2030 **Budget:** Existing resources (additional resources may be required to support implementation) **Lead | support:** Sustainable Environment | Planning, Asset Management **External collaborators:** DELWP, Bass Coast Landcare, community groups and organisations	**Primary | secondary impact areas:** Natural environment | Physical environment, Transport Contributes to Human, Social, Financial, Infrastructure, Natural Capital
17	**Collaborate to deliver climate resilient transport infrastructure**	Convene a multi-stakeholder workshop to identify climate related risks, challenges and opportunities (e.g. maintenance, access issues, distribution logistics, mode switching, active transport and flooding, erosion or bushfire making routes impassable). Clarify local issues, opportunities, stakeholder roles and ongoing governance arrangements that will support collaboration.	Transport networks have the potential to be highly impacted by climate change. This includes: _Faster degradation of roads due to extreme heat and higher intensity rainfall events _Maintaining transport connections through periods of bushfire and other emergencies. The action supports an initial map out of issues and priorities for collaboration, with the potential for ongoing governanace arrangement to manage critical issues and shared advocacy.	**When:** 2021. Ongoing delivery **Budget:** $10,000 (workshop and planning) **Lead | support:** Asset Management | Strategic Planning, Infrastructure Delivery and Maintenance **External collaborators:** RACV, Regional Roads Victoria, Freight transport, CFA, Emergency Victoria, DELWP and community representatives	**Primary | secondary impact areas:** Transport | Physical environment Contributes to Social, Financial, Infrastructure, Natural Capital **Enables:** Household actions 13, 15. Business and organisation action 7

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
18	**Review the critical communications partnership**	Partner with emergency and essential services to ensure clear critical communication (through mobile apps) to community members before, during and after extreme weather events, such as bushfire, floods, storms and extreme heat.	A great deal of alignment already exists between Council, emergency services and other stakeholders to inform the community during extreme weather events. This action is designed to cement partnerships and ensure that communication channels are effective, coordinated and deliver the right messages. Heat extremes (whether linked to bushfire risk or not) will become a more critical part of messaging through the next decade.	**When:** 2021. Ongoing delivery **Budget:** Existing resources **Lead | support:** Emergency Management | Sustainable Environment **External collaborators:** CFA, Emergency Victoria, DELWP	**Primary | secondary impact areas:** Health and human services Contributes to Human Capital
19	**Establish a Bunurong climate change partnership**	Establish partnership with the Bunurong Land Council Aboriginal Corporation to implement climate adaptation projects in Bass Coast with a potential focus on natural resource management and impacts of climate change on Indigenous cultural heritage.	First Nations peoples have successfully managed land in Bass Coast for thousands of years. This action supports and prioritises protection of culturally significant places from the impact of climate change and seeks opportunities to educate the wider community on land management practices that can assist in the adaptation processes.	**When:** 2022-25 **Budget:** Existing resources **Lead | support:** Community Recreation and Culture Team | Sustainable Environment **External collaborators:** Bunurong Aboriginal Land Council, Land managers	**Primary | secondary impact areas:** Natural environment | Health and human services, Water Contributes to Human, Social, Natural Capital
20	**Optimise multi-stakeholder waterway health management**	Optimise multi-stakeholder governance for health waterway management, with reference to the Healthy Waterway Strategy and acknowledging rainfall decline, increasing intensity etc. Ensure water quality monitoring is regularly carried out and reported.	This action acknowledges the potential threat of declining waterway health as a result of increased rainfall intensity and slightly declining rainfall.	**When:** 2022-25 **Budget:** Existing resources **Lead | support:** Asset Management | Sustainable Environment **External collaborators:** West Gippsland Catchment Management Authority, Melbourne Water, DELWP, Farmers, Landcare, and other community groups	**Primary | secondary impact areas:** Water | Natural environment Contributes to Natural Capital **Enables:** Farm actions 1, 6

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
21	**Finalise the Integrated Water Management Plan**	Finalise the Integrated Water Management Plan (IWM) and deliver critical projects, ensuring focus on: • Ensuring Council drainage infrastructure caters for existing and projected increased rainfall intensity • Vegetation health in streetscapes and other vegetation to be enhanced through localised WSUD initiatives • Irrigation needs for open space are met through increased utilisation of alternative water sources • The influence of sea level rise on drainage infrastructure • Partnerships with Westernport Water, South Gippsland Water and Melbourne Water to ensure reliable long-term water supply	Integrated water management is a critical adaptation strategy available to local government to manage increased rainfall intensity and declining supply. The IWM planning process will identify a suite of priority projects to be staged through capital works funding through the 10 year timeframe.	**When:** 2021-22 **Budget:** Existing resources (implementation budget sought in development of the IWMP) **Lead | support:** Asset Management | Sustainable Environment, Infrastructure Maintenance External collaborators: Catchment Management Authority, Melbourne Water, DELWP	**Primary | secondary impact areas:** Water | Natural environment Contributes to Natural, Human, Financial, Infrastructure Capital **Enables:** Farm actions 1, 6
22	**Update the climate resilient species list**	Develop a climate resilient species list for Council works, planning and community, focusing on: • Species selection for plants resilient to changing rainfall patterns and increased temperatures • Indigenous, native and other heat and drought tolerant plants (including grasses and turf options)	Existing and future climate conditions are different to historic conditions. This action delivers on the need for local planting palettes with species which can tolerate and thrive in future climate scenarios. This will provide essential support for local ecosystems that underpin the local economy and community wellbeing.	**When:** 2022 **Budget:** $30,000 **Lead | support:** Sustainable Environment | Infrastructure Maintenance External collaborators: CSIRO, Bass Coast Landcare, Catchment Management Authority	**Primary | secondary impact areas:** Natural environment | Health and human services Contributes to Human, Financial, Natural Capital **Enables:** Household action 2, Farm actions 1, 6

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
23	**Improve vegetation cover in urban centres**	Deliver a program to improve vegetation cover in urban centres that includes: • Establishment of a baseline for canopy cover and other vegetation • A 2030 public realm canopy cover percentage improvement target for towns and villages • Amending legislation to ensure the protection of a greater range of existing and new vegetation assets • Strengthening revegetation of public land while considering sight lines and service locations (e.g. street lighting, underground services and overhead power) • Adoption of minimum vegetation requirements for new development (including car parks) • Supporting the development of food forests in appropriate locations on public land Note: this action covers urban areas (including urban / rural interfaces). The Biolinks project covers rural land.	Canopy cover and other vegetation is an effective tool in reducing the impact of extreme heat days and urban heat island effect, as well as creating local biodiversity, reducing stormwater runoff and delivering a range of cultural ecosystem services (recreation, aesthetics, place value and social cohesion). The public and private land vegetation cover in Bass Coast townships is not well understood. This action establishes a baseline, then delivers a staged implementation plan against a target. There is potential to undertake these activities under an Urban Forest Plan, and in partnership with local communities.	**When:** 2021-2030 **Budget:** $50,000 (baseline and target setting. Implementation budget to be set following baseline and target) **Lead | support:** Infrastructure, Local Law, Statutory Planning | Natural environmental, Infrastructure Maintenance **External collaborators:**Local residents and community groups and organisations	**Primary | secondary impact areas:** Health and human services |Natural environment Contributes to Human, Social, Infrastructure, and Natural Capital **Enables:** Household action 2
24	**Strengthen planning policy and practice**	Update local planning policies and practices to reflect climate change impacts with a focus on: • Updating Clause 22.01 Stormwater Management (informed by State Planning Policy changes and the IWM Plan) • Identifying and supporting infill development within townships and reducing fringe rural / residential development • Implementing an ESD policy targeting zero carbon and climate resilience for built form as priorities • Continue implementation of planning requirements in response to sea level rise and erosion risk • Undertaking a trial of the Sustainable Subdivisions Framework • Developing planning policy standards for urban greening • Develop key planning advocacy actions targeted to State Government	The planning process is a critical tool for managing the evolution of land use and development in the municipality. This action targets critical areas of influence, including stormwater management and the need to respond to declining annual rainfall at the same time as the potential of higher intensity rainfall events. The action also targets the two main influence points in statutory planning (built form and subdivision) to ensure that new development in the municipality is climate responsive.	**When:**2021-24 **Budget:** Existing resources,. 1 FTE **Lead | support:** Strategic Planning | Statutory Planning **External collaborators:** Developers and landowners	**Primary | secondary impact areas:** Physical Environment | Natural environment, Water Contributes to Human, Social, Infrastructure, Financial, and Natural Capital

