

TOWN OF
BASSENDEAN

FREE home composting workshop

Have you always wanted to try composting at home?

The Town of Bassendean is looking for residents who would like to participate in a composting program to help them better understand how local families can reduce their kitchen waste.

How to get involved

- 1 Residents are invited to attend **FREE** workshop with an opportunity to purchase either a **Bokashi bin, worm farm or 150L compost bin** at a subsidised costs
- 2 Must be a resident of the Town of Bassendean to attend and may purchase one of the home composting methods at a subsidised cost. Residents must attend the workshop to be eligible to access the subsidy. Numbers are limited
- 3 Cost for residents after subsidy are as follows:
 - Bokashi bin with 1kg Bokashi mix \$34
 - Worm farm with 1kg worms \$51.50
 - 150L compost Bin \$20
- 4 Register to attend the composting workshop by calling **9377 9030**

Workshop details

When - Tuesday February 19

Where - Ashfield Soccer Club
40 Haig St, Ashfield

Workshop

2 hour workshop 7 - 9pm

What you will learn at the workshop

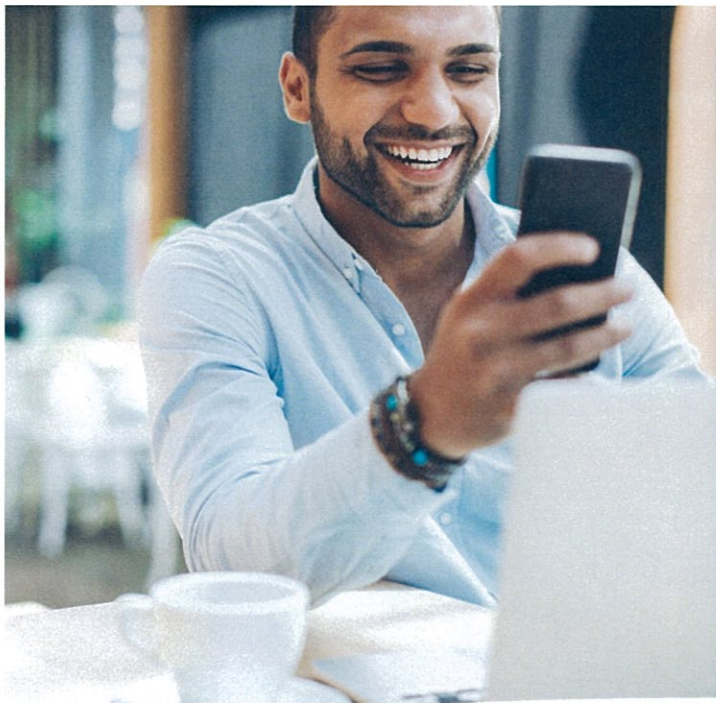
- How to set up your own worm farm at home;
- what to feed your worms;
- how to convert your kitchen scraps and garden clippings into compost;
- and other strategies to reduce the amount of waste going to landfill.

Town of Bassendean

35 Old Perth Road Bassendean WA 6054 | (08) 9377 8000 | mail@bassendean.wa.gov.au

 bassendencouncil |  TownOfBassendean |  @TownBassendean





How to Apply

Contact the City's Sustainability Officer on 08 9411 3444 to discuss your project ideas. A site visit may be required by Council staff.

Download and review the 'Sustainability Grants Guidelines'

Apply online via the Cockburn Smarty Grants website: cockburn.smartygrants.com.au

Further Information

Sustainability Officer,
Operations Centre, 52 Wellard Street,
Bibra Lake

T: 08 9411 3444

E: sustainability@cockburn.wa.gov.au



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Sustainability Grants



A better tomorrow in the City of Cockburn

Sustainability Grants provide an opportunity for groups to implement projects in the community that help create a better tomorrow.

How much is offered?

You can receive up to \$4,000 per application.

Important Dates

Complete and submit your application before 31 March every year.



Guidelines

We encourage you to be creative and innovative in your application. Grant themes include:

Giving Back to improve social equity and involvement across the City e.g. volunteering, helping those in need, providing opportunities to participate

Protecting our Future to build resilience to climate change and safeguard biodiversity e.g. native landscaping and community gardens, education for climate change, preservation of natural areas

Strong Communities to build community capacity e.g. community development, training, workshops, events, inclusive neighbourhoods

Water, Energy and Waste to promote resource use efficiency e.g. increased recycling, composting, water and energy efficiency

TravelSmart to facilitate the uptake of alternative transport e.g. end of trip facilities, travel smart events, education

Healthy Lifestyles promoting opportunities for improved public health outcomes in the community e.g. events, healthy lifestyles programs, education.

Selection Criteria

Applicants:

- » Must be part of one of the following groups:
 - Community group or not-for-profit organisation
 - Small business (20 employees or less)
 - Collective household (2 employees or more)
 - School
- » Must be based in Cockburn and/or provide services primarily within the area
- » May only apply for one project each year
- » May seek a maximum of \$4,000 for the proposed initiative
- » May not seek funding for infrastructure projects such as:
 - Renewable energy systems
 - Rainwater tanks
 - Grey water systems
 - Hot water systems
- » May not seek funding for labour costs
- » Projects must address at least one of the sustainability grant themes
- » Projects which demonstrate significant in-kind and/or financial contribution will be considered favourably
- » Funds cannot be sought or used to comply with planning approvals.



CITY OF VINCENT

ENVIRONMENTAL GRANTS

GUIDELINES & CRITERIA

The City of Vincent's Environmental Grants program is designed to assist and encourage schools, community groups and non-profit organisations in implementing environmental projects or initiatives within Vincent.

The City offers one round of grants per financial year with each Environmental Grant awarded up to a maximum amount of \$2,000. Additional funding of up to \$500 per approved project may be applied for subject to funding availability.

The number of grants available in each financial year will be subject to the funding allocated in the City's Annual Budget.

ENVIRONMENTAL GRANTS ARE AVAILABLE FOR

Projects or initiatives that have a demonstrated outcome for at least one of the objectives of the City's *Sustainable Environment Strategy 2011-2016*.

Your organisation must

- Be a school, a community group or a non-profit organisation
- Be located within the City of Vincent boundaries, or where the applicant is a community group or a non-profit organisation and is based outside of the City, the project must have clear benefits for the City

WHAT WE WILL FUND

The following will be considered for funding:

- Projects that will raise community or school awareness, by involving the community or students in environmental activities
- Projects that will have a demonstrated outcome for at least one of the objectives of the City's *Sustainable Environment Strategy 2011-2016*, that is:
 - Encourage, empower and support the City's community to live in an environmentally sustainable manner
 - Contribute to a cleaner local and regional air environment by using and promoting alternative modes of transport to car use
 - Reduce and offset the use of non-renewable energy and promote the same to the community
 - Use and promote the use of renewable energy sources
 - Ensure effective and efficient management of water
 - Protect and promote the quality of surface and groundwater resources within the City
 - Re-establish, conserve and enhance floral and faunal biodiversity, native vegetation, green spaces and green linkages within the City



CITY OF VINCENT

VINCENT.WA.GOV.AU

- Reduce the use of resources and production of waste within the City, including through the re-use and recycling of materials
- Reduce the use of toxic and hazardous materials within the City and facilitate the proper disposal of such materials

PROJECT AREAS THAT WE CANNOT FUND

- The following will not be considered for funding:
- Schools, groups and organisations who have failed to acquit grants awarded to them in any capacity
- Groups and organisations that operate with the aim of making a profit
- Capital expenditure including major capital equipment purchases and new building projects
- Ongoing or recurring recurrent staff salaries or costs
- Facility maintenance projects or payment of rent
- Debt reduction or operational deficits
- Fundraising activities or events
- Projects where more appropriate alternative sources of funding are available, including where the proposed project falls within the ambit of another grant program offered by the City
- Projects that commence prior to the grant application being considered by the City

ASSESSMENT PROCESS

Each application is independently assessed by members of the Grant Panel consisting of The Director of Technical Services, Manager Parks & Property Services, Project Officer Parks & Environment and Project Officer Sustainability.

- Grant applications will be assessed on the following:
- The extent to which the proposed project will achieve an objective (or multiple objectives) of the *Sustainable Environment Strategy 2011-2016*
- Whether there is a clear explanation of how the proposed project will deliver its intended outcomes
- Whether the proposed project is feasible and can be successfully implemented on time
- Whether there is a clear benefit from the proposed project, and
- Whether the proposed project will provide benefit to the wider City of Vincent community

ACQUITTAL PROCESS

Each successful applicant is required to expend all of the grant funds within twelve months from the date the Grant is awarded and submit to the City a formal acquittal report including an expenditure statement and written summary of the report.

The City may require the grant recipient to refund to the City any grant funds not expended within this time.

ADDITIONAL FUNDING

Additional funding of up to \$500 per approved project may be applied for subject to funding availability. A detailed submission outlining the reasons why the additional funding is required must be submitted in order for additional funding to be considered.

The provision of additional funding will only be considered where it can be demonstrated that unforeseen circumstances and costs have resulted in the project not being able to complete within the original budget amount.

For further information regarding the grant program, guidelines and application form, please contact the Project Officer – Parks and Environment on 9273 6000.



CITY OF VINCENT

ENVIRONMENTAL GRANTS

APPLICATION FORM FOR THE COMMUNITY

This document can be made available in alternative formats on request by calling 9273 6000
or mail@vincent.wa.gov.au

When you have completed this form, send it and any supporting material to:

Project Officer - Parks & Environment
City of Vincent, PO Box 82, Leederville 6902
or emailed to mail@vincent.wa.gov.au

PLEASE RETURN THIS APPLICATION BY NO LATER THAN: 5.00PM FRIDAY 6 APRIL 2018

LATE APPLICATIONS WILL NOT BE ACCEPTED

DETAILS OF YOUR ORGANISATION

Name of Group:			
Postal Address:			
		Postcode:	
Telephone:		Facsimile:	
Email Address:			



PLEASE PROVIDE DETAILS OF WHO IN YOUR GROUP WE CAN CONTACT REGARDING YOUR PROPOSAL

Name:	
Position Title:	
Daytime telephone number:	

DESCRIBE WHAT YOU WILL USE THE GRANT FOR.

