Background document

For the Borough of Queenscliffe Climate Emergency Response Plan Community Panel workshops

November 2020

Borough of Queenscliffe

Queenscliff & Point Lonsdale, Victoria, Australia

March 2021

Statement of Acknowledgement

The Borough of Queenscliffe respectfully Acknowledges the Traditional Custodians of our community, the Wadawurrung people, one of some 25 clans that form part of the Kulin nation.

We pay respect to their Elders past, present and emerging, and extend this respect to all Aboriginal and Torres Strait Islander peoples.

The Wadawurrung Traditional Owners Aboriginal Corporation have recently released their Healthy Country Plan - the Paleert Tjaara Beek. The plan sets a vision, recognises key values and threats and outlines out a range of programs and strategies to address these. Council has engaged and talked to the traditional owners about our Climate Emergency Response Plan and they will decide how they want to be involved.

Kuling wada-ngal - Let us walk together

How to use this document

This document is a reference tool and was provided to the Community Panel in November 2020 to provide Background to the Climate Emergency in the Borough of Queenscliffe.

Links, references and videos are available if you want to dive deeper into specific topic areas. An attachment to this document is an **Appendix for Background Document** which is a full Appendix of the original sources and supporting documentation.

Contents

Overview

The Borough of Queenscliffe Council declared a Climate Emergency on 19 December 2019 and committed to prepare a Climate Emergency Response Plan in partnership with the community. We are seeking your help to create this important plan together.

The series of workshops we are about to undertake together will not debate the clear science around climate change, nor Council's decision to declare an emergency. By declaring a Climate Emergency, we accept the science of climate change.

Queenscliff and Point Lonsdale are already being affected by the impacts of climate change. We face an increasing risk from coastal inundation, frequent heatwaves, heavy rainfall and flooding, and sea level rise.

As a community, we need to act now. Together, we'll decide what ambitious local action we are prepared to take together to protect our community and the special places we love.

Many residents have already taken action to reduce their impact on the environment, and Council has reduced its emissions by a third since 2013, but we'll have a much greater impact if we come up with a plan to work together.

The Climate Emergency Response Plan for Queenscliff and Point Lonsdale will be community-led, underpinned by a strong partnership with the Borough of Queenscliffe to guide Council and community action.

In partnership with the community, our three sessions together will contribute towards a plan that:

- Defines roles and responsibilities for both Council and the community,
- Sets ambitious goals and ways to measure how we meet them,
- Outlines specific actions Council and the community will take to respond to the climate emergency,
- Addresses both mitigation and adaptation strategies.

What is the Climate Emergency?

The United Nations (UN) released a report in October 2018 on the impacts of global warming and warned that we may have just twelve years left from 2018 to limit a climate crisis.

An increase of global warming at current rates will significantly increase the risk of drought, floods, extreme heat and climate-related poverty for millions of people across the world.

This is the Climate Emergency.

View these short videos:

Video title and link	Description	Duration
Climate 101: climate with Bill Nye from the Climate Reality Project	Bill Nye narrates this short film on the basics of climate change.	4 min 33 sec
Climate Change: the facts in 4 minutes	2018 was one of the hottest years on record. Looking at the science of climate change, Sir David Attenborough outlines the challenge it poses for all of us.	4 min

Both the global population and the level of carbon in the atmosphere has grown in the past century:

Year	World population	Carbon in atmosphere	Remaining Wilderness
1937	2.3 billion	280 parts per million	66%
2020	7.8 billion	415 parts per million	35%

David Attenborough's witness statement.

Presentation: A pocket guide to climate change

What are the key responses to the Climate Emergency?

In an emergency, society devotes all available resources needed to solve the problem - it requires every level of government and community to work together.

Responding to the climate emergency involves a two-pronged approach: mitigation and adaptation.

Mitigation (reducing climate change) involves reducing the flow of heat-trapping greenhouse gases into the atmosphere, either by reducing sources of these gases (for example, the burning of fossil fuels for electricity, heat or transport) or enhancing the "sinks" that accumulate and store these gases (such as oceans, forests and soil).

To restore a safe climate, we need a rapid transition to zero emissions and a drawdown of excess greenhouse gases in the air at emergency speed - 2030, not 2050, is the crucial time frame.

Adaptation (adapting to life in a changing climate) involves adjusting to actual or expected future climate. The goal is to reduce our vulnerability to the harmful effects of climate change (like sea level encroachment, more intense and extreme weather events or food insecurity).