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
25	**Township adaptation plans**	In partnership with local communities, develop adaptation plans for townships identified as at risk to inundation: • Create and use selection criteria to identify vulnerable townships, with a staged rollout based on highest risk • Integrate with broader coastal planning framework • Drive planning scheme changes required to control land use and development • Encorporate implementation pathways into the Plans, including the role of Council and how local communities can participate	Local townships have the most 'value at risk' from sea level rise. With this as a primary driver, localised adaptation plans for townships are a critical pathway for controlling any land use changes and understanding impacts to physical infrastructure. This process will identify capital projects (which would be prioritised and may be delivered through the Plan timeframe) as well as planning scheme changes required to control land use and development.	**When:** 2022-2025 **Budget:** $50,000 per year **Lead | support:** Strategic Planning | Sustainable Environment, Infrastructure, Governance **External collaborators:**Local communities, DELWP	**Primary | secondary impact areas:** Health and human services | Physical environment, Transport, Natural environment Contributes to Natural, Human, Financial, Infrastructure, Social Capital
26	**Deliver targeted assistance for vulnerable Households**	Through partnerships, deliver targeted financial and advisory services for vulnerable households (elderly, rentals, CALD) to respond to climate change impacts focusing on: • Social connectedness to improve social resilience to climate change Linking to finance for low cost, high impact housing improvements to reduce energy costs and increase comfort • Leveraging available State / Federal Government assistance for housing upgrades • Linking with existing Council and other local social services and programs	Without targeted assistance to vulnerable households, a segment of our community will miss out on the benefits of climate change action, be unfairly disadvantaged with household costs and be more exposed to extreme weather. This action supports fairness and equity, leveraging existing and new programs and funding streams to deliver this financial and advisory assistance to households who have barriers to change (such as language, lack of capital and not owning their home).	**When:** 2021-2024 **Budget:** $40,000 (program design and stakeholder engagement. Delivery budget to be set following program design) **Lead | support:** Social and Community Planning | Sustainable Environment **External collaborators:** Community groups and organisations, social service organisations	**Primary | secondary impact areas:** Health and human services | Physical Environment Contributes to Human, Social, Financial, Infrastructure Capital

Fast facts: The cost of walking and cycling paths

Currently about $40 million worth of footpath and bike path construction works that have been identified as highly desirable across Bass Coast. Typical costs for a concrete cycle path is $250,000 per km.

The entire Council budget for 2019/21 was only $85 million. Historically, $300 - 400,000 is available annually to invest in walking and cycling paths.

Given the expense of path construction, Council will carefully prioritise route construction to ensure they serve the maximum number of people.

San Remo to Cowes Cycling Track provides local connection and benefits for tourism and the economy (IMAGE: VISIT MELBOURNE)

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
27	**Support businesses to build a circular economy**	Establish an Economic Development program that supports local businesses to work together to exchange waste as a resource. Linked with Action 10.	Improving waste management practices and moving towards a circular economy is a critical climate change response. This action can deliver cost savings for businesses, potentially create new revenue streams, divert waste from landfill and reduce emissions. This action positions Bass Coast Council and the local business community to leverage the Victorian Government's $300million Recycling Victoria initiative.	**When:** 2022-2030 **Budget:** $20,000 per year. 0.2 FTE **Lead | support:** Economic Development | Waste and Sustainable Environment **External collaborators:** Local businesses	**Emissions source:** Waste Contributes to zero net emissions target, and to Social, Infrastructure, and Financial Capital **Enables:** Business and organisations 1, 2, 5
28	**Support a shift to climate resilient transport for Bass Coast Community**	Support the transition to climate resilient in Bass Coast through the delivery of: • Township movement studies to identify infrastructure priorities, including for on and off-road active transport paths, considering quality and quantity • Development of partnerships and options to pilot a community bus services (with a pathway to an electric bus) • A staged and funded delivery plan for transport infrastructure, with priority stages delivered before 2025 • Community engagement activity linked to the availability of new infrastructure • Advocacy / funding priorities (public and active transport) targeted to State Government support	Transition to active and public transport from private vehicles is a highly effective strategy for community emissions reduction and also delivers a range of health and wellbeing benefits. This action supports the community to undertake that transition, where the travel distances and public transport availability can support this modal shift.	**When:** 2021 planning. Ongoing delivery **Budget:** Existing resources **Lead | support:** Strategic Planning | Infrastructure Maintenance, Investment and Visitor Economy **External collaborators:** Local businesses and community groups	**Emissions source:** Transport **Primary | secondary impact areas:** Transport | Physical environment, Health and human services Contributes to zero net emissions target, and Social, Financial, Infrastructure, Natural Capital **Enables:** Business and organisations 28
29	**Support local electric vehicle charging infrastructure and usage**	Support the development of appropriate charging infrastructure and encourage EVs by: • Reviewing existing EV charge sites and usage • Centralising and sharing charging usage data, barriers and enablers with accommodation providers and other stakeholders • Ensuring Council planning mechanisms minimise barriers for EV charge points in new and existing developments • Delivering a communications campaign tailored to locals and tourists to promote EV travel and charging to and within Bass Coast	Transition to active and public transport from private vehicles is a highly effective strategy for community emissions reduction and also delivers a range of health and wellbeing benefits. This action supports the community to undertake that transition, where the travel distances and public transport availability can support this modal shift.	**When:** 2021-2023 **Budget:** $10,000 (2021-2022), $5,000 (2023) **Lead | support:** Economic Development | Sustainable Environment, Communications and Engagement **External collaborators:** Tourism and retail businesses	**Emissions source:** Transport **Primary | secondary impact areas:** Transport | Physical environment Contributes to Social, Financial, Infrastructure, Natural Capital

* The Enablers field indicates where Council is delivering an action that could support your household to act. See 'The impact of our actions', p47 for an explanation of the Impact summary

8a. Bass Coast Shire Council actions: Supporting Community

Foundation actions		Action description	Rationale	Details	Impact summary*
30	**Deliver the Biolinks project**	Continue the Bass Coast Biolinks tree planting project with a 1.5% expansion each year to: • Provide connectivity in the landscape by linking remnant patches of indigenous vegetation • Sequester carbon	Permanent forestry projects provide new carbon sinks. As trees and other woody biomass grow, they draw down carbon dioxide from the atmosphere. Forestry and revegetation activities also deliver ecosystem benefits including restoration of habitats and wildlife corridors, improved amenity. The Bass Coast Biolinks project is an established and successful project, strongly contributing to carbon sequestration and offsetting emissions in harder to tackle areas.	**When:** 2021-2030 **Budget:** $180,000 per year **Lead | support:** Sustainable Environment **External collaborators:** Landcare and landowners	**Primary | secondary impact areas:** Natural environment | Health and human services Contributes to Human, Financial, Natural Capital 3.4% estimated contribution to community zero net target **Enables:** Farming action 6

Photo Courtesy of Bass Coast Landcare Network and the Smart Farming in Westernport project

8b. Bass Coast Shire Council actions: Corporate

Council Corporate Operations

Foundational Actions: Corporate

Foundation actions		Action description	Rationale	Details	Impact summary*
31	**Deliver climate emergency staff training and awareness program**	Implement training that enables staff to understand and contribute to the local Climate Emergency response, including: • Support staff in finding their best climate emergency response contribution given their specific role and sphere of influence • Resource at least one new role specifically to help deliver the Climate Change Action Plan • Include climate emergency training into the Training Needs Analysis (TNA) and Training Plan • Investigate existing resources and tools that could be adapted to train Bass Coast staff • Leverage an existing or develop an e-learning tool for current staff and Council induction to build climate emergency literacy and help staff understand responsibilities for their role • Support Councillors and Council leadership team to make climate-smart decisions	Council's climate emergency declaration is a commitment to go beyond business as usual. To achieve this and demonstrate leadership to the local community and beyond, Council will need to embed its climate emergency response across all teams and into standard ways of working. Staff awareness and training is a key part of this change process, and will also support staff to understand the value of their efforts.	**When:** 2021 program development. Ongoing delivery **Budget:** $20,000 (develop training) and e-learning tool ($50,000 as a potential future investment). 1 FTE **Lead | support:** Learning and Development | Sustainable Environment, Executive Leaderships Team, Bass Coast Leadership Team, Governance, Communications	**Impact areas:** Physical environment, Natural environment, Health and human services, Water, Transport, Local economy Contributes to Human, Social, Financial Capital
32	**Embed the Climate Emergency into all staff roles and responsibilities, and performance planning**	Embed the Climate Emergency response into staff roles and responsibilities such that all staff are aware of their role-specific and organisational responsibility. This includes: • Incorporation into position descriptions • Performance planning templates	Every Council staff member can play a role in the climate emergency response either directly or by influencing others. By harnessing the unique skills, networks and opportunities present in different roles within Council, the climate emergency response can be embedded and efficiently delivered without duplication of effort.	**When:** 2021 **Budget:** Existing resources **Lead | support:** Human resources | Sustainable Environment, People managers	**Impact areas:** Physical environment, Natural environment, Health and human services, Water, Transport, Local economy Contributes to Human, Social, Financial, Infrastructure, Natural capital