Please describe the project you want to use the grant for, clearly and fully, telling us who will be involved and what the aim is.

--

HOW MUCH MONEY ARE YOU APPLYING FOR IN THIS APPLICATION?

Please be aware that the maximum amount is \$2,000.

--

ALL PROJECTS MUST COMMENCE BY AUGUST 2018 AND BE FINISHED BY AUGUST 2019.

Please provide proposed project timeline.

--

HOW WILL THE PROJECT/INITIATIVE RAISE COMMUNITY AWARENESS ABOUT THE ENVIRONMENT AND/OR BENEFIT THE ENVIRONMENT?

--

WHAT WILL THE DEMONSTRATED OUTCOMES BE?

--

WHAT COMMUNITY INVOLVEMENT IS PROPOSED?

--

PLEASE PROVIDE THE NAMES AND DETAILS OF TWO REFEREES WHO WILL KNOW ABOUT YOUR GROUPS WORK AND WILL BE ABLE TO PROVIDE INFORMATION ON HOW YOUR PROJECT WILL BENEFIT PEOPLE LIVING IN THE CITY OF VINCENT:

Referee 1

Name:	
Organisation:	
Position/Title:	
Daytime Telephone:	

Referee 2

Name:	
Organisation:	
Position/Title:	
Daytime Telephone:	

BUDGET

Using the form over the page, please provide information about the costs and income for the service or program you are seeking funding for. In most cases, we do not require information about the costs and income of your entire group.

Please note the City of Vincent does not provide funding for salaries and wages or the purchase of machinery, office equipment, computers, motor vehicles or capital items.

However, the City of Vincent will provide funding to cover operations including, but not limited to, the cost of advertising and promotion (where required), the hire of equipment, fees for contractors and maintenance works.

If you would like any further information or assistance contact the Parks & Environment Officer on 9273 6000 or mail@vincent.wa.gov.au.

Please progress to the budget sheet over the page.

INCOME	\$	COST	\$
City of Vincent Financial Assistance Grant (The amount of money you are applying for)		Costs of running the service or program (For example, hiring the venue, providing transport, buying materials and equipment, production) Please list your costs below:	
Money from other government or grant organisations. Please list grants below:		Salaries, wages, fees. Please list your costs below:	
Your own Groups cash contribution:		Costs of supporting the service or program (For example, photocopying, postage, database management, office work) Please list your costs below:	
Money from private organisations (For example, businesses or individuals) Please list contributions below:		Marketing and Promotion (For example, designing flyers and brochures, printing, ads) Please list your costs below:	
In kind support (For example, free venue, volunteer instructor, free advertising or promotion) Please list contributions below:		Other costs (please list):	
TOTAL INCOME		TOTAL COSTS	

IS YOUR GROUP INCORPORATED?

Yes:	<input type="checkbox"/>	No:	<input type="checkbox"/>
------	--------------------------	-----	--------------------------

If no, please attach a letter from an incorporated organisation that agrees to manage the funds for you. The City of Vincent will not give money to an unincorporated organisation.

If an incorporated organisation has agreed to manage the funds on behalf of your group, please include the organisation's ABN and tell us whether it is registered for the GST in the questions below.

DOES YOUR GROUP HAVE AN AUSTRALIAN BUSINESS NUMBER (ABN)?

Yes:	<input type="checkbox"/>	Please write it here:	
No:	<input type="checkbox"/>		

If your group is applying for an ABN please write the Australian Taxation Office registration number below

--

IS YOUR GROUP REGISTERED FOR THE GOODS AND SERVICES TAX?

Yes:	<input type="checkbox"/>	No:	<input type="checkbox"/>
------	--------------------------	-----	--------------------------

CHECKLIST

Have you answered every question?	<input type="checkbox"/>
Completed the budget section?	<input type="checkbox"/>
Provided the names and details of two referees?	<input type="checkbox"/>
Provided your Australian Business Number (ABN)?	<input type="checkbox"/>
Enclosed a supporting letter from an incorporated organisation if your Organisation is not incorporated?	<input type="checkbox"/>

I have read the assessment criteria relating to this program. To the best of my knowledge the information about my Group and project is correct.

Applicant:	
Signature:	
Date:	

WWW.VINCENT.WA.GOV.AU/GREEN



ENVIRONMENTAL GRANTS - GUIDELINES & CRITERIA

Background

The Environmental Grants Fund was established by Council in 2018-19 as a Sustainability committee Initiative. The number of grants available in each financial year will be subject to the funding allocated in the Town's annual budget.

Purpose

The Town of Bassendean Environmental Grants program is designed to assist and encourage Local Schools or Community Groups in implementing environmental projects or Initiatives within the Town of Bassendean. The Town is offering one round of grants per financial year with each Grant awarded up to a maximum of \$2,000.

Who Can apply ?

Applications are invited from Local Schools, Community Groups or a non-profit organisation; your group/organisation must be located within the Town of Bassendean Boundary. If non-for profit organisation is outside of the Town's boundary the project must have a clear benefit for the Town of Bassendean.

Selection Criteria

Projects or initiatives must have a demonstrated outcome for at least one of the following Strategic objectives:

Objective 2.1 : to display leadership in Environmental Sustainability

Objective 2.2 Protect our River, Bushland Reserves, and Biodiversity

The following will be considered for funding:

- Projects that will raise community awareness by involving either Students or the community in environmental activities

Projects that have demonstrated outcomes for one of the Town's strategic objectives

Objective 2.1:

- Projects that encourage, empower and support the Town's community to live in an environmentally sustainable matter
- Projects that promote emission reduction for example, alternative modes of transport to car use, use & promote of renewable energy, ensure effective & efficient management of water both Scheme & ground water

Projects that have demonstrated outcomes for one of the Town's strategic objectives

Objective 2.2:

- Protect & restore our biodiversity and ecosystems for example; weed management, revegetation programs, foreshore restoration
- Sustainable management for natural areas within the Town

Limitations & Conditions

Applicants must be based in the Town of Bassendean or be able to demonstrate that you serve the Bassendean community or looking to provide a service in Bassendean that will benefit the Bassendean community.

- Each Successful applicant is required to expend all of the grant funds by 30th of June for the current financial year the funds were administered with a formal acquittal report including an expenditure statement and written summary of the report
- Applicants must demonstrate at least a matching financial and/or in-kind contribution will be made to the project.
- Applicants that have been successful in previous years are eligible to apply in the following financial year provided all previous funding has been satisfactorily acquitted.
- The successful request to the Community Fund in any year does not imply any ongoing commitment of the same or similar contribution in following years.
- An organisation is eligible to receive funding from the Town once in a Financial Year.

Applications from Schools must satisfy the following additional criteria:

- There is an identified community need for the project or activity.
- The project or activity is extra-curricular and accessible to the wider Bassendean community outside of school hours (clearly outside the Education Department's area of responsibility).

Assessment Process

Each application is independently assessed by members of the sustainability committee against the selection criteria with a recommendation made to council to choose the successful grant applications. Grants will be assessed on the following:

- The extent to which the proposed project will achieve an objective of the Town's Corporate Business Plan;
- Whether there is a clear explanation of how the proposed project will deliver its intended outcomes;
- Whether the project is feasible and can be implemented within the proposed timeframe;
- Whether there is a clear benefit to the Town of Bassendean community.

For further information

If any of this information is not understood, please do not hesitate to get in touch with the Town's Environmental Officer: mail@bassendean.wa.gov.au or 93779026

Application Form

Environmental & Sustainability Community Grants (up to \$2,000)

Applications Close ??? Late application will not be accepted

For information about the grant process please contact the Environmental Officer
93779026

Please send through completed form with any supporting material to:

Environmental Officer – Asset Services

Town of Bassendean, PO Box 87, Bassendean WA 6054

Or Email to mail@bassendean.wa.gov.au

Details of applicant

Name of group:

Address:

Contact Person:

Role/ position title:

Telephone:

Mobile:

Email:

Is your group Incorporated: Yes No

ABN (if applicable):

GST registered: Yes No

Have you previously received a grant from the Town of Bassendean Yes No

Project details for Grant

Please check box as to which of the Towns strategic Objectives your project aligns with

- Objective 2.1: Display Leadership in Environmental Sustainability
- Objective 2.2 Protect our River, Bushland Reserves, and Biodiversity

Describe what you will use the Grant for and how it aligns with the Objective

Please describe the project you want to use the grant for, clearly and fully, explain who will be involved where you intend to implement the project and what the aim of the project is:

How much money are you applying for?

Please outline the budget required for your project with a detailed breakdown itemising expenditure, please be aware the maximum amount is \$2,000. Please provide details of any other funding sources you have for the project if applicable.

Project Time line

Please provide proposed project timeline with start and finish dates, keep in mind all projects must be completed by 30th June of current financial year

Outline Benefits of your project to the community and/or Environment

Explain how your project or initiative will benefit or raise awareness to the community. What will the demonstrated outcomes be and what community involvement is proposed.

Referees:

Please provide details for two referees who will know about your groups work and will be able to provide information on how your project will benefit the community of The Town of Bassendean.

Name:

Organisation:

Position/title:

Daytime Phone:

Grant Acknowledgement

Please sign this form to acknowledge that you have read the assessment criteria relating to the grant-funding program and the Terms & conditions, the information provided about your group and the project is correct.



CLIMATE ACTION TOWN OF BASSENDEAN

DISCUSSION PAPER



Eastern Metropolitan Regional Council
226 Great Eastern Highway
Belmont WA 6104

PO Box 234
Belmont WA 6984

Telephone: (08 9242 2222

Website: www.emrc.org.au



The Red Hill Waste Management Facility Environmental Management System is certified to ISO 14001:2004 standard.