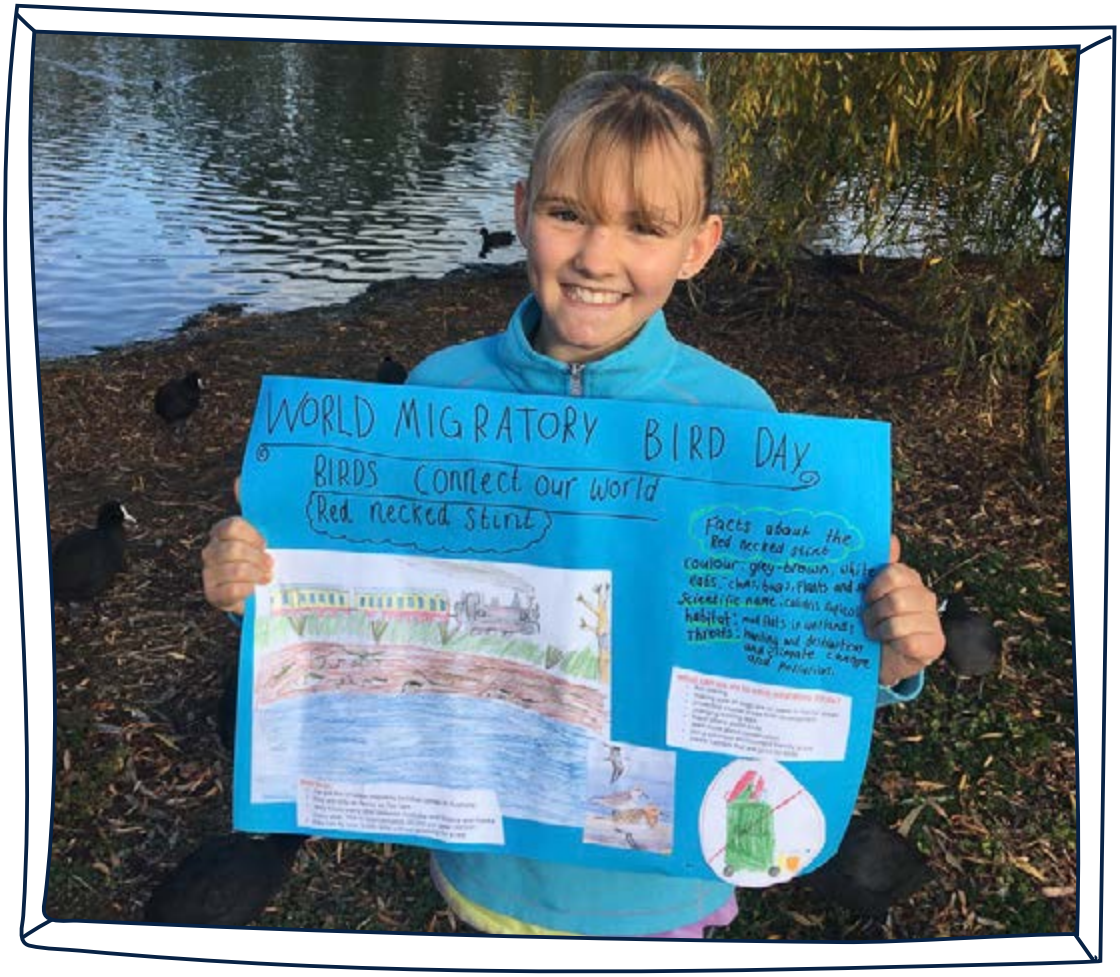
Adaptation is vital, but no substitute for deep climate mitigation and should be seen as a parallel strategy to mitigation to deal with unavoidable impacts and risks.

It also encompasses making the most of any potential beneficial opportunities associated with climate change (for example, the likelihood of longer growing seasons or increased yields in some regions such as the Barwon South West).

What other key climate terms should I know about?

Drawdown Carbon - in order to restore a safe climate, excess emissions need to be rapidly removed (or drawn down) from the atmosphere through the storing of carbon in soils, vegetation, trees, oceans and via other biological processes.

Many carbon removal techniques are not currently deployable at the scale needed, may be unproven and have other implications for land and natural resource use. The focus is to reduce emissions to achieve zero net emissions while also supporting action that contributes to carbon storage, such as tree planting and vegetation management and larger scale projects (carbon sinks and changes in land management).



How are other Councils and communities navigating this?

Local governments are fundamental in the Climate Emergency response.

The Borough of Queenscliffe is part of a group of 1,824 local governments across 31 countries, with a combined population of more than 820 million citizens, that have declared a Climate Emergency. In Australia, around 99 councils have declared a Climate Emergency, representing a combined 9 million people. Being part of a global movement means we have a greater impact and more opportunities to collaborate and save resources.

In Victoria, councils that have recognised or declared a Climate Emergency include regional councils like Ballarat, Surf Coast, Warrnambool, Greater Shepparton and Bass Coast, as well as urban councils like Darebin, Yarra City, Melbourne City, Port Phillip and Greater Dandenong.

In developing our plan, we can learn from the Climate Emergency Response plans that other councils and communities have developed. Plans relevant to our Borough include:

- Darebin Climate Emergency Plan
- Mornington Peninsula Shire Climate Emergency Action Plan
- Draft Climate Change Action Plan for Bass Coast
- Yarra's Climate Emergency Action Plan

Many councils and communities are also committing to becoming carbon neutral or `zero carbon'. This means local carbon emissions across all sectors are reduced, sequestered (stored long term) or offset. Councils and state governments that have committed to zero net emissions or carbon neutrality include:

- City of Adelaide and City of Melbourne - by 2020
- Noosa - by 2026
- City of Darebin and City of Moreland - by 2040
- Australian Capital Territory - by 2045
- City of Yarra, State of Victoria and State of South Australia - by 2050

Communities that have committed to zero carbon/zero emissions targets include Hepburn, Bass Coast, Mornington, Byron Bay, Noosa and Toowoomba. Other communities like Hepburn, Phillip Island, Yackandandah, Nillumbik and Southern Otways have committed to 100% renewable energy targets.