* The Enablers field indicates where Council is delivering an action that could support your household to act. See 'The impact of our actions', p47 for an explanation of the Impact summary

Foundation actions		Action description	Rationale	Details	Impact summary*
33	**Integrate and address climate risks in corporate processes**	• Review and further integrate climate risk impacts into Council processes and corporate documents including: • Corporate Risk Register, ensuring actions are in place for all high and very high rated risks • OHS Risk Register where applicable	Climate change poses very real risks for Council, and the land and infrastructure managed by Council. This action will help: • Quantify risks related to climate change impacts • Prioritise risks that require further attention • Establish a process for ensuring that these higher priority risks are managed effectively	**When:** 2021 **Budget:** Existing resources **Lead | support:** Risk | Sustainable Environment, Infrastructure Maintenance, Emergency Management, Council Audit Committee **External collaborators:**	**Primary | secondary impact areas:** Physical environment | Natural environment, Health and human services, Water, Transport, Contributes to Human, Social, Financial, Infrastructure, Natural
34	**Integrate climate risk into financial decision making**	Update financial decision making processes to ensure senior decision makers are accounting for: • Avoided cost of climate change impacts • Utility savings and productivity improvements from higher environmental performing buildings and assets	Responding to climate change requires investment for the long-term. This action will support Council to gain maximum value by investing in climate change actions to the right level, at the right time.	**When:** 2021 **Budget:** $25,000 **Lead | support:** Asset Management | Bass Coast Leadership Team, Budget Officers **External collaborators:**	**Primary | secondary impact areas:** Local economy | Physical environment, Natural environment, Health and human services, Water, Transport, Contributes to Human, Social, Financial, Infrastructure, Natural
35	**Increase fossil fuel divestment**	Strengthen clause 5.3 of Council's Investment Policy to further encourage fossil fuel divestment.	Globally, governments and the private sector are reducing investment exposure to fossil fuels and lowering the risk of reduced returns due to stranded assets (investments that are not able to meet a viable economic return and which are likely to see their economic life curtailed due to a combination of technology, regulatory and/or market changes). This action demonstrates leadership and ensure that Bass Coast's corporate investments are not contributing to emissions in locations beyond the Bass Coast border.	**When:** 2023 **Budget:** Existing resources **Lead | support:** Finance | Governance **External collaborators:**	**Primary | secondary impact areas:** Natural environment | Local economy Contributes to Human, Social, Financial, Infrastructure, Natural capital
36	**Update the Procurement Policy and procedures**	Update Procurement Policy and procedures to drive climate-aware purchasing behaviour (e.g. high efficiency electrical appliances and tools, recycled materials, local purchasing, and the transition from fossil fuels to all electric), through: • The assessment of potential suppliers, goods and services • Ensuring procurement decisions are held accountable to the Policy • Staff responsible for procurement functions are upskilled in line with the new Policy and procedures to become advocates for climate-aware purchasing	As a large organisation, the procurement value of goods and services is significant. Council can reduce its climate impact by choosing goods and services that have reduced embodied carbon and encourage suppliers to transition their businesses to deliver good and services that are climate-aware and in line with circular economy principles.	**When:** 2022 **Budget:** $25,000 **Lead | support:** Procurement **External collaborators:**	**Primary | secondary impact areas:** Local economy | Natural environment Contributes to Human, Social, Financial, Infrastructure, Natural capital

8b. Bass Coast Shire Council actions: Corporate

Foundation actions		Action description	Rationale	Details	Impact summary*
37	**Integrate climate emergency into Council reporting processes**	Incorporate key actions from this Action Plan into the Council Plan 2021-25 and 2025-29. Include a new section in the Council Report template to drive climate emergency reporting. Provide the highest level of accountability and transparency in reporting against actions and indicators, according to proposed monitoring and evaluation section in this plan.	This low cost action that will help embed the climate emergency response into Council's operations. It will ensure Councillors and the community are more aware of the climate change work Council is delivering across its operations.	**When:** 2021 **Budget:** Existing resources **Lead | support:** Governance | Sustainable Environment **External collaborators:**	**Impact areas:** Physical environment, Natural environment, Health and human services, Water, Transport, Local economy Contributes to Human, Social, Financial, Infrastructure, Natural capital
38	**Review Council's zero net emissions target**	Drawing on the modelling conducted for this Plan, and with respect to the emissions reduction work undertaken by Council out to 2024, conduct analysis to determine the earliest date by which Council could feasibly achieve zero net emissions for corporate operations prior to 2030. Through community engagement, develop a clear position on the mechanisms to achieve neutrality (considering local projects, a range of offset options and the need for carbon neutral certification). Amend the target in response to the findings.	With a Power Purchase Agreement due to be in place by 2021, Council will have very few residual carbon emissions, creating the opportunity to become carbon neutral prior to 2030 through purchasing offsets. This action provides a check-point at which Council could demonstrate increased local leadership by committing to zero net emissions in advance of the community target.	**When:** 2024 **Budget:** $15,000 **Lead | support:** Governance | Sustainable Environment **External collaborators:**	**Impact areas:** Local economy | Natural environment Contributes to Social and Financial capital

8b. Bass Coast Shire Council actions: Corporate

Foundation actions		Action description	Rationale	Details	Impact summary*
39	**Asset vulnerability assessment project**	Participate in the South East Councils Climate Change Alliance (SECCCA) Asset Vulnerability Assessment Project to: • Develop criteria to prioritise building and infrastructure asset upgrades against climate risk impacts (e.g. by critical function, utilisation, contents replacement value, community interface etc) and integrate with asset management data • Determine priorities for capital works to respond to key climate risk impacts • Implement the highest priority physical infrastructure actions	Councils building and infrastructure assets have not yet been comprehensively reviewed to understand the climate risk profile of the assets. This action fills a knowledge gap which will ensure Council can make well informed decisions and investment in physical infrastructure improvements to the right level, at the right time.	**When:** 2021 SECCCA project. Ongoing delivery **Budget:** $15,000 (SECCCA fees. Implementation budget to be set following the assessment). 1 FTE **Lead | support:** Asset Management | Sustainable Environment **External collaborators:** SECCCA	**Primary | secondary impact areas:** Physical environment | Transport Contributes to Infrastructure, Natural, Financial Capital
40	**Update Environmentally Sustainable Design (ESD) Policy for Council Buildings (2017)**	Update the existing ESD Policy for Council Buildings, including: • Design standards for new builds and major retrofits which target zero carbon construction and operation (including transition to all electric) and respond to expected climate impacts (RCP 8.5) at end of asset life • Procurement guidelines to ensure reduced carbon and climate resilient materials • Procedures for briefing consultants, architects, and contractors to ensure climate risk mitigation is a central design intent and outcome • Post occupancy review for all new builds and major refurbs, and the implementation of findings • Leveraging of regional tools (e.g. SECCCA tool) • Integration with asset vulnerability assessments findings (see action 39)	This action promotes best practice in design of new and major refurbished Council buildings. The most cost effective time to lock in operational savings and avoided future maintenance and replacement costs is at the time of initial construction or refurbishment. The Policy update would set clear targets for buildings at a variety of scales.	**When:** 2021 **Budget:** $5,000 **Lead | support:** Infrastructure Delivery | Sustainable Environment **External collaborators:**	**Primary | secondary impact areas:** Physical Environment | Natural environment, Health and Human Service Contributes to Infrastructure, Human, Financial Capital

* The Enablers field indicates where Council is delivering an action that could support your household to act. See 'The impact of our actions', p47 for an explanation of the Impact summary

Image Courtesy of CFA Communications and Stakeholder Relations

SECCCA Asset Vulnerability Assessment project

It is essential for Council to understand how climate change will impact assets and service delivery, particularly on roads, buildings and drainage.

The Asset Vulnerability Assessment project is developing a toolkit to support councils to understand how council buildings, drainage and local road assets will be impacted by various climate scenarios. This will include attributing a vulnerability rating to these assets and identifying adaptation actions that may increase asset resilience.

The project will further examine how climate change will impact expenditure and income on council assets through calculating the cost of mitigation actions, the cost of inaction (e.g. expectations of higher insurance premiums and maintenance and repair costs) identifying how service delivery may have to change to adapt to future climate extremes and how income generating actions may be impacted (e.g. leasing of premises, rates reduction in line with property values). This information will assist with appropriate budget forecasting to ensure ongoing delivery of services to the community.