LIMITATION

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It is the responsibility of any person printing this document to ensure that they use the current version of this document.

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LIST OF ABBREVIATIONS

BOM	Bureau of Meteorology (Australia)
BZE	Beyond Zero Emissions
C40	C40 Cities Climate Change Leadership Group
COICOP	Classification of Individual Consumption according to Purpose
COP21	21 st convening of the Conference of Parties (United Nations)
CRC WSC	Cooperative Research Centre for Water Sensitive Cities
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEE	Department of Environment and Energy (Australia)
EMRC	Eastern Metropolitan Regional Council
ICLEI	International Council for Local Environmental Initiatives
IPCC	Intergovernmental Panel on Climate Change
LCCAAP	Local Climate Change Adaptation Action Plan
LGA	Local Government Authority
NASA	National Aeronautics and Space Administration (USA)
NGERS	National Greenhouse and Emissions Reporting Scheme
NRM	Natural Resource Management
NSW OEH	New South Wales Office of Environment and Heritage
SEMC	State Emergency Management Committee (WA)
UNFCCC	United Nations Framework Convention on Climate Change
WA	Western Australia
WALGA	Western Australian Local Government Association
WRI	World Resources Institute

1 INTRODUCTION

For over a decade, the Town of Bassendean has been committed to combating climate change. The Town's Council, staff and residents recognise the importance of reducing their impact on the environment and have been taking steps towards a more sustainable and resilient future by implementing climate-related plans and strategies. The Town has implemented actions through its Carbon Reduction Strategy, Emissions Reduction Plan, Greenhouse Action Plan and Local Climate Change Adaptation Action Plan (LCCAAP). In 2019, the Town is looking to set a more ambitious emissions target and further its strategic direction towards taking urgent action to combat climate change and its impacts.

This discussion paper collates climate change information relevant to local government from recent governmental and scientific reports incorporating global, national and local observations and predictions. Climate change is a key issue for local governments that impacts almost all aspects of their operations and responsibilities. As the level of government closest to the community, local governments manage and plan for a range of impacts of climate change, including on community assets, disruption of council services, unbudgeted financial impacts and adverse health impacts on residents (WALGA 2017).

As world average temperatures increase in response to climate change, Australia's climate becomes drier and warmer. Internationally, the United Nations continues to convene to address the increasingly urgent issue of climate change and highlight the importance of reducing emissions and adapting to impacts. The Paris Agreement and International Panel on Climate Change (IPCC) reports have influenced emissions reduction targets nationally and internationally as the world tries to reduce global warming to well below 2°C.

Around Australia, local government authorities (LGAs) have approached the call to action differently to suit geographical, demographic and political factors using globally accepted and influenced frameworks and guidelines. LGAs have also entered into partnerships to enhance their impact and improve their performance through collaboration. The processes that each LGA uses for its strategic direction could aid the Town in deciding the best fit for its community and council. Here in WA, the State Government is currently developing a climate change policy considering advances in climate change science and changes in national policy.

This document has been prepared for the Town to encourage climate action leadership and to demonstrate the many possibilities to strive for important climate targets and develop a resilient and connected community in line with international commitments.

*"Right now, we are facing a man-made disaster of global scale.
Our greatest threat in thousands of years.
Climate change."*

Sir David Attenborough, 2018

2 CLIMATE CHANGE AND ITS IMPACTS

KEY POINTS:

- There is scientific consensus that climate change is caused by human influence on the climate system via increasing use of fossil fuels and land use change
- Global CO₂ concentrations have now exceeded 400ppm
- Global average temperatures have increased by 1.0°C from pre-industrial levels
- Without action, temperature increases are highly likely to exceed 2°C which increases climate change related risks and will have severe impacts on the community
- The south-west of Western Australia is expected to see further decreases in annual rainfall, longer and more frequent heatwaves and increasing temperatures
- LGAs will experience the impacts of climate change directly.

Climate change, as defined by the United Nations Framework Convention on Climate Change (UNFCCC), is "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (United Nations 1992).

Since the beginning of the industrial era, the Earth's climate system has been warming and to levels that have not been recorded previously. The Intergovernmental Panel on Climate Change (IPCC), furthermore states that "human influence on the climate system is the main cause of observed warming since the mid-20th century" (IPCC 2013). Recent scientific organisations and peer-reviewed reports have also stated a consensus that human activities contribute to climate change.

The change in climate from pre-industrial times when compared to long-term historical climate levels has been linked to increasing greenhouse gas emissions within the Earth's atmosphere including the increasing burning of fossil fuels and changing land use (Figure 1). Greenhouse gases in the global atmosphere trap heat and keep the Earth warm, but with the addition of human activities, it is leading to an enhanced warming effect as levels of carbon dioxide remain in the atmosphere for centuries (BOM, CSIRO 2018) and will lead to physical and chemical changes in the atmosphere, land and ocean surface (Hope et al. 2015).

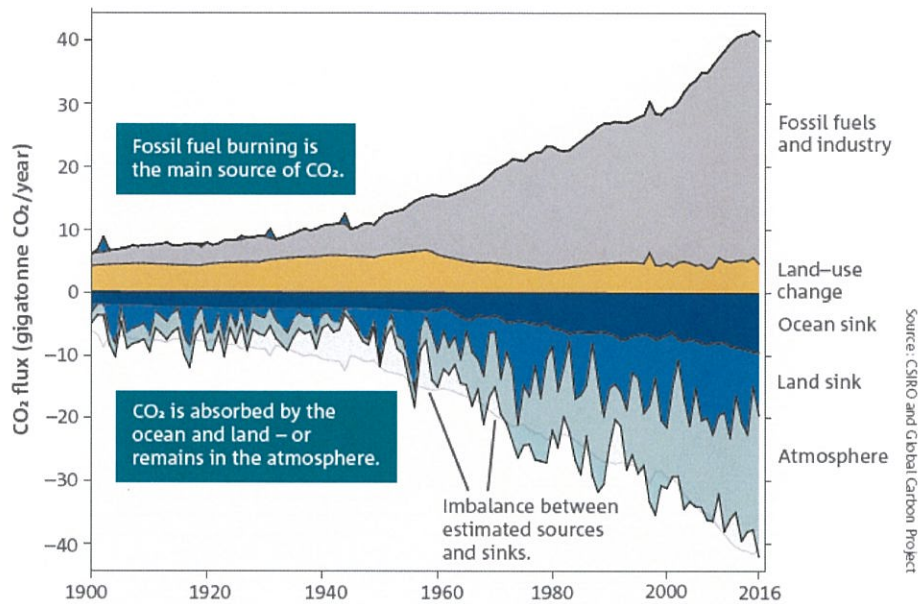
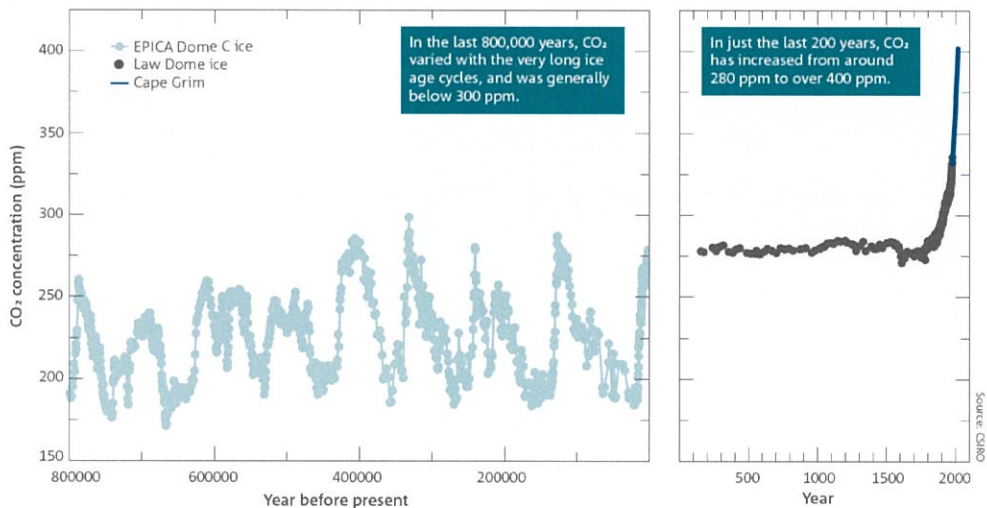


Figure 1: The increase in fossil fuel burning and industry influence on CO₂ flux since the beginning of the 20th century and what is absorbed in land and sea sinks compared to what remains in the atmosphere

2.1 Climate observations

Global CO₂ concentrations exceeded 400 ppm in 2016 (Figure 2) and continue to rise as emissions from fossil fuels increase. Since 1750, there has been a 46% increase in concentration of CO₂ from 278 ppm. The last time CO₂ concentrations were similar or higher than present day was more than 2.3 million years ago (BOM, CSIRO 2018). Increasing CO₂ concentrations in the atmosphere can have an effect on global temperatures and ocean pH among other associated impacts (NASA 2018).



Atmospheric CO₂ concentrations from 800,000 years ago to around year 0, and for the last 2017 years, from measurements of air in Antarctic ice cores and at Cape Grim.

Figure 2: The changes in CO₂ concentration in the atmosphere (ppm) over the last 800,000 years and more closely, the past 2017 years. (BOM, CSIRO 2018)

Global average temperatures have increased by 1.0°C from pre-industrial levels and are expected to continue to increase beyond 3.7°C – 4.8°C without any action to reduce greenhouse gas emissions (DEE 2016). It is expected that global average temperatures will likely increase by 1.0°C – 1.5°C between 2030 and 2052 at the current rate of anthropogenic emissions production (IPCC 2018) and will cause further long term changes to climate systems and climate related risks for natural and human systems.

Australia's average temperatures have also increased by more than 1.0°C since 1910 with both day and night temperatures warming, fire seasons increasing in length and the south-west of WA experiencing decreasing rainfall (BOM, CSIRO 2018). With no action, cumulative impacts will increase with some projections expecting 4.1°C – 4.8°C of warming by 2100.