What is the local climate change context?

Victoria

The Victorian Government and the CSIRO's Climate Science Report 2019 brings together the latest climate change science for our region.

Victoria is expected to get hotter and dryer and to experience longer fire seasons and rising sea levels. Across the state, hot days are expected to approximately double between now and the 2050s under high emissions.

Extreme heat events already cost the Victorian economy on average $87 million a year and this cost is projected to rise as heatwave events become more frequent.

These changes are expected to continue in the future. Understanding the drivers and impacts of these changes, as well as what we can expect in the future, will help us to plan and adapt.

Barwon South West Region

The Borough of Queenscliffe is part of Wadawurrung Country in the Barwon South West region of Victoria. The Barwon South West region has already become warmer and drier - a climate trend likely to continue into the future.

Barwon South West has been getting warmer and drier. In the future the region can expect...

- Temperatures to increase all year around
- Less rainfall in Winter and Spring
- Harsher fire weather and longer fire seasons
- Increased frequency and height of extreme sea level events
- More hot days and warm spells, and fewer frosts
- More frequent and more intense downpours
- Rising sea level

Source link

What is happening in the Borough of Queenscliffe?

In Queenscliffe, we are seeing an increase in the frequency of extreme heat events. Our climate is predicted to get hotter and drier, driving water demand up and supply down. Rainfall into our reservoirs is modelled to reduce 7% by 2040. We also face the likelihood of extreme and unpredictable weather and increased incidents of storms.

These climate risk trends will significantly impact our natural environment, ecosystems, agriculture, the built environment, and importantly, the health and wellbeing of our community. It will also place increased pressure on the economy with the expected annual cost to Victoria from heatwave events alone predicted to reach $179 million by 2030.

Coastal communities like Queenscliff and Point Lonsdale are at the forefront of climate change in Australia. Victorian Government research strongly indicates that future changes could include:

- Extreme weather events
- Rising sea levels
- Hotter, drier summers
- Warmer, wetter winters.

Sea level rise, catchment inundation, storm surge and erosion in the Borough

As a low-lying, coastal community, impacts resulting from rising sea levels and extreme weather events are major risks we need to prepare for.

The image below from Coastal Risk Australia shows the predicted inundation scenario for the Borough in 2100 at +0.74m, based on findings from the Intergovernmental Panel on Climate Change (IPCC)'s fifth assessment report.

In 2016 the Borough collaborated with the Department of Environment, Land, Water and Planning (DELWP), the City of Greater Geelong (COGG), and three local coastal management organisations to establish `Our Coast'. This project uses the latest data on projected sea level rise and storm surge to model potential inundation levels across Geelong and the Bellarine Peninsula. The `Our Coast' program was recognised for its in excellence in March 2018 with the Borough receiving the Australian Coastal Award for Climate Adaptation. Detailed information can be found in the `Our Coast' Summary Report'.

The Our Coast Project completed the Geelong - Queenscliff Coastal Mapping Project, identifying areas that may experience sea level rise. The research involved a technical assessment by consultants from Cardno, looking at issues including catchment inundation, storm surge and erosion. The assessment includes a series of maps of Point Lonsdale, Queenscliff and Lakers Cutting showing the potential impact of sea level rise scenarios and severe weather events.

Key issues highlighted:

- The Point Lonsdale to Point Edwards (top of Swan Bay) section of the coast is subject to overtopping and inundation hazards from storm tide levels, which means there could be scenarios where structures may fail. This showed quite a significant hazard for the present day and in future with sea level rise increases.
- Inundation is likely to be the overriding hazard for the Queenscliff area, more specifically, Fisherman's Flat. The Fisherman's Flat shoreline is significantly lower than the rest of the Queenscliff area; therefore, any inundation is likely to originate from there.
- At the southern end of Swan Bay, an assessment of the inundation of Lakers Cutting and the Lonsdale Lakes development was undertaken. It was found that the chance of inundation may extend to the Bellarine Highway and properties in the vicinity of Murray Road. The extent of inundation of this area becomes significant under a 1% AEP with a 0.2 m sea level rise (AEP is `annual exceedance probability' - the probability of a flood event occurring in any year).
- Under higher sea-level rise events the Bellarine Highway could be impacted. The most significant impact of a 1% AEP storm-tide within Swan Bay is that shoreward of the Marine Discovery Centre and sections of Murray Road would both be inundated at the present day sea-level.

View the results for Point Lonsdale and Queenscliff and watch the visualisation videos:

- `Our Coast' project video
- Lakers Cutting, Queenscliff visualisation video
- Fisherman's Flat visualisation video
- Impacts on cultural heritage - refer to Wadawurrung Healthy Country Plan

Impacts on natural environment

The natural ecosystems that underpin human life, wildlife and biodiversity are at risk due to the speed and scale of the climate changing, the consequent extreme weather events - such as catastrophic bushfires - as well as land clearing and habitat loss. Devastation to the natural environment is exacerbated by the inability of many species to adapt at the same pace as the climatic change, and the increased risk of pests and disease.

Economic impacts

The economic impacts of climate change are substantial. Victorians are already bearing the costs of damage caused by extreme weather events and will continue to do so as conditions worsen.