Armed with this toolkit, Council can take an evidence based approach to asset management, and ensure essential infrastructure is protected against climate change impacts.

A key element to achieve zero net emissions will be the expansion of the municipal solar program and transitioning to renewable energy (Image: Wonthaggi Civic Centre)

The final suite of actions are focused on reducing Councils corporate emissions to zero by 2030. A foundational action (Action 38) programmed for 2024 highlights an earlier opportunity to deliver zero net emissions for Councils operations by purchasing offsets.

The pathway to zero net emissions comprises several key elements which include:

- Procuring 100% renewable energy
- Transitioning the vehicle fleet to low emissions
- Driving energy efficiency improvements
- Expanding the municipal solar program
- Transitioning street lighting to the most energy efficient

A separate, flexible tool has been developed for Council to stage the investments required to deliver zero net emissions for their operations.

These actions when taken in aggregate still leave significant residual emissions within the corporate emissions profile, primarily from the Grantville Waste Facility. The modelled pathway to zero offsets these emissions through the drawdown of carbon as a result of the Biolinks project.

This means that by 2030, Bass Coast Council would be considered zero net emissions in operation. If carbon neutral certification was sought through Climate Active however, this would require formal certification of the Biolinks project or the purchase of alternative offsets.

8b. Bass Coast Shire Council actions: Corporate

Emissions reduction: Corporate

Emission reduction actions		Action description	Rationale	Details	Impact summary*
41	**Power Council with 100% renewable energy**	Energy use not reduced through energy efficiency opportunities or covered by onsite solar PV to be certified GreenPower or sourced through a renewable electricity Power Purchase Agreement (PPA). Renewable energy arrangements should allow flexibility for Council to scale down its purchase as it scales up onsite energy efficiency and solar.	100% renewable energy, whether generated onsite or offsite is a critical component of achieving the zero carbon by 2030 goal.	**When:** 2021 **Budget:** Existing resources **Lead | support:** Procurement | Sustainable Environment **External collaborators:**	**Emissions source:** Stationary energy
42	**Transition to electric vehicles**	Deliver a phased transition to a carbon neutral fleet by upgrading to: 1. Electric passenger vehicles 2. Energy efficient light commercial vehicles 3. Electric light commercial vehicles 4. Biodiesel (or another lower emissions alternative) for heavy vehicles	Electric vehicles (EVs) are more efficient then standard combustion engines. As the proportion of renewables grows in the electricity supply, EVs will have an even greater impact on emissions reduction. EVs have lower running costs than internal combustion engine vehicles and fewer moving parts mean that EVs require less maintenance. For some types of commercial vehicles with longer replacement times and less advanced electric alternatives (technological maturity), replacement with other fuel sources or with increased energy efficient alternatives will still be the necessary pathway within the 10 year timeline of this plan.	**When:** 2021-30 **Budget:** $30K (fleet transition plan), $195,000 per year[1] **Lead | support:** Fleet **External collaborators:**	**Emissions source:** Transport Assumed uptake by 2030: 90% vehicle turnover
43	**Improve energy efficiency**	Continue to develop and implement a phased energy efficiency upgrade program across Council building stock. Draw on results from Type 2 Energy Audits conducted to date and introduce an operational policy to facilitate ongoing energy improvements.	Energy efficiency opportunities in the asset portfolio of Council have been identified as beneficial, but are not yet implemented. This action ensures that cost effective energy efficiency actions are undertaken to reduce operating costs and emissions.	**When:** 2021-28 **Budget:** $90,000 per year for 4 years (2025 audits to set further budget) **Lead | support:** Sustainable Environment | Asset Management **External collaborators:**	**Emissions source:** Stationary energy

** The Enablers field indicates where Council is delivering an action that could support your household to act. See 'The impact of our actions', p22 for an explanation of the Impact summary*

1 This is the marginal cost of EV's over standard passenger vehicles and is based on 25% (approximately 10 vehicles) in the passenger fleet being transitioned each year for the first four years (noting this will lead to significant operational savings which can be reinvested)

8b. Bass Coast Shire Council actions: Corporate

Emission reduction actions		Action description	Rationale	Details	Impact summary*
44	**Accelerate the implementation of municipal solar**	Continue to install on-site solar PV on all appropriate council owned facilities. This may include solar on leased facilities (where costs could be offset by potential increases in rent).	Installation of Solar PV can be an extremely cost effective method for reducing emissions. It provides the additional benefit of future proofing Council against electricity price rises and demonstrating leadership within the local community.	**When:** 2021-28 **Budget:** $30,000 per year for 4 years (subject to detailed feasibility) **Lead | support:** Sustainable Environment | Facilities, **External collaborators:**	**Emissions source:** Stationary energy
45	**Transition all street lighting to energy efficient LED lighting**	Following asset assessment of all Council street lighting, implement a phased Lighting Upgrade Program that: • Is needs based, ensuring public spaces are not over-lit • Considers existing external programs for lighting upgrades • Prioritises switching lowest efficiency stock to LED • Switches CFL stock to LED as a lower order priority	Street lights are a significant component of Councils corporate emissions profile - approximately 40%. This action creates a staged plan to ensure that the most efficient street lights are used in Bass Coast, resulting in ongoing operational savings from reduced electricity use.	**When:** 2021-28 **Budget:** Up to $433,400 per year for three years (subject to asset assessment. Funds from 2024 to determined following asset assessment) **Lead | support:** Asset Management | Sustainable Environment **External collaborators:** Ausnet	**Emissions source:** Stationary energy Contributes to electricity related emissions

9. How this Plan was developed

An extensive technical and consultation process was undertaken to develop this Action Plan, as summarised in the diagram over the page.

The three key elements of the process – engagement, emissions analysis and adaptation planning – are described in the following pages. They are described separately for the sake of clarity. In reality, they necessarily overlapped and influenced each other.

The diagram over the page shows the iteration between the technical plan development and the engagement activity. The process sought to find actions where technical and financial viability overlapped with social desirability. The process also accounted for the fact that many actions deliver both emissions reductions and adaptation outcomes. The delivery of co-benefits was a key factor in developing the final set of actions.

BASS COAST

Action Plan - Development

What is the current state?
Data gathering and analysis

What does the community need and want?
Deliver community engagement

What are the best actions from a technical perspective?
Develop draft actions V1

How can Council maximise it's impact and integrate climate action?
Deliver internal engagement

Can we get to Zero Net Emissions?
Develop draft actions V2 and potential pathway to zero

Have we got it right?
Test, prioritise and amend draft actions with community and council staff

Legend: Engagement Plan development

Engagement

Engagement was essential to develop, select, shape and prioritise actions, understand community concerns related to climate change, and ensure actions built on or leveraged existing work.

Over 580 people actively engaged in the process of developing this Plan. Key consultation activities are outlined below, along with the purpose and impact of each.

Community Survey 1: 525 people completed the survey. Responses were analysed and used to create an accurate carbon emissions model for the Bass Coast community, understand community concerns and priorities related to a changing climate, and support the development of draft actions for the Plan.

Community workshops: 35 people attended the workshops. The purpose of the community workshops was to test the draft community actions with residents, business owners and those in the agricultural sector. The workshop also sought advice from the community about how Council could best support the community's efforts.

Council staff workshops and ongoing internal consultation: 21 staff attended workshops with additional technical and organisations information sought from staff throughout the development of this Action Plan. Staff provided essential data, reviewed the draft actions, suggested new actions and provided input in the budget for this Action Plan.

Council Executive meeting: This meeting provided an opportunity for the Council leadership team to provide strategic input into the process of developing this Action Plan.

Stakeholder meetings: These meetings allowed for deeper conversations with organisations who have strong ties to the delivery of this Plan. While there are large number of key stakeholders, time and resource limitations prioritied interviews with: Bass Coast Landcare Network, Bunurong Land Council Aboriginal Corporation, Department of Environment, Land, Water and Planning (DELWP) and Phillip Island Nature Park (PINP).

Business and industry interviews: Due to COVID-19 increasing pressure on local business, a decision was made to conduct a series interviews with businesses rather than one business workshop. The interviews also allowed for very detailed conversations with a range of people from the business community. 9 local businesses were interviewed to get a spread of views across sectors and geography. Interviewees provided detailed advice on the draft actions as well as critical context about the challenges and opportunities facing their business.

Online presentation of draft actions: Designed as a precursor Community Survey 2, this video presentation introduced the extensive list of actions to the community. The video format allowed consistent information to be shared across the community.

Community Survey 2: 133 people completed this extensive survey. The survey provided an opportunity for the community to provide feedback on each draft action. Exiting actions were amended and new actions added as a direct result of the community feedback provided through this survey.