With current policies, warming of 2.6°C – 3.2°C above pre-industrial levels is highly likely (IPCC 2018; CAT 2018). A 0.5°C change in average temperatures can increase climate change related risks from extreme events such as heatwaves, flooding and storms (IPCC 2013) and also have severe impacts on vulnerable ecosystems and human settlements.

2.2 Projections for the south-west of WA

Cities around Australia are already experiencing the impacts of climate change and, without climate action, they are predicted to get worse. In the south-west of WA, the drying climate and increasing population create major challenges for LGAs to manage resources, the growing demands of agriculture and industry and having a sustainable environment (Water Corporation 2012). Perth and surrounds, including the Town, are facing a future with less water, hotter days and changes in seasonality. Rainfall decline and constraints on water resources are already being felt in Perth as water utilities prepare for a low water future (Figure 3).

Summary of observations in south-west WA*:

- Mean surface air temperatures have increased by 1.1°C
- Substantial increases in maximum temperature and frequency of hot days and duration of heat waves
- Decreased average rainfall and prolonged extensive drying in autumn and winter.

Summary of predictions for south-west WA*:

- Temperatures will continue to increase
- More extremely hot days and cool days expected
- Continued sea level rise
- Continued warming and acidification of oceans
- More frequent, extensive, intense and long-lasting heatwaves
- Decrease in winter rainfalls and increase drought
- Increase in high fire weather danger days and longer fire season
- Greater proportion of high intensity storms with large variations year to year
- Higher risk of flooding in low lying areas
- Changes in seasons and biome shifts
- Decreased air quality
- Increase risk of erosion
- Increase in evaporation rates.

*(Perth NRM 2018; BOM, CSIRO 2018; DEE 2016)

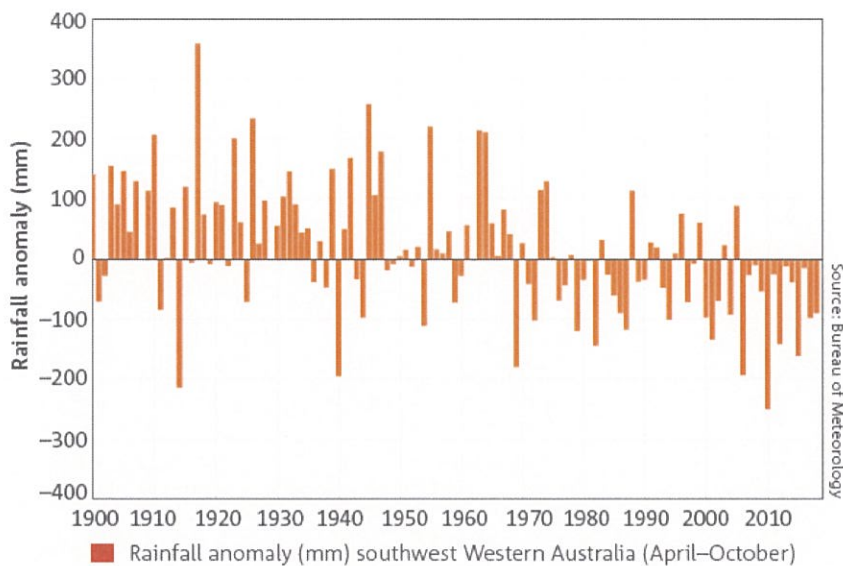


Figure 3: Anomalies of April to October rainfall for south-western Australia. Anomalies are calculated with respect to 1961 to 1990 averages (BOM 2018).

Climate change impacts can also occur simultaneously or increase the risk of other hazards as compound events. Compound events such as increases in evapotranspiration can enhance the impact of decreasing rainfall and then lead to higher risk severe fire weather due to lower soil moisture (Perth NRM 2018). A heatwave can also occur at the same time as prolonged drought and increase the impact of both. Projecting future compound events can be a challenge but is important for climate adaptation (BOM, CSIRO 2018).

It is expected that vulnerable communities will be the most affected by climate change and most locations will experience some level of climate change impacts. Vulnerable communities include those with health problems; social inequality factors such as low income, age, gender, disability and background; and location, and all need to be addressed when considering climate change action such as risk assessment and improving community resilience (Bazaz et al. 2018).

LGAs are on the frontline of responding to climate change threats. Climate change impacts on infrastructure, land use, planning, environmental health, fire and emergency services, and parks and reserve management provide enormous challenges for LGAs.

2.3 Climate action

The urgency of acting on climate change is clear and each year that action is delayed, the opportunity to limit warming to 1.5°C is reduced (Bazaz et al. 2018).

Climate action includes mitigation, adaptation and improving resilience, especially to disasters, and can be in association with sustainable practices.

Mitigation

Mitigation is the intervention to reduce the sources (burning of fossil fuels) or enhance the sinks (oceans, forests and soils) of greenhouse gases (IPCC 2013). Reducing emissions is one of the main ways to reduce the impacts of climate change or prevent further warming.

Mitigation by LGAs includes reducing emissions for operational activities such as electricity for buildings, heating and cooling, fuel for transport and street lighting. Reducing emissions within

an LGA's operations can save money in the long term and also encourage residents to reduce their emissions within the home.

Beyond corporate activities, LGAs can target waste emissions, community emissions and consumption/transportation emissions such as imported goods.

Adaptation

Adaptation is the process of adjustment to actual or expected climate and its effects and may require human intervention in case of natural systems. Adaptation can reduce vulnerability and increase resilience to climate change impacts and as the Earth warms, adaptation is an important component of climate action for all countries, organisations, businesses and individuals.

Adaptation at the LGA level may include preparing for times of drought by ensuring access to water such as rainwater or storage tanks; or advising the community of flood prone areas and not allowing development in high risk locations.

Sustainability

Sustainability is defined by the IPCC as a 'dynamic process that guarantees the persistence of natural and human systems in an equitable manner'. The Environmental Protection and Biodiversity Conservation Act of 1999 states sustainability as 'using natural resources within their capacity to sustain natural processes while maintaining the life-support systems of nature and ensuring that the benefit of the use to the present generation does not diminish the potential to meet the needs and aspirations of future generations'.

Sustainability and the act of 'living sustainably' is connected to climate action and the purpose of preserving the Earth for future generations. Sustainability definitely has a role to play in mitigating and adapting to climate change impacts and also improving community resilience.

3 FRAMEWORKS AND PARTNERSHIPS

KEY POINTS:

- LGAs need to work collaboratively with others to improve action towards climate change.
- No one framework is dominant in Australia or the world in addressing climate action specifically. Each LGA needs to approach climate action in its community and organisation in regards to best fit.
- Consistent and common reporting frameworks and language would be beneficial for continued climate leadership.
- Avoid multiple reporting requirements and look for benefits from programs that are not covered elsewhere.
- The Town of Bassendean is already involved in the Cities Power Partnership and EMRC's sustainability programs.

To limit global warming to 1.5°C, effective governance frameworks will be required and need to include accountable multi-level governance to enable collaboration for local adaptation and mitigation (A. Bazaz et al. 2018). The benefit of using a framework can be the ability to benchmark progress against other organisations that are also using the same process or improve collaboration within the internal environment of the LGA. No one framework is expected to work for all local governments due to variability of priorities and a number of other factors that make LGAs so different from one another. Each framework will need to be assessed to determine suitability for a specific LGA.

Partnerships can also aid in creating suitable internal climate frameworks and focus priorities. Memberships in climate networks and knowledge networks are also a driver of climate related plans in cities (A. Bazaz et al. 2018) and can include access to information, sharing of resources and funding opportunities. Collaboration is strongly encouraged to improve progress towards climate action targets and goals between local governments and other organisations.

Around Australia, LGAs have approached the call to action differently to suit geographical, demographic and political factors using globally accepted and influenced frameworks and guidelines. LGAs have also entered into partnerships to enhance their impact and improve their performance through collaboration.

3.1 Sustainable Development Goals

In 2015, countries worldwide adopted a set of goals to 'end poverty, protect the planet and ensure prosperity for all' as part of a new sustainable development agenda, Agenda 2030. 17 SDG's were adopted at a historic UN Summit. Over the next fifteen years, these goals will mobilise global efforts to, among other things, tackle climate change (United Nations 2017).

The SDGs can be implemented into new or existing frameworks, which is what the C40 Cities Climate Leadership Group has done with its *Urban Climate Action Impacts Framework: A framework for describing and measuring the wider impacts of Urban Climate Action* and the EMRC has done with its *Regional Environment Strategy 2016 - 2020 (RES)*. WALGA's and City of Perth's recent analysis of sustainability frameworks for LGAs found that while no framework reviewed was completely fit for purpose for WA local governments, the SDGs is one of the strongest frameworks for approaching both community and corporate commitments while also aligning with existing LGA KPIs (WALGA, City of Perth 2019).

There is ongoing voluntary national reporting for the SDGs to track progress towards each goal. Australia undertook a Voluntary National Review in 2018.

3.2 One Planet Living

One Planet Living is a framework, developed in 2004, that encourages the vision of people living within the limits of the planet using ten principles that work together to help those strive for sustainable living. This is similar to the SDGs in that it also provides a framework for both community and corporate commitments (WALGA, City of Perth 2019)

In relation to climate action, principles include zero carbon, zero waste, materials and products, travel and transport etc. Each partner using the framework is required to develop an action plan based on the principles. Annual reporting is required and is made publically available.

The City of Fremantle is the only LGA in WA using the One Planet Living Framework.

3.3 Global Covenant of Mayors for Climate and Energy

The Global Covenant of Mayors for Climate and Energy is an alliance of LGAs and cities with the long-term vision to combat climate change and progress towards a low emission, climate resilience future. The framework consists of a pledge to action, includes streamlined measurement and reporting procedures (annually), global recommendations and a common reporting language for those involved.