It is estimated that the State Government spent over $4 billion over 10 years (2003 - 2013) on response to and recovery from climate related events such as bushfire, flood and drought. The total economic costs from bushfires are projected to rise from an average of $172 million per year in 2014 to $378 million per year by 2050.

The economic impacts that Council, businesses and property owners are likely to experience from future climate events in the Borough of Queenscliffe include:

- Increased cost of maintenance to Council due to damage of assets
- Increased insurance premiums for Council, property owners and local businesses
- More frequent flooding and sea level rise leading to exceeded drain capacity and damage to property
- Loss of access (road, path) to essential services during extreme weather events
- Property and asset damage from extreme weather events
- Changes to open space condition and availability
- Loss of vegetation (Exotic or indigenous species)
- Negative impacts on visitation/tourism and local economy.

Health impacts

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

The increase in heatwaves and hot days is one of the most dangerous impacts from climate change. The risks are especially serious for vulnerable people including the very young, elderly, sick and disadvantaged. Heatwaves cause more deaths than any other natural disaster in Victoria.

What is the Policy Context?

The following section covers existing policy and legislative contexts that Council works in to provide insight into how the community can be active in helping to meet these objectives.

Local governments play a critical role in responding to the Climate Emergency.

Local government policies

Local government is generally more open, democratic and flexible, and community advocacy, innovation and support for change can be built more quickly at the local level. Local governments also network and learn from each other, including on climate emergency planning and response. Councils have extensive experience in educating and working with their community.

The fundamental role of councils is reflected in the new Victorian *Local Government Act 2020*, which includes an overarching governance principle requiring councils to promote the economic, social and environmental sustainability of the municipality, including mitigation and planning for climate change risks.

This principle connects with Victoria's Climate Adaptation Plan 2017-2020 and the Climate Change Act 2017, where our role as local government is to provide leadership and good governance, represent the needs and values of local communities, and foster community cohesion.

See more information on the Local Government Climate Review.

State policies

The Victorian Government's current suite of policies and strategies to address climate change are legislated in the *Climate Change Act 2017*. The Act includes:

- Interim targets and strategies to be updated every five years
- Adaptation action plans, policy objectives and guiding principles, pledges and annual reporting
- A target of Net Zero emissions by 2050 and 40% renewable energy by 2025
- An interim target of 15-20% reduction in emissions on 2005 levels by 2020 and 25% renewable energy by 2020; key plans are the Victorian Renewable Energy Target (VRET) and the Victorian Energy Efficiency Target (VEET).

Federal policies

In November 2016, Australia ratified the Paris Agreement and the Doha Amendment to the Kyoto Protocol, reinforcing the commitment to action on climate change. The Federal Government's current climate change plan includes:

- Reducing emissions by 5% below 2000 levels by 2020
- Reducing emissions by 26% - 28% below 2005 levels by 2030
- Doubling Australia's renewable energy capacity by 2020
- Improving energy productivity by 40% by 2030.

Borough of Queenscliffe emissions profile

Here, we have split our Council emissions and community generated emissions profile. Viewing them separately makes it easier to get an understanding of the emission contributors for both groups.

Council's emissions profile

The Borough of Queenscliffe covers 10.83 square kilometres, making it Victoria's smallest local government area and the only Borough in Australia. Council subscribes to an environmental scorekeeper to measure consumption of electricity, gas, water and fuel used to deliver Council services and programs. Council has been actively working to reduce its emissions, and emissions have fallen by 34% since 2013 - 14, when tracking commenced.

The majority of Council's measured emissions come from:

- Council's own corporate electricity consumption (50%: from Council offices, sporting facilities, Town Hall, Library and Visitor Information Centre, Council-operated caravan parks, water pumps, and recycling and waste from Council offices)
- Contractor fuels (20%)
- Electricity consumption from public street lighting (11%)
- Fleet (8%).

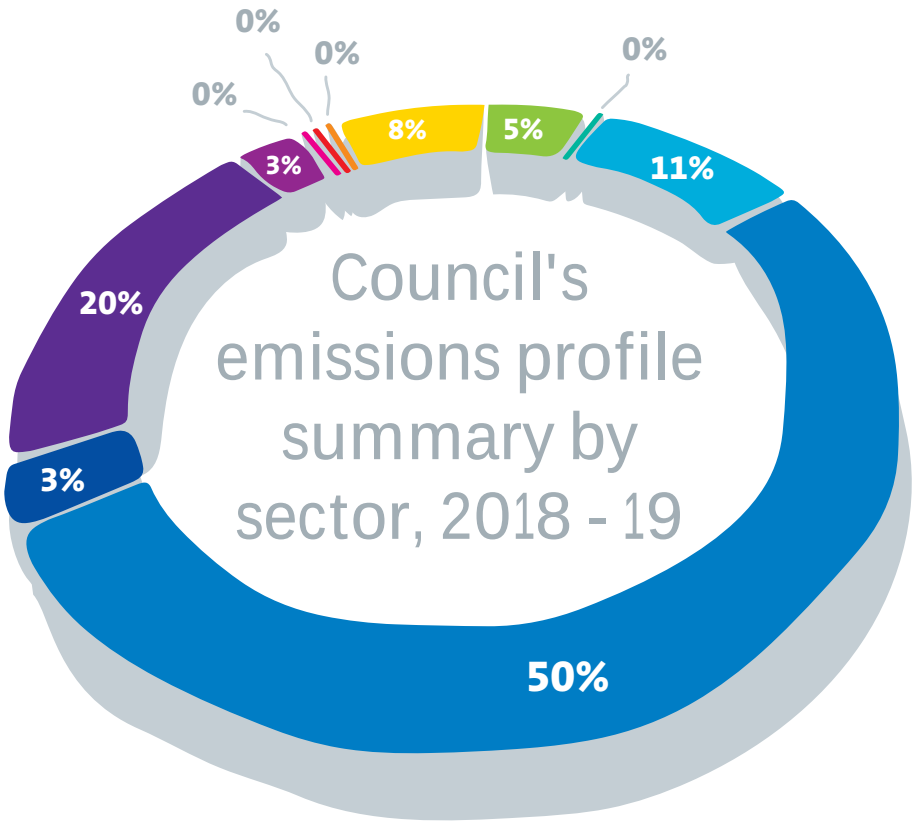
Council's total emissions for 2018-19 were 709.28 tonnes of CO2-equivalent.