Two groups were formed to support the administration and strategic direction of this Action Plan:

Community Reference Group: Provided technical advice and assistance with the community engagement approach. They highlighted community priorities and recommended solutions, as well as supporting the assessment process for action selection. They also played a key role in encouraging and supporting the general community to engage through both surveys. The Group comprised of 2 councillors, 5 community representatives, 3 representatives from community groups/organisations, 2 Council staff, along with three sector representatives.

Project Control Group: Comprised of Council staff, the Group had oversight of the day-to-day management of the project and provided guidance and feedback through attendance at Project Working Group meetings.

An extensive Engagement Report was developed to capture the data gathered through each engagement event and will support council as they design projects and programs to deliver this Plan.

Data from surveys is held by Council and de-identified data is available for the use of community groups and organisations working on climate change solutions locally.

Planning in the time of the COVID-19 pandemic

This Plan was developed during social distancing and stay at home orders associated with the 2020 COVID-19 pandemic. Given legislated restrictions, engagement was conducted using online tools:

- **Zoom:** A video conferencing platform that includes the ability to host break-out room for small group discussions. During all workshops a telephone helpline was available to support any participant having technology issues.
- **Menti:** An interactive presentation platform that allows real-time input from remote participants with live polls, word clouds, Q&As etc. The data entered by participants is aggregated and shown live on screen. The tool helps understand alignment and agreement in the group and capture insights.
- **Googlesheets / Googledocs:** Online spreadsheets or documents that allow synchronous editing (multiple people can work in and edit at the same time). These tools were used to capture data from small group discussions.
- **Video recordings:** Video was used to support information dissemination within Council and the community.
- **Surveymonkey:** A leading online and paper survey tool.
- **Bass Coast Shire corporate communication channels:** Council website, social media channels, and e-updates were used to disseminate information.

Council's communication efforts were strongly supported by many local community groups and organisations who promoted this project to their members and stakeholders.

Deepening engagement

While the volume of people who gave their time to develop this Plan is impressive, Council recognises there are groups who were not able to participate due to personal stress associated with the COVID-19 pandemic and/or lack of access or familiarity with technology.

Community engagement, education and empowerment is embedded into the actions in this Plan. Council, in partnership with local community groups, will work to draw in more and more people behind this Plan. The impacts of this Plan will be monitored and the Plan will be updated at regular intervals, allowing for additional needs and perspectives to be integrated (see section Monitoring Progress)

Emissions profiles and analysis

Emissions profiles or inventories provide a basis for understanding where to focus attention, and what actions are appropriate for reducing emissions.

Emissions profiles were created for both Bass Coast Shire Council and the Bass Coast community to describe the quantity of emissions released during the 2019 financial year.

A number of data sources were used to model each emissions profile. Each source was carefully selected to support modelling that estimates the emissions activity that is specific to Bass Coast, including local data and validation using local expertise wherever possible.

Sources for the community emissions profile include electricity and gas data from distribution networks, ABS and Census data, Council data (rates etc.), and Bass Coast Climate Change Community Surveys. The engagement findings provided guidance for the modelling assumptions, ensuring the model values local knowledge and accounts for local conditions.

For the Council profile, corporate activity data including utility and fuel data from Council systems, and landfill data reported under NGERs.

The pathway zero

Emissions profiles were projected to 2030 so provide an indication of how 'business as usual' would look without action, and what the size of the task for reaching zero net emissions looks like.

A series of emissions reduction actions were then considered across all sectors and tested with the community. For the Bass Coast community this included::

- Stationary energy
- Transport
- Waste and wastewater
- Land use and land use change
- Industrial product use
- Agriculture

Assessing the impact and prioritising emissions reduction actions is complex and requires a combination of technical and economic analysis. A detailed pathways to zero model was developed for the Bass Coast community, drawing on the Z-NET Model.

Consideration was given to quantitative data, including financial cost and benefits, and estimated emissions reduction potential and community adoption. Co-benefits and community response to each action were also considered in the selection and modelled adoption of emissions reduction actions.

Naturally, there are multiple action pathways and scenarios that the community could take to reach zero net emissions by 2030. The modelled pathway (shown in Pathways diagram, P21 and MAC Curve P22) demonstrates a proposed pathway to zero that focuses on market ready technologies that are economically viable, and was tested and shaped through consultation with the Bass Coast community for their desirability.

Carbon accounting frameworks

The Council and community emissions profiles are guided by GHG Protocol carbon accounting guidelines. The guidelines offer some flexibility on particular approaches and the boundaries applied. In all circumstances, methods that make sense for modelling and for monitoring community action have been applied.

For example, to measure road transport emissions, the "Resident activity" approach has been adopted because this relates to the actions that the community has influence over, such as their choice of transport mode, ride sharing, efficient vehicle types etc. This is opposed to say, the easier to measure "Fuel sales" approach which is a proxy for fuel combusted on the roads inside Bass Coast. The fuel sales approach is limited, as it includes visitor and commercial transport emissions outside the influence of the community or Council (or are best manipulated by absolutely crazy actions like closing roads, moving fuel stations outside Bass Coast, or building a wall!)

Emission factors come primarily from Australian Government (e.g. NGA Factors 2019 and the National Greenhouse Gas Inventory and tools such as FullCAM); or have been researched where necessary. All sources are provided in the accompanying Community Emissions modelling.

The Z-NET approach

Z-NET is a collaboration created and coordinated by Starfish Initiatives. The Z-NET Blueprint sets out a simple logic for communities across Australia to establish a least-cost approach to reaching zero net emissions for their community. The approach considers the case for action, and the community needs to weigh up the benefits and the costs of options available, such as using less energy for things like lighting and hot water, and compare these to other possible options.

The Blueprint also recognises that benefits and costs of options for emissions reduction will change over time. Recognising this allows a community to take practical action immediately whilst resolving the most appropriate long-term investment to reach the Z-NET goal.

This project has adopted this approach for the development of the zero net emissions pathway for the community based on its successful use in two other communities.

The approach taken for Bass Coast leverages the previous two previous projects in Uralla, NSW and Hepburn, Victoria. This foundational work, means that the investment in Bass Coast could be focused on the unique attributes of the community and that the Bass Coast community benefits from the work which has come before.

Consistent with the Creative Commons license for the model and other resources Bass Coast will make available the zero net emissions model developed through this project to the Z-NET collaboration. This will ensure benefit to future communities to develop their own pathways.

The Z-NET BLUEPRINT

zeronet energy town

Approach

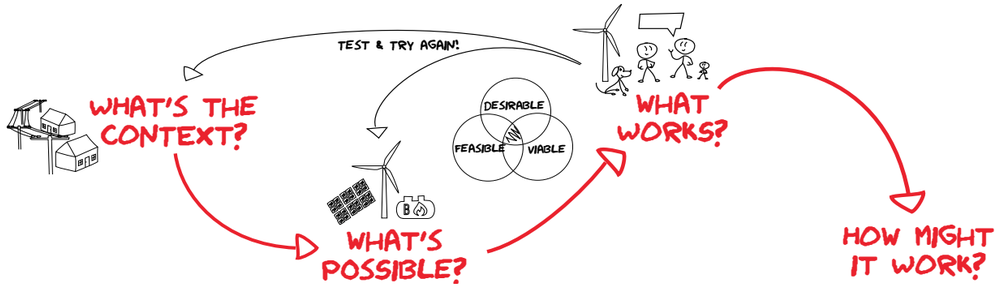
The Blueprint sets out the approach taken, the logic and principles applied in assessing options and the framework used for developing the implementation plan. The Blueprint and the Uralla Case Study are both useful resources for communities seeking to become a Z-NET.

What is a Z-NET?

A zero net energy town (Z-NET) is a community that reduces and balances its local energy needs with a 100% renewable energy supply. This is done firstly by reducing energy use and then importing or locally producing enough energy to meet or exceed the community's demand.

Becoming a Z-NET

Becoming a Z-NET sounds like a great idea—so where do we start? To become a Z-NET we need to find a path that's ambitious, realisable and in the long-term interests of the local community. To do this, it needs to be technically and practically feasible, financially viable and desirable to the local and wider community. The approach taken has been to carefully consider the context, identify all possible options and assess whether they will work and then resolve how they are best implemented.



What's the context?

The first step is to understand the context, which includes identifying the characteristics of the location and the community and its existing energy use. The context defines current and future energy requirements, identifies opportunities and highlights issues that present limitations or risks.

What's possible and will it work?

The next step is to understand all the possible options and determine the best fit within the local context. There are many options to reduce energy use and produce energy from renewable sources. To find the right approach we need to identify if options are feasible, viable and desirable.

How it might work?