It is one of the largest alliances for climate action globally with over 9,000 city LGAs committed to climate leadership (26 in Australia including Cities of Perth, Joondalup and Mandurah).

3.4 Cities Power Partnership

The Cities Power Partnership was developed by the Climate Council in Australia to provide a network to allow LGAs to connect and share their climate and emissions reduction journey with the support of the research and media organisation.

Annual reporting is required on a set of six actions within a pledge that each council submits when it joins the partnership.

The Town joined the Cities Power Partnership in 2018 as part of their draft Emissions Reduction Plan.

3.5 ICLEI – Local Governments for Sustainability

ICLEI is committed to building a sustainable future for its network of cities, towns and metropolises. It supports its members towards sustainability, low carbon living, resilience, green economies and smart infrastructure. ICLEI Oceania is based in the City of Melbourne and provides resources such as the Local Government Climate Change Adaptation Toolkit from the now-finished Cities for Climate Protection program.

There are currently seven WA LGAs who are members of ICLEI including City of Mandurah, City of Vincent and City of Joondalup (ICLEI Oceania 2019).

3.6 EMRC sustainability programs and projects

The EMRC has been working with member Councils, including the Town, on combating climate change and its impacts for a number of years including acquiring funding for projects such as the Understanding and Managing Flood Risk, Perth Solar City, Cities for Climate Protection, Community Energy Efficiency Program and the ongoing Achieving Carbon Emissions Reduction (ACER) and Future Proofing Programs. The EMRC also supports the Town to maintain its emissions inventory, energy and water data platform.

The EMRC's sustainability programs provide an ongoing service to the Town, which is funded through the Town's budget with additional grant funding when available.

3.7 Other

Other local governments and organisations have used community and staff consultation to develop internal frameworks to create similar local objectives and outcomes. This is usually done with input from local residents, businesses and internal staff with the guidance of a climate or sustainability expert from within the organisation or sourced via a consultant.

4 EMISSIONS ACCOUNTING AND REPORTING STANDARDS

KEY POINTS

- Greenhouse gas (GHG) emissions reporting standards are important for ensuring consistent reporting for comparability and credibility.
- The Global Protocol for Community-Scale GHG Emissions Inventories (GPC) is currently used as best practice guidelines.
- The Town currently is not legally required to report to NGERs, however, an upcoming review into the reporting scheme may change this.
- The Town can use a reporting platform to report on and monitor climate commitments and plans or create one from guidelines available.
- Community emissions inventories approach both the direct emissions and lifecycle emissions of a LGA and its residents. More LGAs are setting targets based on community emissions inventories.

The ability of a LGA to take effective action on climate change depends on access to accurate and quality GHG emissions data. Measuring emissions and developing a GHG inventory that is comparable to other LGAs is important to allow for aggregation and more credible reporting practices. The emissions inventory tool that the Town currently uses tracks emissions from electricity, gas and fuel used within the Town's operations and activities.

LGAs also have influence over activities beyond corporate operations which only make up a small portion of total community emissions (Figure 4).

More LGAs and cities are setting targets based on community emissions with over 100 LGAs having completed city-wide community profiles and over a dozen with science based targets.

The Town will need to set clear emissions boundaries and have a coherent approach based on GHG emissions reporting standards as this is essential in developing targets, policies and continued monitoring.

4.1 GHG emissions accounting and reporting standards

There are a number of GHG accounting and reporting standards used internationally, however the most common standards used in Australia across business and government can be seen in **Table 3** below.

Table 3: GHG emissions standards used to develop emissions targets, inventories and reporting frameworks*

GHG Emissions Inventory and Reporting Standard	Developer	Purpose
Global Protocol for Community-Scale GHG Emissions Inventories (GPC) 2014	C40, ICLEI, World Resources Institute (WRI)	Designed to promote best practice GHG accounting and reporting for city-wide emissions inventories.
GHG Protocol Mitigation Goal Standard: An accounting and reporting standard for national and subnational GHG reduction goals 2014	WRI	Designed for setting emissions reduction targets and developing GHG inventories. Has a guide to developing emissions scenarios and estimating base years, and assessing goal achievement.
International Local Government GHG Emissions Analysis Protocol 2009	ICLEI	Designed to provide an easily implementable set of guidelines to assist LGAs in quantifying GHG emissions city-wide.
National Greenhouse and Energy Reporting Scheme (NGERS)	Clean Energy Regulator	National framework for reporting and disseminating information about GHG emissions and other for relevant companies.
Guidelines for National Greenhouse Gas Inventories 2006	IPCC	Created for countries to calculate a GHG emissions inventory however has been reapplied in national guidelines for other organisations to use for best practice.

*(WRI et al. 2014; WRI 2014; ICLEI 2009; IPCC 2006)

Most reporting standards are tested and recommended for cities with a larger population than the Town such as the City of Melbourne or City of Perth. Currently, state and local government authorities are not required to report emissions to NGERS, however, there is currently a recommendation from the review of the operation of NGERS for local governments and other associations to be included in threshold reporting in the future.

The most recent GHG emissions standard is the GPC created in 2014. The GPC method is aligned with the Global Covenant of Mayors for Climate and Energy reporting requirements and requires capturing emissions from both production and consumption activities for the whole community, including the LGA's corporate emissions. The GPC also recommends that methodologies for emissions data be aligned with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (WRI et al. 2014).

4.2 Climate action reporting

As part of the Paris Agreement's goal transparency, there is also guidance available that focuses on the assessment of GHG reduction, sustainable development and transformational change. The Initiative for Climate Action Transparency guidance follows a modular structure so you can choose what tools or guides you may need. Although designed with countries needs in mind, certain modules such as renewable energy, buildings efficiency, transport, transformational change and stakeholder participation could aid the Town in setting standards for climate action reporting internally (ICAT 2018).

Another option is for the Town to use an online reporting platform. The carbonn Climate Registry (cCR) is an internationally recognised reporting platform to enhance transparency, accountability and credibility of climate action of local and subnational governments. It is designated as the central repository of the Compact of Mayors and includes community emissions inventories, climate change mitigation and adaptation actions. The platform is voluntary and public (cCR 2017).

4.3 Community emissions inventories

Community or city-wide emissions inventories include approaching consumption-based direct and lifecycle GHG emissions of goods and services. The process includes allocating GHG emissions from raw materials, manufacturers, retails, transport, and disposal to the consumers rather than the producers. A consumption-based inventory includes direct emissions such as household use of fuels and electricity from residents and also imported goods and services consumed by residents (excluding exported goods and services).

C40 Cities recently conducted a study to establish consumption-based GHG inventories for its members to better understand the ability of cities to contribute to GHG reduction activities beyond their boundaries. The study used COICOP reporting frameworks to categorise the different types of consumption emissions by function or purpose (Figure 4).

Depending on the region, utilities and housing, capital, transportation, food supply and government services contribute the most to consumption-based GHG emissions (almost 70%). Collecting information on these emissions can be challenging but is important for consistent reporting to compare to other communities.

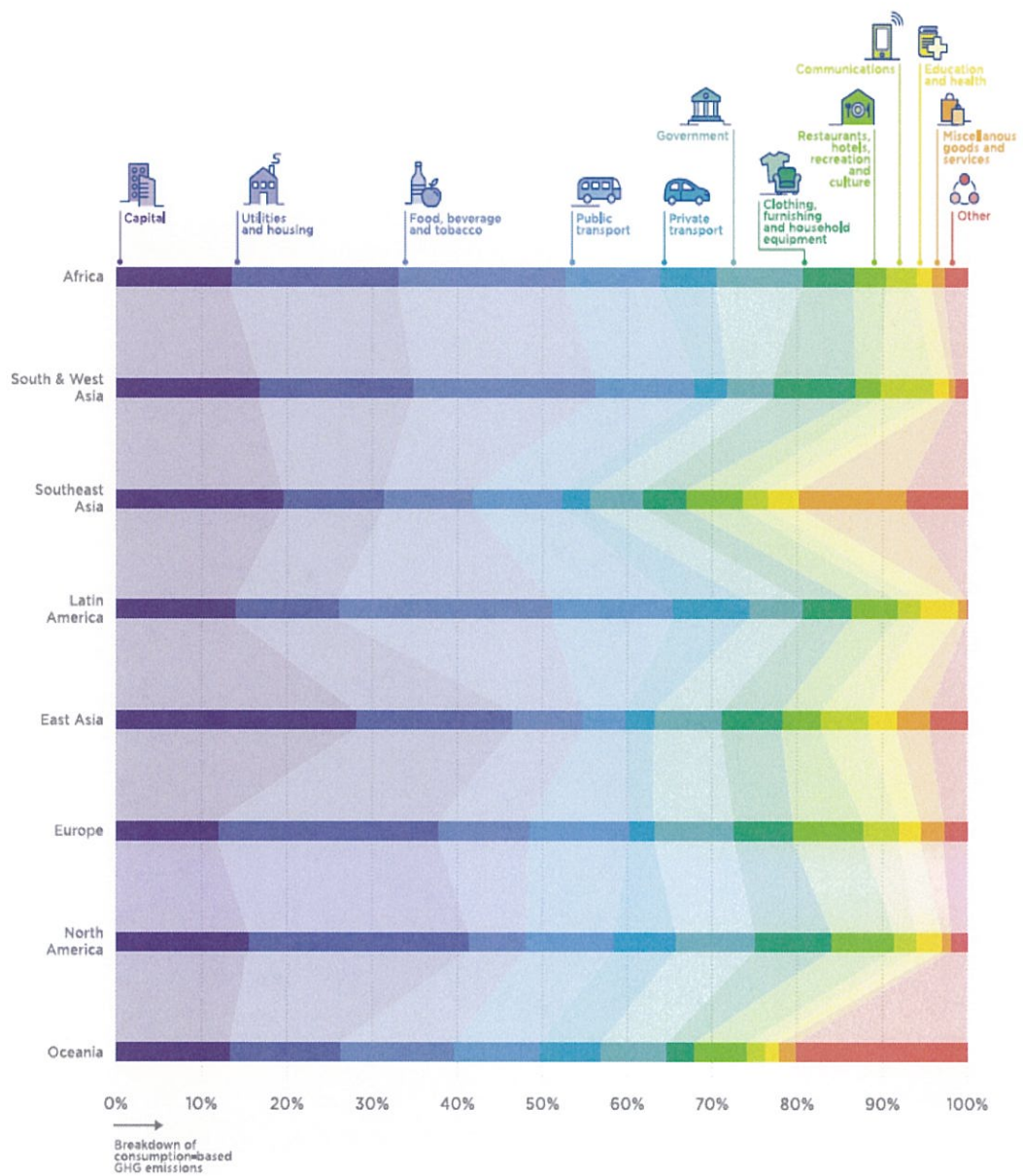


Figure 4: Relative breakdown of consumption-based GHG emissions by COICOP category and region – Australia is in the Oceania region (C40 2018)