Council's purchase of Green Power was used as a reduction measure and reduced the total emissions by 166.5 tonnes, leaving net emissions as 709.28 tonnes. See below Council's emission profile.

Note: Green Power is a government-managed scheme that enables Australian businesses and householders to buy renewable energy from their electricity retailer who then has to source this from renewable energy providers.

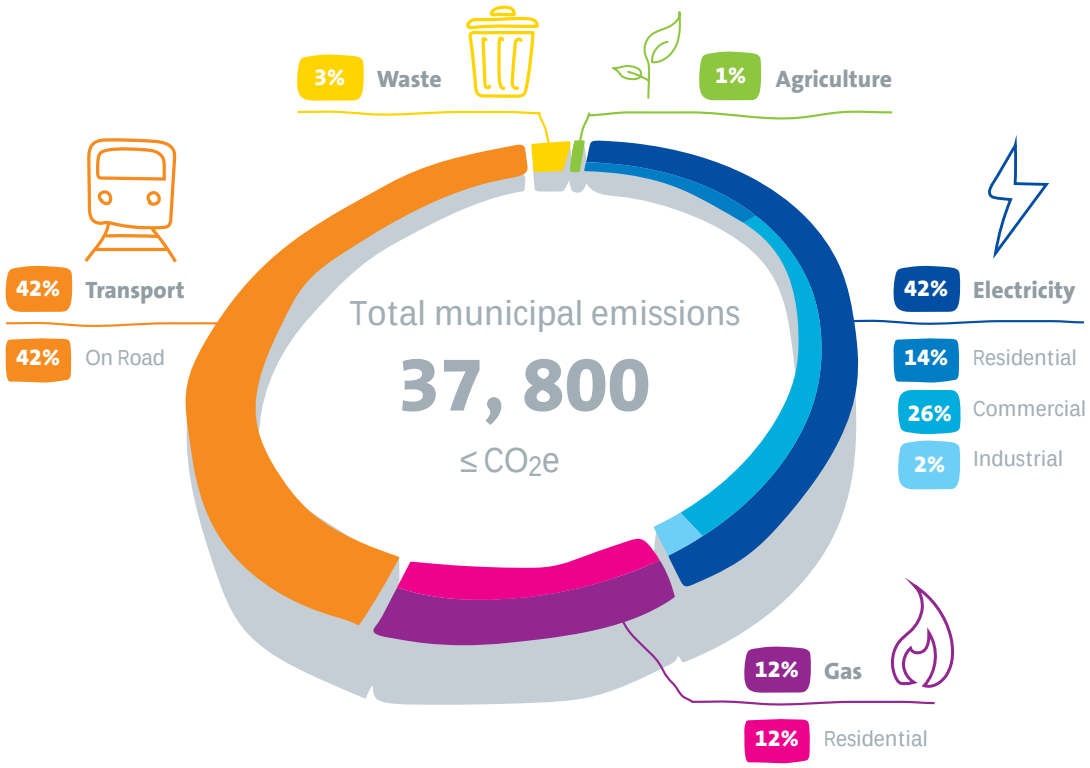
Council's emissions profile summary by sector, 2018-19

The 2018-2019 Council emissions profile was used instead of the 2019-2020 emissions profile because 2019-2020 emissions were significantly lower with the closure of Council facilities due to Covid19 and as a result these emissions are not representative of Councils normal operations.



Community Emissions Profile

Borough of Queenscliffe municipal emissions snapshot, 2018-19



Source	Sector	Emissions († CO_2e)
Electricity	Residential	5,300
	Commercial	9,800
	Industrial	800
Transport	On Road	16,100
	Domestic Air Travel	0
Waste	Landfill	600
	Water	400

Source	Sector	Emissions († CO_2e)
Gas	Residential	4,600
	Commercial	0
	Industrial	0
Agriculture		200
Land Use		600

Land Use data is not used in the chart nor the displayed total municipal emissions

As a Borough, Queenscliffe is very small geographically, which provides us with a unique opportunity to drastically reduce our emissions profile if we work together as a community, creating a potential blueprint that could be used by others. A crucial part of this process will be for us to set a target as a community to reduce our emissions.

The short term is crucial: what we do now and before 2030 matters.