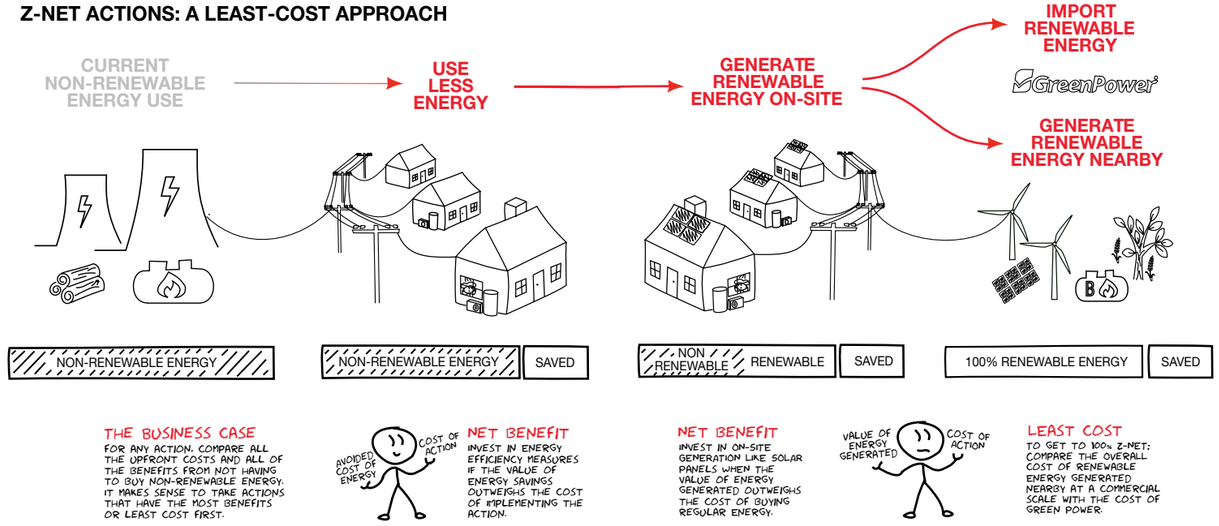
Having a model is great but it's crucial to have a plan to ensure it gets done. Understanding who is responsible for what and being clear about the resource requirements are key to ensuring we have a practical and reasonable path to achieve the goal of becoming a Z-NET.

Logic

The Blueprint sets out a simple logic for communities across Australia to establish a least-cost approach to becoming a Z-NET. Becoming Z-NET is technically possible today with available technology, however in practice cost is a key consideration for most if not all participants.

To establish the case for action, the community needs to weigh up the benefits and the costs of options available, such as using less energy for things like lighting and hot water, and compare these to other possible options. The Blueprint logic ensures that actions that have the most benefits or least cost are taken first.

The Blueprint also recognises that benefits and costs of renewable energy options change over time. Recognising this allows a community to take practical action immediately whilst resolving the most appropriate long-term investment to reach the Z-NET goal.



The graphic above outlines the z-net blueprint - a least cost approach to getting to zero net. the original Z-net project in uralla nsw, focused on energy only but the methodology has evolved to include all emissions sources.

Adaptation planning

Whilst there are a number of adaptation planning approaches available, the approach adopted for this project is outlined below.

Data and other technical information was sourced for the Bass Coast region with information specific to the local context prioritised.

A technical summary set the platform for the development of adaptation actions. This included:

- Establishing an agreed list of key climate hazards which could impact the region
- Documentation of moderate and high emissions scenarios to understand the extent of change in these hazard levels over time. This was completed with reference to established Representative Concentration Pathways (RCP's) in particular RCP 4.5 and RCP 8.5.
- Collation of locally specific information, resulting in a master list of climate change impacts felt in Bass Coast across a range of impact areas including Physical Environment, Health and Human Services, Local Economy, Natural Environment, Transport and Water
- An investigation of current / completed adaptation work in Bass Coast and the wider region

The impacts identified were reviewed with respect to the control or influence of Council or the broader community and the level of impact expected. A key determinant of the level of impact is:

- The level of exposure to the hazard
- The vulnerability of those adversely affected

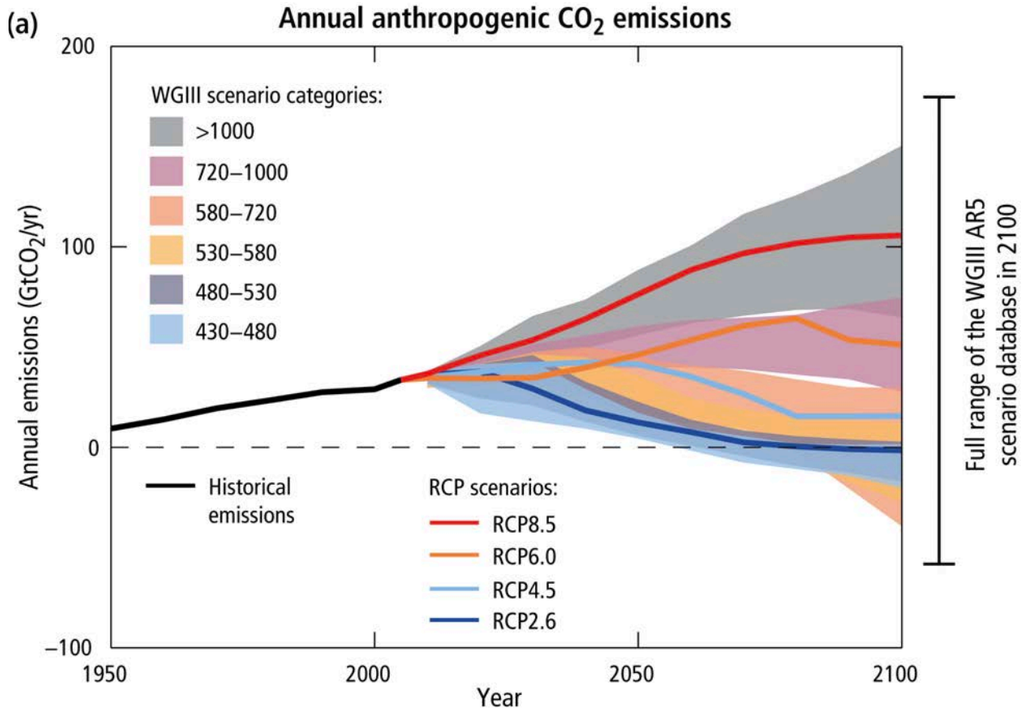
Where there was potential to influence and impacts were tangible, actions were developed in response and then tested in a workshop setting. The workshop and subsequent analysis adopted the 'five capitals' as a framework for analysis.

This approach recognises that adaptive capacity must simultaneously be built across five critical areas.

Following this 'five capitals' analysis some actions were removed as the benefit was low compared with the potential cost.

Many actions which had a capacity / governance focus, in particular in building human or social capital were re-categorised as foundational actions. These actions were highlighted as the pre-condition for improved decision-making over time.

The local knowledge of the CRG and broader stakeholder / community groups was critical in developing a context specific response.



Historical and expected emissions for each RCP scenario, IPCC 2014

10. Monitoring progress

The scale and urgency of the climate emergency mean that Bass Coast Shire and the community need to be well-informed, flexible and prepared to adapt or capitalise on opportunities as they emerge. Transparent, timely monitoring and reporting on progress is critical to understanding effectiveness of the activities and ultimately delivering on the ambition of this Plan.

Monitoring framework

There are four key areas of the plan that will need to be monitored and evaluated to ensure effective and efficient delivery:

1. Foundations for strong, collective climate action
2. Emissions reduction: at a council operations and community level
3. Climate change impacts and effectiveness of adaptation responses
4. Reach and engagement of the community

A high-level framework for monitoring progress and evaluating effectiveness of the actions and their implementation is outlined in below. It is important to note that this framework focuses on the actions delivered or supported by Council rather than the actions that need to be undertaken by individuals, households, businesses, farms and other levels of government.

Governance

To strengthen accountability and transparency for the Plan, Council will investigate how the Council and community can best work together. Council will establish an appropriate representative forum for the community to provide advice to Council on community climate change issues, action implementation and program development. The principles which will guide this partnership approach include:

- **Inclusive** - The platform will be open to all to engage, and seek input from a variety community voices
- **Transparent** - The platform for community engagement and partnership will allow for the honest communication of success and failure in project and program implementation
- **Celebratory** - The engagement forum will celebrate action taken across Council and the community

This approach will allow community members to engage with Council and the Plan on their own terms, build community stories and narrative, with engagement on specific programs with the community.

Monitoring and evaluation tools

Five tools are recommended to guide monitoring and evaluation:

- Climate change community portal
- Annual Council reporting
- Community indicators
- A detailed mid-term review of the Plan
- Climate change impact and adaptive capacity tracking

The regular tracking and reporting of key indicators will allow Council and the community to review the activity, investment and priorities annually based on progress and feedback from staff, partners and the community.