5 TYPES OF EMISSIONS REDUCTION TARGETS

KEY POINTS

- Local governments in Australia all have different emissions reduction pathways and targets based on local priorities and political support.
- Carbon budgets and science derived targets are based on a LGA's fair share of the global carbon budget and have targets based on IPCC research.
- Carbon neutral comes with accreditation from the Australian Government's Carbon Neutral program and currently have certification for LGAs based on corporate emissions only.
- 100% renewable requires collaboration between local and state government and utilities to avoid excessive offset requirements.
- Purchasing offsets in Australia can be expensive and is often a last resort after reducing emissions in other ways. Some offset options are also currently not available to access by LGAs.

Emissions reduction targets are being used by all levels of government and private organisations to set long term goals to reduce emissions produced by their activities. In the past, LGA emissions targets were developed through ICLEI's Cities for Climate Protection program and aligned with the Kyoto Protocol. These targets were generally aspirational goals which focused on a percentage reduction around 10-20%. The recent Paris Agreement set international goals and targets for parties to aim for and the IPCC special report supported the direction for the world to work towards a zero emissions future in 2050 or 1.5°C.

5.1 Aspirational Targets

Aspirational targets are the most common emissions reduction targets that LGAs set as they require less information about council operations and are good at unifying staff and the community. Targets similar to "reduce corporate carbon emissions by 30% by 2030 from 2005 levels" have an important part to play as they motivate a council and its community to act on climate change. Other aspirational targets have been formed based on previous international agreements such as the Kyoto Protocol and Toronto Target. However, these targets can be poor at assessing the efficacy of a specific program or action, and can be hard to defend.

Aspirational targets are a good starting point to build community and council support for climate action; however, for LGAs who would like to take a leadership role in reducing emissions, a science derived target would be recommended (Ironbark Sustainability 2018).

The Town has set aspirational targets in the past and has been very successful in both achieving them and in building community and Council support for climate action.

5.2 Carbon Budgets and Science Derived Targets

According to the IPCC special report in 2018, 'limiting global warming requires limiting the total cumulative global anthropogenic emissions of CO₂ since the pre-industrial period, which is, staying within a *total carbon budget*'.

The global carbon budget specifies the total amount of emissions that the world could release over a period of time (CCA 2014) (Figure 5) and has been used to translate temperature goals into targets for action. Once the carbon budget has been 'spent', this where the term 'net zero emissions' comes in. Net zero emissions is the phase-out of GHG emissions to a level equal to or smaller than the atmospheric concentration of anthropogenic emissions was at zero.

Creating a carbon budget for countries, state governments or local governments requires guided calculations and a series of assumptions. The Climate Change Authority of Australia have adopted a budget approach and have calculated Australia's fair share of the carbon budget based on keeping global warming below 2°C by 2050 (CCA 2014). Australia, as of 2014, had a total carbon budget of 10.1 GT of CO₂_e from the global budget and is expecting to use that budget before 2030 if emissions continue as business as usual (**see Appendix A – Carbon Budget Infographic by Climate Works**).

Other countries have been also researching how to apply the global budget down to regional government and LGA level. Swedish municipalities collaborated with research institutions to complete the calculations and develop carbon budgets for each of their own LGA in 2018 (Anderson et al. 2018). These budgets have clear assumptions and provide hard limits of what needs to be achieved. Calculating targets based on a carbon budget have been considered by some organisations as best practice.

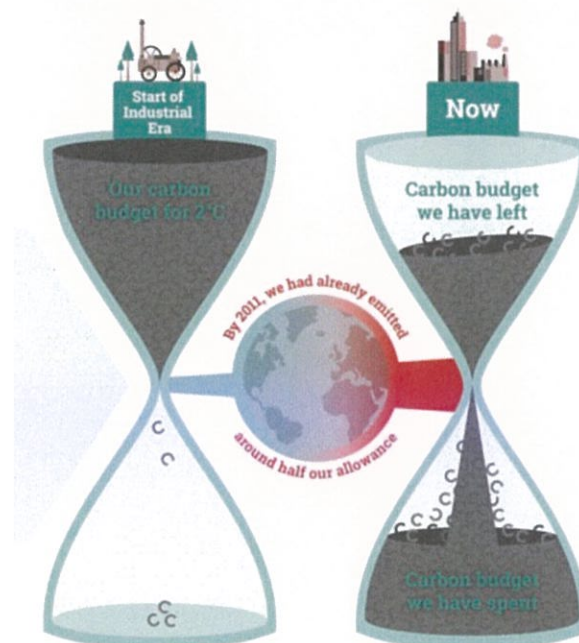


Figure 5: Carbon budgets past and present explained . Source University of Cambridge.

A Science Derived Target is based on the understanding that local targets can be determined by the science of climate change and follow internationally agreed targets such as the Paris Agreement. Targets based on science (like the Carbon Budget) move LGAs away from setting targets in relation to their own available budgets, community support and Council expectations (Ironbark Sustainability 2016). These science derived targets are also sometimes called 'locally determined contributions' to align with the Paris Agreement pledges from participating nations.

Within Australia, Ironbark Sustainability is one of the consultancies that can provide LGAs and organisations with science derived targets and community emissions inventories based on the IPCC global budget using the GPC. Targets are based on community-wide emissions, not just council operations.

The details of these science derived targets however may not be as motivating to the community and therefore some LGAs choose to show action towards 'net zero emissions' instead of attempting to explain the carbon budget to the broader community.

5.3 Carbon Neutral

Local governments and businesses can aim for carbon neutrality by reducing GHG emissions wherever possible and the remaining emissions are offset or captured (DEE 2017b). Some of Australia's capital cities are aiming for carbon neutral by abiding by the National Carbon Offset Standard (NCOS) which is required to make the claim of carbon neutrality. The Australian Government's Carbon Neutral Program certifies local governments and other organisations as carbon neutral against NCOS (Energy Australia 2019). Carbon neutrality does not include the reduction of methane or nitrous oxide gases which are also considered to be greenhouse gas emissions that are anthropogenic.

LGAs that have claimed carbon neutrality in Australia have done so through reducing corporate carbon emissions directly together with a level of offsetting. There has not been a LGA in Australia yet to be community-wide carbon neutral. The City of Fremantle is currently the only certified carbon neutral LGA in Western Australia, but some councils are working towards this such as the City of Mandurah (See Appendix C – Table 2).

Although most Perth LGAs include emissions from street lighting in their corporate emissions inventories, including the Town, they don't necessarily have the operational capacity to affect these emissions as most of the street lights are owned by Western Power. In order to attain carbon neutrality, LGAs would need to pay to have all street lights replaced with LED equivalents, then offset the residual emissions, or offset the entirety of street lighting emissions; both options could be very costly.

5.4 100% Renewable Energy

Some government agencies (and even whole countries) have focused climate change mitigation action towards increasing renewable energy or electricity sources. A target of 100% renewables ensures that all energy usage within operations (electricity, heating/cooling and transport) is sourced from renewable sources such as solar, wind, biomass, wave etc. While it is relatively straightforward to reach 100% renewable electricity, it is more difficult to achieve 100% renewable energy for stationary and transport fuels.

Currently, there are barriers in WA in connecting renewable energy sources such as solar farms to the South West Interconnected System (SWIS), which is the local electricity grid operated by Western Power. This, however, is changing through the electricity network reform work program which is expected to be completed in 2022. Another barrier includes the current uptake of electric vehicles within Australia and the state of accessible infrastructure for electric vehicles.

To achieve 100% renewable energy, the Town would need to either offset current vehicle emissions or convert its entire fleet to electric with a renewable energy source.

5.5 Offsets

It may not be currently possible to reach zero emissions in some areas (e.g. heavy machinery needing diesel fuel) and therefore a small amount of GHG emissions will need to be offset via carbon storage in vegetation or soil sinks. Offsets are accredited and purchasable as 'credits' for most organisations to reduce their carbon emissions, however, into the future it is expected that offset options will become more expensive as more LGAs try to reach their targets on time and some are currently only available to certain organisational activities.

If the Town were to set a target similar to carbon neutral, it is recommended that the Town first investigates the purchasing of accredited offsets to understand the full financial implications.

6 ASSESSING CLIMATE CHANGE ADAPTATION

KEY POINTS

- Risk assessment is essential to approaching climate change impacts and determining adaptation responses.
- Risk assessment should be conducted in line with the ISO/ANZS standards.
- Vulnerability assessment in combination with risk assessment is the recommended approach from the IPCC.
- Community engagement is an important part of developing climate change adaptation actions and climate plans.

A LGA's ability to take effective action on climate change depends on access to accurate and quality GHG emissions data. Measuring emissions and developing a GHG emissions inventory that is comparable to other LGAs is important to allow for aggregation and more credible reporting practices. The GHG inventory that the Town currently uses tracks emissions from electricity, gas and fuel used within the Town's operations and activities.

LGAs however also have influence over activities beyond corporate operations which only make up a small portion of total city-wide GHG emissions (Figure 5).