While Council has a clear indication of its baseline emissions, we need to invest in detailed data analysis on the emissions we generate as a community. However, we do know through the climate snapshot profile of Point Lonsdale and Queenscliff that:

We need to reduce our community's major emissions sources, which are energy and transport.

Council has started this process with the Renew Alternative Energy Supply Discussion Paper (see summary on page 25), which provides us with detailed data on the Borough's electricity use, including how much we currently use and how much we need to generate to move to a 100% renewable energy supply.

There are also significant embodied emissions produced from goods, services and activities that are not accounted for in our emissions profile. `Embodied' emissions include emissions produced from extracting or growing raw materials, processing and manufacturing, transport use and disposal. Air travel and the food we consume, such as meat and dairy, are particularly carbon and resource-intensive. While the exact quantity of emissions attributable to our lifestyles is complex to calculate, the planet cannot sustain this level of consumption, associated carbon emissions and waste generation.

What has our community and Council done in response to Climate Change?

By declaring a climate emergency on 19 December 2019, Council has joined a global movement of local governments taking action in partnership with their communities. As the nimblest level of government, and the one closest to the community, Council has a fundamental role to play. Council can also advocate to higher levels of government for emergency action. Council's climate emergency declaration built on other important work they have done to address climate change.

Queenscliffe Climate Action Group (QCAG) was created following a community meeting on 30 October 2019 in Point Lonsdale. QCAG is a group of local residents from Point Lonsdale and Queenscliff united in a growing concern about the increasing impacts of climate change on our local community and natural environment.

More than 1,101 local residents signed the QCAG petition calling for Council to declare a climate emergency.

The group also conducted the Queenscliffe Climate Action Community Survey in November 2019 to capture the community's views about the local impacts of climate change and appetite for solutions. 94% of survey respondents were `quite' or `very' concerned about climate change, and local desire for climate action is strong, with 79% responding that they would feel proud if the Borough was taking a leading role, especially in renewable energy.

Many residents have already taken action to reduce their impact on the environment, and Council has reduced its emissions by a third since 2013.

Queenscliffe's aim to be a Carbon Neutral Council

A Carbon Neutral Council is when a Council aims to have a net-zero carbon footprint. This is achieved when the amount of greenhouse gas emissions emitted into the atmosphere is balanced by the amount being removed. In Victoria, over 79 councils have targets towards carbon neutrality. To become carbon-neutral, you need to calculate the carbon emissions generated by your activities such as fuel or electricity use and travel. You focus on reducing these emissions by investing in new technology or changing the way you operate.

Remaining emissions can be compensated for by purchasing carbon offsets. Carbon offsets are generated by others that prevent, reduce or remove carbon emissions from being released into the atmosphere, like investing in large scale renewable energy projects, land management or tree planting. When the offsets purchased by an organisation equal the emissions produced, they are carbon neutral.

The Borough of Queenscliffe achieved its commitment to get to a net balance of zero carbon dioxide emissions for our corporate emissions by 2013, but the goal of net zero for the community by 2020 has not been achieved, as this needs to be accomplished together.

The Borough spends around $115,000 each year dealing with climate change. Initiatives undertaken by Council each year include the Climate Change Adaptation Action Plan, the Corporate Carbon Neutral Action Program, and the provision of Community Environment Alliance seeding grants. Specific activities which Council engages in include:

- Community events, education programs, engagement, communications and campaigns; collaboration with regional alliances (such as G21) to leverage opportunities, efficiencies and economies of scale
- Adopting a Corporate Carbon Neutral Action Plan, which has brought about the following achievements:
  - Installed solar power on Council-owned buildings (Council offices, Queenscliff Community Sports Club, kindergarten and Queenscliff Community Hall)
  - Installed solar public lighting
  - Upgraded to energy-efficient lighting in Council buildings and public amenities blocks
  - Retrofitted all existing Council building to be energy-efficient
  - Reduced Council's electricity consumption by 55,270 kilowatt hours, saving $10,200 in 2018 - 19
  - Purchased 100% renewable energy for Council buildings
  - Purchased 100% GreenPower for Council-operated caravan parks
  - Introduced a kerbside green waste bin service that has diverted more than 2500 tonnes from landfill since July 2015
  - Became the first local government area in Victoria to change all our street lights to low-emission energy efficient LED lights.

- Creating the Community Carbon Neutral Action Plan (CNAP), which aims to help the community (residents, businesses, schools and community groups) achieve its carbon neutral goals by reducing emissions - see the top 10 actions residents selected by residents; not all of these actions have been implemented
- Facilitating two community solar initiatives which delivered 83 solar installations in Queenscliff and Point Lonsdale. Combined, these solar systems generate a total 369 megawatt hours of solar power every year, which is the equivalent of supplying electricity to 80 homes in Victoria for 12 months. The solar initiatives reduce the community's carbon emissions by 369 tonnes every year

- Carrying out a climate change risk assessment on Council assets and services and developing a local adaptation action plan to respond to those risks. The local adaptation action plan was titled `Preparing for Climate Change in the Borough of Queenscliffe: Climate Change Adaptation Action Plan'
- Purchasing 100% GreenPower for Council operated caravan parks, Queenscliffe Community Sports Club, netball clubrooms, Maritime Museum, Christmas tree, public amenities blocks, water pumps, foreshore lighting, barbecues across the municipality, library and VIC building
- In conjunction with the Department of Environment, Land, Water & Planning (DELWP), managing and maintaining numerous reserves located along the bayside beaches and the surf beach at Point Lonsdale, including the Queenscliff and Point Lonsdale Lighthouse Reserves. Many of the indigenous species in Queenscliffe have a high conservation significance, with a large proportion classified as rare, and a number protected under State or National biodiversity legislation, as well as significant habitat for critically endangered species. For example, Our Ramsar salt marshes on Swan Bay which are of cultural significance to Wadawurrung people, and one of the preferred nesting grounds for the critically endangered orange-bellied parrot.