Climate change community portal

A key action contained within the plan is the development of a climate change community portal, which has a strong awareness and education role, but also provides the channel for transparent and accountable reporting against the Plan progess.

The design of the climate change community portal will make the results of that monitoring and evaluation visible to inform the community and to hold Council accountable for progress.

Whilst the level of 'granularity' of the information is still being resolved the intention is that the community will be able to access the portal to review key indicators of Council progress, but also understand how their individual action can and is contributing to the implementation of the Plan.

A more limited set of indicators will be available to understand progress against community goals which are easily monitored using publicly available data and which are indicative of progress towards the 2030 zero net emissions target.

BASS COAST

Annual review

Monitoring and evaluation against each Council action is recommended to be undertaken annually, where the action is a multi-year action. A Council 'Action Tracker' will be developed to ensure ease of monitoring against Plan actions.

This Action Tracker is intended to be a 'living' rather than a static document, which would be linked to the proposed portal. Many of the indicators and tools for data collection will be developed as part of development of project plans for each action.

The Action Tracker sets out:

- Action number and name
- Indicator
- Target (date)
- Tool (Data / Source)
- Frequency
- Monitoring responsibility

The Action Tracker will also outline a series of actions which will be reported through the highest level of Council reporting - the four year Council Plan. The intention is that climate actions suitable for 'elevation' into the Council Plan will be selected as part of the development of the Council Plan in early 2021.

One of the more tangible components of annual reporting relates to progress against Council corporate emissions targets. The table opposite outlines a limited set of key indicators. Progress towards the first goal of net-zero emissions for council operations by 2030 will be tracked and reported annually to the wider community via the Council Annual Report. A range of supporting indicators will also be regularly tracked to ensure the plan is being implemented and achieving its objectives. Achievement against these indicators will be reported via the Climate Change Community Portal.

As outlined, a more limited number of community emissions reduction indicators are proposed as per the table opposite. As Council has no direct control over this trajectory they will not be included in the Council Annual Report, however where Council has a role in supporting community action that will be reported at minimum through the Action Tracker and community portal.

Council corporate emission reduction indicators

Indicator	Tracking progress	Reporting Frequency & Location
Council emissions	Net-Zero by 2030	Council Annual Report and via portal
% of renewable energy	100% 2021	Council Annual Report and via portal
kW Solar Installed	Additional 250kW of capacity by 2030	Council Annual Report and via portal
% EVs in fleet	90% 2030	Council Annual Report and via portal
% LED street lights	100% by 2030	Council Annual Report and via portal

Community emission reduction indicators

Indicator	Tracking progress	Reporting Frequency & Location
Community Emissions	Net-Zero by 2030	Mid-point review (2024/25)
% households with Solar PV	60% by 2030	Annually via portal
% households with Solar PV plus battery*	36% by 2030	Annually via portal
% businesses and farms with Solar PV	25% by 2030	Annually via portal
% households with EV's	80% by 2030	Annually via portal
% reduction in waste to landfill	10% by 2030	Annually via portal

** Assumes data will be readily available via the Clean Energy Regulator.*

Community indicators

To understand (beyond the emissions reduction indicators) climate action participation within the community, a broad set of indicators have been developed. These focus on:

- The reach of Council programs
- The awareness and level of climate action of community members

The reach of Council programs will be effectively built into the evaluation of individual Council programs and then made visible through the portal as part of ongoing reporting. Evaluation of this progress would also be built into the individual Council programs in a consistent way (allowing comparison of effectiveness between programs).

Several indicators of awareness and level of action of community members are proposed, and rely on a mix of self-reporting and through surveys supported by community groups. These would also be reported through the portal when developed.

Indicator	Tracking progress	Reporting Frequency & Location
# community groups supported (or amount of funding distributed)		Annually via portal
# households participating in council or community programs		Annually via portal
# businesses and farms participating in council or community programs		Annually via portal
Reach / engagement with the portal		Annually via portal
Reach / engagement with the resilience hubs / toolkit		Annually via portal
% Household Resilience Plan (development and implementation)	50% of householders by 2030	Annually via portal
% Community group membership	25% of householders by 2025	Annually via portal
% Business Resilience Plan	50% of businesses by 2030	Annually via portal
% Farm Adaption Plan	50% of farmers by 2030	Annually via portal (with Landcare support)

Mid-term review

At the midpoint of implementation in 2024/25 Council will lead, in partnership with the community, a comprehensive review to ensure that the Plan is on track. This midpoint review will include:

- Final evaluation of the potential for an accelarated zero net emissions target date for Council corporate emissions (Refer Action 38)
- A refreshing of the community emissions baseline, adopting where possible the same data sources as underpin this work
- Re-testing community priorities and needs for climate action in Bass Coast
- A detailed audit of council policies, programs and plans to ensure alignment with climate emergency has been measurably improved
- A re-evaluation of climate change data and projections, for the purposes of refining emissions reduction actions and evolving the adaptation responses
- Changes in State and Federal Government policies or programs (operating environment) and evaluation of advocacy priorities
- Review of available research, technology and other information (in particular the maturing of key solutions)
- Current research and expert advice

The output of this review will be a refreshed Climate Change Action Plan which has been modified to reflect the changes in operating environment and responses to new challenges and opportunities. The timing of this review will coincide with the development of the 2025-2029 Council Plan and will confirm budgets for Council climate change action for this period.

A mid-term review of this plan will include a re-evaluation of the communities priorities and needs around climate action (Image: BCSC)

Climate change impacts

Monitoring progress in relation to climate adaptation and resilience is more challenging. This is in part due to the long-time frames associated with potential climate change impacts and further complicated by the challenge of establishing counterfactuals (i.e. what would have happened without the intervention). There is reduced consistency for measuring climate change adaptation interventions (outcomes and impacts) compared with emissions reduction where there are well established, globally consistent metrics.

For Council actions, indicators of the effectiveness of Council adaptation actions will be set through the detailed action design. The Action Tracker will include consideration of whether or not (or the extent to which) the action has been completed. Additionally, qualitative evaluation is possible in relation to the extent to which the action has been effective (in mitigating impacts).

Monitoring climate action requires an agreed set of indicators for both climate hazards (such as sea level rise) and impacts such as coastal erosion (Image: Cape Woolamai by Geoff Russell)

There is complexity at the whole of community level, with difficulty in attribution of the impact of adaptation actions. Actions have been selected based on their ability to tangibly and cost effectively build the adaptive capacity of Council and the broader community (through the 'Five Capitals' framework).

A comprehensive approach to monitoring the effectiveness of these actions as a whole is proposed to include the following:

- Collaboration with DELWP to resolve a set of agreed indicators that the State will be monitoring in the region over the lifetime of the plan (this relates to both climate hazards (such as sea level rise) and impacts such as electricity network disruption due to extreme heat
- Establishing a baseline of the current levels of 'adaptive capacity' within Council and the broader community through a benchmarking survey of staff and the broader community and at a minimum a two yearly review (the second of which would be a key input into the mid-term review)
- Qualitative assessment of Foundation and Adaptation actions in relation to their effectiveness in improving human, social, infrastructure (physical), natural and financial capital (yearly)

Indicators already in the Council Action Tracker support this evaluation and these will be augmented over time through the detailed design of actions.

Within the context of limited resourcing, the focus on monitoring climate change impacts will be limited primarily to those indicators which are collected already by State Government, other stakeholders or are already part of Council reporting.

New indicators will be developed only if there is a clear gap, acknowledging that a combination of process, output and outcome indicators that take into account the timeframe of climate change impacts and adaptation are required.

BASS COAST

11. Thank you

Hundreds of people have been involved in developing this Plan. Every contribution has been important.

Bass Coast Shire Council would like to thank each and every person who gave their time, information and creative thinking for the betterment of this Plan.

This Plan was developed during the 2020 COVID-19 pandemic. Giving time and energy during this challenging period speaks to the local passion for climate action and for the urgency of the response needed.

Beyond this contributing to the development of this Plan, there are so many people in our community, at home and at work, who are already taking action. Thank you for these efforts – let's scale up action together!

BASS COAST

Community Reference Group

Community representatives: Michele Isles, Naomi Coleman, Ian James, Isabel Rooks, Wendy Williams

Community Group representatives: Totally Renewable Phillip Island (TRPI): Bhavani Rooks, Bass Coast Climate Action Network: Michael Nugent, Cowes East Foreshore Prevention Action Group: Ken Hailey

Sector Specialist representatives: Water Sector: Paul Donohue, Westernport Water, Agriculture sector: Ric Oldham, Bass Coast Landcare Network, Community Energy: John Coulter, Energy Innovation Cooperative

Councillors / Council representatives: Cr Michael Whelan, Cr. Geoff Ellis, Benita Russell – Climate Change and Sustainability Advisor, Diana Whittington – Coordinator Land and Catchment

Survey and workshop participants

Over 580 community members and Council staff have participated in surveys and workshops to support the development of this plan.