More LGAs and cities are setting targets based on community consumption emissions with over 100 LGAs having completed city-wide profiles and over a dozen with science based targets. To develop targets and policies, clear emissions boundaries and a coherent approach based on GHG reporting standards is essential.

6.1 Adaptation Assessment

Climate Change risk assessment and adaptation planning has been developed in line with the ISO/ANZS 3100:2009 risk management framework and guidelines produced by the Australian Greenhouse Office. LGAs maintain a number of community assets and services and the assessment process identifies risks from climate change and assists to develop adaptation responses to those risks. Risk analysis is fundamental to climate change adaptation and emergency management. Other risk assessment processes may also include integrating vulnerability assessments.

After a climate change risk assessment is conducted, it is recommended that it is integrated into the LGA's risk register which contains LGA identified and rated risks for the entire organisation.

Risk Guidelines and Frameworks

The Australian Greenhouse Office in 2006 developed the *'Climate Change Impacts and Risk Management: A Guide for Business and Government'* to integrate climate change impacts into risk management and other strategic planning activities into local and state government organisations as well as the private sector. The guide provides a framework for managing the increased climate change risks and focuses on the initial risk assessment and prioritisation. The guide also can aid in creating likelihood and consequence tables that are required for rating risks. Local governments in the Perth metropolitan region, such as the City of Joondalup, Town of Victoria Park and SMRC, have cited the guide in Climate Change Strategies or Plans that have undertaken a risk assessment process. The guide is aligned with the Australian Standard for Risk Management (AS/NZS 4360:2004).

The most recent and relevant guidelines for assessing climate change risks or developing adaptation plans for local government is the 'Climate Change Adaptation Toolkit' that was created by WALGA in 2016. The document is a step by step guide to climate change adaptation planning which includes risk assessment. The toolkit describes the complexity and uncertainty of climate change scenarios and that risk assessment is essential to local planning for climate change. The toolkit also supplies resource links to the AGO guide above, among other specific resources for coastal risk and decision making framework.

NCAARF national climate change adaptation research plans outlines a three-way classification for considering adaptation research including; climate change science, risk analysis, and policy and practice.

Vulnerability assessments

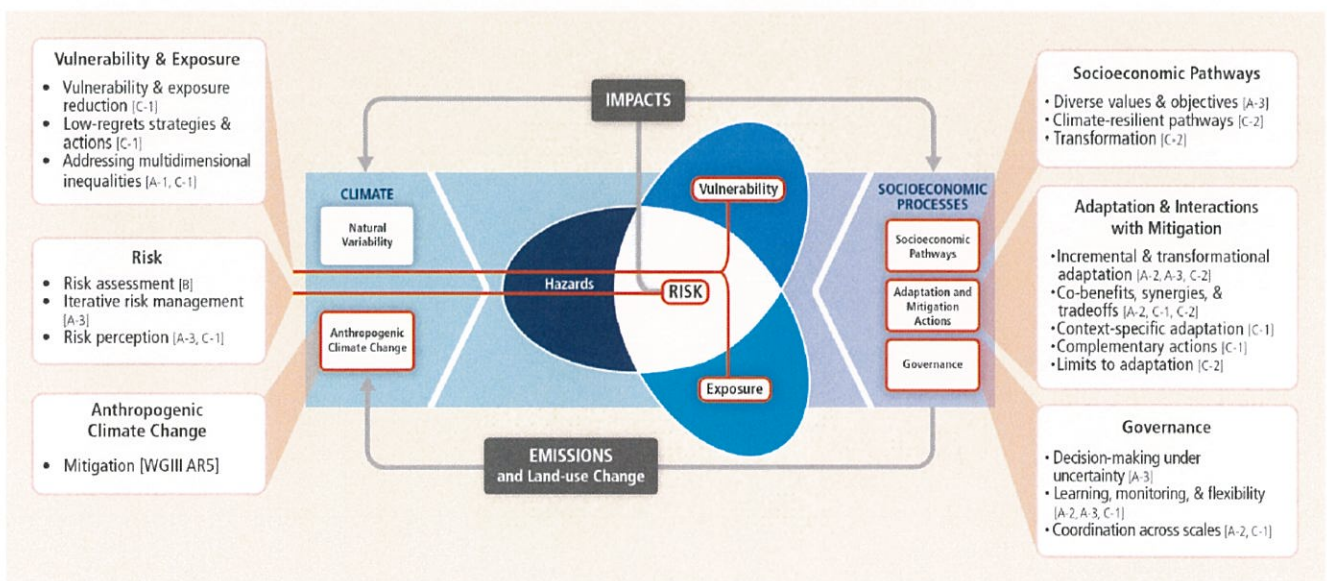
The IPCC stated the "A first step towards adaptation to future climate change is reducing vulnerability and exposure to present climate variability" (IPCC 2014). A vulnerability assessments help defines the nature and extent of risks that may cause harm to the human or natural systems, and provides a process to minimising or avoiding the harm. Vulnerability assessments are considered an important and essential component to climate change adaptation since it can be used to systematically understand how socio-ecological systems may be affected by climate change.

A risk assessment approaches vulnerability in terms of consequence when people or assets are exposed to a hazard. Another approach sees vulnerability as a factor that can enhance or reduce the impacts of a hazard. This is usually associated with the political-economy approach or the 'bottom up' approach which describe the drivers of vulnerability rather than the risk-hazard approach of what is vulnerable and where (Hammill 2013).

The IPCC recommends using an integrated approach of the above (Figure 6), describing vulnerability as:

"The 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." (IPCC, 2014)

Figure 6: Assessing and managing the risks of climate change (IPCC 2014)



6.2 Community Engagement

Local Governments are encouraged to consult its community regularly to ensure focused operations towards the priorities of its residents and culture. When developing climate change related documents such as strategies, it is up to the particular local government to decide the best way to approach its community in regards to what its residents would like their Council to focus on.

The Town's community noted that they value a community-wide approach to climate change resilience planning in a survey conducted as part of the Town's Strategic Community Plan development in 2017. The Beyond Zero Emissions survey of Australians' views on climate action also showed that 98% of respondents thought the community should be very engaged in developing and implementing a climate action plan.

7 GOVERNMENT CLIMATE ACTION

KEY POINTS:

- In 2015, Australia ratified the United Nations Paris Agreement to limit global warming to well below 2°C.
- The Paris Agreement encourages signed parties to continuously develop more ambitious targets as they progress and is driving ambitious targets within state and local governments.
- In Australia, many state governments have set renewable energy reduction targets or net zero emissions targets.
- The WA State Government is currently developing a climate change policy. Recent years have seen no emissions reduction target set.
- LGAs are leading the way in climate action by collaborating, setting ambitious emissions targets and implementing adaptation plans and strategies.

7.1 International

Climate change is a key issue of the 21st century, recently influencing political debates and elections. Global conferences within the United Nations Framework Convention on Climate Change (UNFCCC) such as COP3 in Kyoto and COP21 in Paris have set targets for member nations to aim towards, in order to avoid the most serious impacts of climate change.

As part of the COP21 Paris Agreement on climate change, member nations committed to keep global average temperature rise to well below 2°C above pre-industrial levels while trying to limit the temperature increase to 1.5°C. Nationally determined contributions (NDCs) are at the heart of the Paris Agreement and embody the efforts by each country to reduce national emissions and adapt to the impacts of climate change. Each climate plan reflects the country's ambition for reducing emissions, taking into account its domestic circumstances and capabilities.

The Paris Agreement recognises that adaptation is a global challenge faced by all and that mitigation should be undertaken through absolute economy-wide reduction targets. The Paris Agreement has given the world goals to work towards and all levels of government are important in bringing about a low-carbon and climate resilient world. Climate action through the Paris Agreement globally can also contribute to the Sustainable Development Goals (SDGs).

7.2 Federal

In a survey of Australian residents, 73% of Australians stated they are concerned about climate change and 53% think governments are not doing enough, should be funding renewable infrastructure and that delays or half measures on climate action increase the risk of sudden negative economic adjustments (Bennett 2018).

In August 2015, Australia ratified the Paris Agreement. Australia's NDC is to reduce emissions by 26-28% on 2005 levels by 2030 (DEE 2017a).

To reach the above NDC, the Australian Government intends to implement its Direct Action policies which include the Emissions Reduction Fund, Safeguard Mechanism and Renewable Energy Target. The Australian Government will need to review its NDC every five years and each review will require a progression on the previous target and reflect highest possible ambition (UNFCCC 2019).

Research institutions and other climate related agencies continue to be active in communicating the issue to the community and government, but real action requires everyone collaborating together to solve the issue.

7.3 State

In the absence of clear climate policy or action at the federal level, state governments around Australia are committing to their own targets and approaching climate action within their own budgets.

Current targets by state include:

- ACT 100% renewable electricity by 2020; Net zero emissions by 2050
- NSW Net zero emissions by 2050
- NT 50% Renewable energy by 2030
- QLD 50% renewable energy by 2025; Net zero emissions by 2050
- SA Net zero emissions by 2050
- TAS 100% renewable energy by 2022; Net zero emissions by 2050
- VIC 40% renewable energy by 2025; Net zero emissions by 2050
- WA No current targets.

The ACT is currently developing a new climate change strategy after community consultation on continuing its commitment to the target of net zero emissions. The ACT Climate Change Council has recommended changing its net zero emissions target to 2045 or earlier due to the growing risks of dangerous climate change.

In WA, the current State Government announced in 2018 that it will develop a new climate change policy.

A more detailed picture of state government commitments across Australia can be found in **Appendix B - Table 1**.

“There’s more we can do to reduce the risks, the impacts and the costs. And there’s more we can do to improve the resilience of our communities and our environment.”

Environment Minister Stephen Dawson, 2018

7.4 Local

Climate action within local government has been introduced over the years as a necessary component of addressing impacts on the natural environment, built environment, community and corporate functions, often within strategies, plans or policies. LGAs are an important part of combating climate change and, in some areas, are leaders in climate mitigation and adaptation techniques.