Options for renewable energy in the Borough

The Borough of Queenscliffe recently commissioned Renew to prepare a discussion paper exploring renewable energy supply options for Queenscliff and Point Lonsdale, with a vision of transitioning to a 100% renewable energy supply.

The paper provides a detailed analysis of the Borough's current energy use (mainly electricity and gas) and how this could be replaced using renewable energy sources - principally through rooftop solar photovoltaic (PV) panels.

To replace our current electricity imports would require a four-to-six-fold increase in solar PV capacity in the Borough. Renew's analysis shows that if a major increase in rooftop solar on both residential and commercial buildings occurred, 70 - 85% of our current electricity imports can be replaced. However, to also replace gas and other energy usage would require an approximate ten-fold increase in local generation capacity. Given the Borough's limited geographical footprint, approximately 50% of the renewable energy supply would need to be procured from outside.

A review of energy market trends with regard to renewables including trading, grid connection issues, and incentives highlighted the fact that:

There are many incentives and financing programs through Federal and State government sources that could be used right now to subsidise the cost of energy efficiency upgrades for buildings and solar PV installation in the Borough.

The paper examined all possible renewable energy technologies that could be adopted, including solar PV, wind, tidal and wave, batteries and microgrids, and assessed the feasibility of each of these technologies for the Borough.

Key findings of Renew's paper

- Rooftop solar PV is highly viable for the majority of residential and commercial buildings (thanks to the subsidies available) with a payback period in the region of four to five years
- In the immediate future, wind and tidal power were not viable options for the Borough. Wind: due to lack of space and suitable locations for the size of turbines that are financially viable (small wind turbines are not) and tidal/wave power: because the technology is still emerging
- Preliminary feasibility studies for various commercial and community sites showed that, in most cases, solar PV can provide a very attractive return on investment in the region of 15 - 25% p.a. through savings on electricity bills and the export of excess electricity to the grid
- Current barriers around capital costs for installation and the complexity of renewable technologies can be overcome with:
  - Council and community driven education initiatives
  - Council-organised solar PV and battery bulk buy programmes
  - Council facilitation on cost-effective financing
  - Council and community resourcing for energy audits, energy efficiency upgrade programs, feasibility studies and follow-up.

Renew recommends that achievable and staged targets should be set to achieve the overall objective of a Zero Carbon Community, starting with a target of 100% renewable electricity supply, which they estimated could be achieved in the Borough over a four-to-five-year period.

- The next target would be a `Zero Net Energy' community with all energy use including gas, wood, etc. matched with renewables. The ultimate target is a Zero Carbon Community.

The paper outlined a clear action plan to achieve the target of Zero Net Energy comprising four key pillars:

1 Use less energy

Contributes 20 - 30% of the target through energy efficiency upgrades for buildings and switching to more energy-efficient electric heat pump technologies for space and water heating. The key to unlocking community ability to reduce energy use is access to financing and expertise, and there are several programs listed in the paper that are available to be rolled out immediately.

2 Generating renewable energy within the Borough

Contributes 30 - 50% of the target, mainly through rooftop solar on both residential and commercial buildings facilitated by Council solar PV and battery bulk buy programs. Residential and possibly community battery storage and virtual power plants will have a key part to play in this strategy. In addition, Renew suggested a feasibility study is undertaken for a solar farm at two possible sites in the Borough.

3 Fuel switch from gas and wood to renewable electricity

Contributes 10 - 25% of the target, as more than 80% of homes are connected to mains gas that provides a major source of energy for space and water heating and therefore a major contributor to emissions in the Borough.

4 Generating/procuring renewable energy from outside the Borough

Contributes 50 - 75% of the target, including community investment options in solar and wind farms in neighbouring shires.

Options to consider for developing the Climate Emergency Response Plan

There are some exciting initiatives relevant to our small, coastal community that we can explore as we develop our Climate Emergency Response Plan.

Zero Carbon Communities

A Zero Carbon Community is any community where people, groups, clubs, local business and councils are acting together to reduce carbon emissions.

There is an Australia-wide community network of Zero Carbon Communities committed to 100% renewable energy goals and zero emissions targets. Zero Carbon Communities in Australia include Hepburn, Phillip Island, Southern Otways, Yackandandah, Baw Baw, Moreland, Darebin, Mt Alexander, Hobart, Byron Bay and Noosa. By being involved in a national network, each community can share their experience and learn from each other.

Key benefits of Zero Carbon Communities include growth in local jobs and investment, significantly reduced electricity and gas bills for households, businesses and industry, and a cleaner, healthier environment for local residents.

A ten-year timeframe is generally recommended for communities to transition to zero carbon to ensure the transition is achievable and affordable.