Business and stakeholder interviewees:

- A Maze'N Things, Geoff and Sandy Moed
- South Coast Bus Lines/ Phillip Island Bus Lines, Michael Wright
- Newhaven College, Stuart Robinson
- The Cape, Brendan Condon
- Bass Coast Health, Lynne Winterburn
- CYC Christian Youth Camps / Phillip Island Adventure Resort, Mark Rowe
- Corinella General Store, Barbara Oates
- Springbank Ecosystems, Libby Lambert
- Daryl Hook, beef farmer
- Bass Coast Landcare Network, Joel Geoghegan - Team Leader, Sustainable Agriculture
- DELWP, Cassandra Philippou - Project Manager – Inverloch Regional and Strategic Partnership (primary contact), Tamika Darragh - land and built environment program officer, Pat Lambert - Land and Built Environment Program Manager, Jeremy Neilson - Land and Built Environment (Acting Regional Manager Gippsland)
- Phillip Island Nature Park, Jarvis Weston - Projects and Procurement
- Bunurong Land Council Aboriginal Corporation, Dr Rohan Henry - Manager of Land, Waters and Values

Bass Coast Shire Council staff

_ Climate Change And Sustainability Advisor

_ Foreshore and Bushland Reserves Encroachment Officer

_ Waste Education Officer

_ OHS Advisor

_ GIS Officer

_ Visitor Services Officer

_ Coordinator Coast and Bushland, Bass Coast Shire Council.

_ Land and Catchment Coordinator

_ Coordinator roads

_ Team Leader Operational Support Infrastructure Maintenance

_ Statutory Planning

_ Manager Investment and Visitor Economy

_ Team Leader social planning

_ Coordinator Asset Management

_ Coordinator Open Space and Buildings

Information dissemination

Many community groups and grass-roots organisations disseminated information and encouraged their members to get involved with the development of this Plan. We would like to thank all groups, organisations and individuals that recruited new participants into this project.

BASS COAST

12. Glossary

(Carbon) Abatement: Is the reduction of the amount of carbon dioxide that is produced when coal and oil are burned: Fossil fuel-based carbon abatement technologies (CATs) enable fossil fuels to be used with substantially reduced CO2 emissions.

Adaptation: Imagine you're on a ship that's sinking because of a leak. If you want to stay afloat, you've got to act. You grab a bucket and pour water out as it gushes through the hole. This response is adaptation — addressing the effect (the water in the boat), but not the cause of the problem (the hole).

The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as "the process of adjustment to actual or expected climate and its effects." It's doing what we can to live with and minimise the destruction and suffering from climate change.

Blue-green infrastructure: The use of vegetation, soils and natural processes in an urban context to simultaneously deliver landscape and water management benefits. Examples include natural and artificial waterways, raingardens, trees and indigenous plant landscapes.

Carbon emissions: Greenhouse gas emissions released by the process of consuming fossil fuels and the production of materials.

Carbon neutrality: Carbon neutrality is achieved when the net greenhouse gas emissions associated with an organisation's activities, products, services and events are equal to zero.

Carbon offset: Represents the removal of greenhouse gas from the atmosphere by sinks, or a reduction in emissions relative to a business-as-usual baseline. Carbon offsets are tradeable and often used to negate (or offset) all or part of another entity's emissions. Examples include tree planting, methane capture and use and renewable energy projects.

Carbon Sequestration: 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 Re-Use, Re-Purposing and Recycling.

Climate change: Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.

Climate change adaptation: See Adaptation

Climate change mitigation: See Mitigation

Climate Emergency: The catastrophic changes to the climate brought about by human activity that poses a dangerous threat to all life on the planet.

Emissions: Shorthand for carbon emissions (see entry on carbon emissions).

Emissions reduction: Also known as mitigation (see glossary entry on mitigation below).

(Climate) Exposure: Presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.

Fossil Fuels: Any of a class of hydrocarbon-containing materials of biological origin occurring within Earth's crust that can be used as a source of energy (i.e. coal and oil).

Greenhouse gases (GHGs): There are six GHGs which are considered to be key contributors to global warming. These are Carbon dioxide (CO2), Methane (CH4), Nitrous oxide (N2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF6). Carbon dioxide is considered the most significant GHG due to its increasing prevalence within the atmosphere.

(Climate) Hazards: Relates to the potential occurrence of a natural or human-induced physical event or impact that may cause loss of life, injury or other health impacts, or damage infrastructure and ecosystems.

(Climate change) Impacts: These are the subsequent consequences, or effects on natural and human systems from climate change.

Microgrid: are is a subset of the broader electricity network with all the necessary components to operate independently. Microgrids are typically developed for three main reasons – energy security, cost savings and sustainability

Mitigation (emissions reduction): Imagine you're on a ship that's sinking because of a leak. Sealing the leak to stop more water coming in is mitigation. In other words, it's addressing the root cause of the problem rather than dealing with its effects.

The IPCC describes, mitigation is "human intervention to reduce the sources or enhance the sinks of greenhouse gases".

Regenerative agriculture (RA): Aims to re-empower natural forces to stabilise biodiversity health and soil quality to create a more resilient form of food production at larger scale. RA includes minimising soil disturbance, maximising crop diversity, integrating livestock and integrating larger trees into crop designs.

Renewable energy: (also called 'clean energy') comes from natural sources or processes that are constantly replenished such as solar, wind and water (hydro).

Resilience: the capacity of individuals, institutions, businesses, communities and systems to adapt, survive and thrive no matter what kind of chronic stresses and acute shocks they experience.

Representative Concentration Pathway (RCP): RCPs refer to the portion of carbon concentration within a particular emission pathway or trajectory extending to 2100. The IPCC has identified four RCPs: 2.6, 4.5, 6.0 and 8.5 – which are named after their expected radiative force (W/m2), or difference between sunlight absorbed by the earth and energy radiated back to space.

Safe climate: Refers to the enjoyment of a safe, clean healthy and sustainable environment accessible by all global citizens.

Stationary energy: the energy we use to power our buildings and infrastructure - electricity, mains gas and LPG bottled gas.

Virtual Power Plant (VPP): Are similar to microgrids, however often cover a wider area and are flexible enough to expand or contract the area in which they operate, depending on market conditions. They serve the main grid, while microgrids don't always provide services to the main grid.

(Climate) Vulnerability: Propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Zero net emissions: Also referred to as 'zero carbon' is the process of achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.

13. Appendix 1: Community Groups and Organisations

Image:

2020 Clean Up Australia Day, Cowes Foreshore

Bass Coast Community groups and organisations

Local community group and organisations have been and will continue to be at the heart of climate change action within Bass Coast. Below is a list of community groups and organisations actively participating in some form of climate change action (as at August 2020):

- Barb Martin Bushbank
- Bass Coast Climate Action Network
- Bass Coast Conservation Council
- Bass Coast Community Gardens Network
- Bass Coast Friends of the Hooded Plovers
- Cape Paterson Residents and Ratepayers Association
- Cape Woolamai Coast Action
- Coastcare (Surf Beach, Sunderland Bay, Red Rocks)
- Corinella Foreshore Committee
- Cowes East Foreshore Preventative Action Group
- Energy Innovation Co-op
- Fishcare Mornington Peninsula and Westernport Inc
- Friends of Blue Gum Reserve
- Friends of Harmers Haven
- Friends of the Koalas Inc
- Friends of Scenic Estate Reserve
- Friends of Wonthaggi Heathland and Coastal Reserve
- Grow Lightly Food co-op
- Inverloch Garden Group
- Inverloch Sustainable Living
- Landcare
- Mornington Peninsula and Westernport Biosphere Reserve
- Newhaven Coast Action
- Philip Island Conservation Society
- Phillip Island Nature Park
- Plastic Free Phillip Island & San Remo
- Rhyll Coast Action
- San Remo Garden Group Inc
- Silverleaves Conservation Association
- Smiths Beachcomber Association
- South Gippsland Conservation Society
- Southern Gippsland Extinction Rebellion
- Totally Renewable Phillip Island
- Transition Phillip Island
- Ventnor Coast Action Network
- Watershed Vic
- Wonthaggi Food CoOp.
- Wonthaggi Seed Bank & Nursery

Climate Change Action Plan

2020 - 2030

BASS COAST