Each community is unique and has different opportunities and timeframes to reduce emissions.

As the smallest municipality in Victoria, the Borough of Queenscliffe has a distinct advantage. It is easier for us to work together to significantly reduce our emissions, especially our two main sources - electricity and transport.

Building an accurate emissions profile is a vital step to becoming a Zero Carbon Community. While further analysis is still required for community emissions in the Borough, Council has a clear indication of its baseline emissions and is currently working with Renew to obtain detailed data on the Borough's electricity use.

Setting a target to reduce emissions is another vital step for a community to become zero carbon. The target gives an indication of the scope and scale of the steps required. To maintain a safe climate, the target needs to be ambitious - rapid reduction of emissions to zero is required to reduce the threat of severe climate change and costly adaptation measures.

For more information on what's involved in becoming a Zero Carbon Community - see Zero Carbon Communities Guide 2020.

Community energy

Community energy is an emerging sector in Australia. However, in other parts of the world, particularly Denmark and Germany, it is the mainstream model and has been around for decades. Community-owned and financed renewable energy infrastructure is also growing fast in the UK, the US and Canada.

Community energy enterprises give local groups a chance to make a significant contribution to reducing climate change. They can also provide long-lasting economic and social benefits to the local community.

Communities around Australia have started the journey towards building their own renewable energy projects utilising a range of technologies including wind, solar, bioenergy and mini-hydro.

Hepburn Wind

Hepburn Wind is the owner and operator of Australia's first community-owned wind farm at Leonards Hill, about 100km north-west of Melbourne, just south of Daylesford. The 4.1MW wind farm hosts two turbines which produce enough clean energy for 2000 homes.

Hepburn Wind have captured their learnings and made them widely available so that other communities may adapt the `Hepburn Model', as it is often called, to suit their unique requirements.

Hepburn Z-NET

The success of Hepburn Wind's work has led to the Hepburn Shire being selected to be the Z-NET pilot for Victoria. This project is a collaborative partnership bringing together community groups, organisations, experts and Council to shift the Hepburn Shire to zero-net energy by 2025 and zero-net emissions by 2030.

Totally Renewable Yackandandah

Totally Renewable Yackandandah is a community group formed at the beginning of 2014 as a result of a community energy forum in Yackandandah, organised by Indigo Shire Council. Totally Renewable Yackandandah has brought together community members passionate about the notion of powering their town with 100 per cent renewable energy, and aims to achieve `energy sovereignty' for Yackandandah by 2022.

Totally Renewable Phillip Island

Totally Renewable Phillip Island was initiated in June 2018 after a community energy public forum. Phillip Island became the first community in Bass Coast to embrace the challenge of going 100% renewable and has committed to being a carbon neutral community by 2030. They have developed a framework with six focus areas - Clean Energy, Toward Zero Emissions Transport, Carbon Farming, Carbon Accounting, Food and Waste, Education and Communication.

Transport

Transport emissions are a huge component within the emissions process and is an area where an exciting and innovative initiative can be explored. Currently, private vehicle transport is the issue, so active transport and public transport would be key areas of focus.

Community input

346 residents from across Queenscliff and Point Lonsdale took part in a Council survey to share their ideas for projects to be included in the Climate Emergency Response Plan. This input generated a large amount of information about what our community expects to see in the response plan, and how they'd like to be involved. You can read a detailed summary of results in the Stage 1 Community Engagement Report.

Working with our young people

Unfortunately, our young people will experience most of the impacts of the climate emergency. Given this, it is crucial that they help to shape our Climate Emergency Response Plan. Council conducted a workshop with secondary school students and with primary school students representing each of the schools across our Borough to generate and prioritise ideas for action in response to the climate emergency.

As part of the process, participants spent time imagining they were in charge of the Borough of Queenscliffe and were invited to suggest ideas for actions that could practically serve to reduce the impacts of climate change.

Renewable energy projects received the highest number of votes as their key action priority.

You can read a summary of what was said in the Stage 1 Community Engagement Report.

For Council

There are also various initiatives to help support councils to reduce their emissions, including:

- The Global Covenant of Mayors, an international program that supports Councils in tracking progress to zero carbon
- The Cities Power Partnership, a program where councils commit to reducing their own emissions through selected actions, which the Borough has already signed up to
- Take-2, the Victorian Government's climate action pledge to support zero-net emissions and keeping global temperature rise to under two degrees by 2050, of which the Borough has committed to.

Additional resources

- A Life on Our Planet: David Attenborough recounts his life, and the evolutionary history of life on Earth, to grieve the loss of wild places and offer a vision for the future
- Climate Reality Check: Pulls together current climate science research to present understandings of the climate crisis to make informed decisions for action.
- Fight for Planet A: Fight for Planet A explores how we can all save greenhouse gas emissions by making changes in relation to three key areas - energy, transport and food - while also calling on our leaders to protect people and our planet
- Home Front: A documentary focusing on the impacts of climate change and solutions in Australia
- Kiss The Ground: Science experts and celebrity activists unpack the ways in which the earth's soil may be the key to combating climate change and preserving the planet
- Wadawurrung Healthy Country Plan (2020-2030) paleert tjaara dja - Let's make Country good together, Wadawurrung Healthy Country summary, plan and video