Around the country, LGAs have partnered with external organisations (such as the Climate Council, ICLEI and C40) to aid in developing strategic directions towards best practice climate action that suits their municipality. Each LGA approaches action on climate change in different forms and finding best practice can be difficult when trying to compare the benefits and success of policies, strategies or plans. A review of climate change actions, targets, policies and strategies was conducted by Beyond Zero Emissions in 2016 that found 82% of Australian councils had corporate emissions targets and 53% had plans or strategies to guide climate change adaptation (BZE 2018). The UNFCCC also identified local and regional governments as important players in meeting Paris Agreement targets.

In **Table 2 (Appendix C)**, a summary of local governments and regional governments and partnerships from around Australia and Western Australia are listed to identify what type of documents they use for climate action implementation and what process they took to develop the documents.

In Western Australia, local governments have the support of some state government and non-government agencies to implement climate related projects and strategies. The Western Australian Local Government Association (WALGA), recently collated the feedback of WA LGAs to develop a new '*Policy Statement on Climate Change*' that states the LGA commitment to addressing climate change and the call for strong climate change action, leadership and coordination at all levels of government (WALGA 2018).

Other organisations have also been active in response to calls for climate action and most have produced guidelines, discussion papers or factsheets to assist LGAs. The Water Corporation has recently integrated the Cooperative Research Centre for Water Sensitive Cities (CRC WSC) Index goals and indicators into strategies to achieve a Waterwise Perth for the future. Curtin University's Sustainable Policy Institute continues to support local innovative projects to trial new technology and low carbon options within LGAs in collaboration with the CRC for Low Carbon Living and 2020 Vision has also provided guidelines for local governments to develop urban canopy strategies to increase urban green space and combat the urban heat island effect.

LGAs have been active in climate change mitigation and adaptation activity for over two decades and many LGAs have made voluntary commitments or pledges in relations to climate change (see **Appendix C - Table 2**). LGAs are known for developing innovative solutions, opportunities and benefits and provide valuable lessons to inform state and national policy to cope with the climate challenges of the future (BZE 2018).

However, LGAs also recognise that there are ongoing issues that may prevent climate action that need to be addressed, including:

- Low funding or no budget for mitigation and adaptation action/target implementation
- Scale of investment and related costs are not well understood
- Lack of state and federal support or direction towards best practice
- Increasing population which requires leaders to deal with multiple challenges and prioritise
- Institutional capacity limiting coordinated local responses
- Addressing social and economic consequences of low-emissions transition
- Lack of reliable or comprehensive data.

Overcoming these issues requires strong leadership and community support. Leadership from LGAs can also drive state and national action towards effective governance frameworks with collaboration between LGAs, regions, industry, community and scientific institutions. Local action and community participation is also most effective when integrated with sustainable development, community vision and values and multi-government support.

8 BASSENDEAN CLIMATE ACTION

KEY POINTS

- The Town has implemented numerous climate actions and most of these through its own strategies or plans, or with the help of external funding opportunities and partnerships.
- The Town has continued to reduce corporate carbon emissions and achieved its first emissions reduction target in 2016.
- The Town's review of its LCCAAP found that most actions were progressed through other plans or in collaboration with external partnerships.
- The Town's community is very supportive of climate action and values a community-wide approach to climate change resilience planning.
- The next steps for the Town will include considering frameworks, targets, data, risk assessment and community involvement.

The Town of Bassendean has been integrating climate action into its operations for over a decade and has been actively involved in climate related projects that have supported the Town and its residents to reduce GHG emissions and adapt to specific climate related hazards. The Town is also an active supporter of sustainable living and continues its climate journey through its internal projects and partnerships.

Some of the climate actions that the Town has implemented include:

- Reducing corporate carbon emissions through its Carbon Reduction Strategy and Plan and achieving its target of 7.5% reduction by 2016/2017
- Installation of over 110kW worth of solar PV systems on council buildings
- Developing urban canopy plans and collected mapping data for a future Urban Canopy Strategy
- Reducing water consumption and improving stormwater management within the Town through its Water Efficiency Action Plan and water conservation policies
- Conducted foreshore restoration and prevention along Swan River
- Building flood resilience of its community and participating in the EMRC's Understanding and Management Flood Risk project
- Participated in programs such as the Cities for Climate Protection, Community Energy Efficiency Program, Perth Solar Cities, and ICLEIs Water Campaign
- The Town is currently participating in the EMRC's Achieving Carbon Emissions Reduction Program, Future Proofing Program, Understanding and Management Flood Risk Project for Perth's East, Water Quality and Conservation Program, Water Corporation's Waterwise Council Program, and Climate Council's Cities Power Partnership.
- Divested 75% of investments away from fossil fuel supporting financial organisations.
- Increasing community knowledge and participation in climate priorities within the Town through committees and groups
- Encourage sustainable living practices by supporting initiatives such as verge transformations, garage sale trails, bike events, waste workshops, and in home energy audits.

8.1 Climate mitigation

Since the development of the Town's first target which was part of the Town's Energy Policy (reduce 1998 GHG emissions and energy consumption by 20% by 2010), the Town has been

setting further emissions reduction targets as it continues to improve building efficiency and achieve reductions in energy use in its buildings as well as increase its renewable energy sources such as solar panels.

Recently, the Town considered the draft *Emissions Reduction Plan* which is an update of the Town's previous *Carbon Reduction Plan* (CRP). Under the CRP, the Town successfully achieved its 2015 Carbon Reduction Target to reduce base year (2011/2012) corporate emissions by 7.5% by 2016/2017, one year early (Figure 7). The draft *Emissions Reduction Plan* comes under the Town's *Carbon Reduction Strategy* which outlines objectives to mitigate the future impacts of climate change by reducing the Town's corporate emissions.

Prior to the review, a new Emissions Reduction Target was suggested, aligned with the Australian Government's NDC under the 2015 Paris Agreement. The suggested target was to 'reduce 2014/2015 corporate carbon emissions by 26-28% by 2029/2030', however this may be viewed as not very ambitious. The development of a new target is still under consideration by the Town's Sustainability Committee and Council.

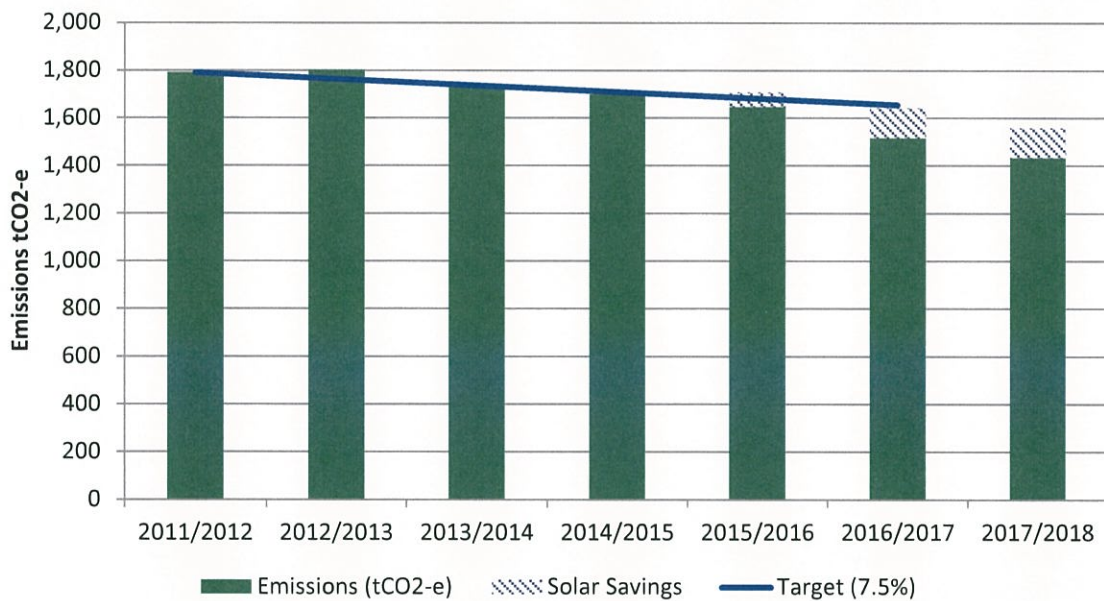


Figure 7: Town of Bassendean's corporate carbon emissions since 2011/2012 against previous emissions reduction target of 7.5%.

In 2018, the Town continued its emissions reduction with funding for air conditioner retrofits, joining the Cities Power Partnership, supplying funding for the ClimateClever program for local schools, and installing the Town's first electric vehicle charge station. The Town currently only measures and tracks its own corporate emissions and its emissions reduction targets have been focused on reducing the Town's own activities before it focuses on other indirect emissions such as consumption emissions. Creating a reliable data inventory for emissions beyond the Town's corporate assets will be important when deciding on a new emissions reduction target.

8.2 Climate adaptation

The Town's Local Climate Change Adaptation Action Plan (LCCAAP) was developed in collaboration with the EMRC and other member councils through the process of creating a Regional Climate Change Adaptation Action Plan (RCCAAP) in 2010. The LCCAAP had priority risks relating to the Town identified through the RCCAAP risk assessment process.

The ten priority risks were:

1. Infrastructure failure
2. Impacts on essential services
3. Watercourse damage and loss
4. Increase in bushfire and urban fire events
5. Water decline and reduced water quality
6. Greenhouse gas emissions and related air pollution
7. Loss of ecosystems and provision of public open space
8. Decline in population health and wellbeing
9. Economic challenges and opportunities
10. Changing leadership and development requirements.

A recent review of the LCCAAP identified that a majority of the completed and ongoing LCCAAP actions were implemented through other plans and programs such as the Water Efficiency Action Plan (2016-2020) and Waterwise Council program, Environmental Management Plan (2014-2024) and Urban Forest Master Plan. The Town is also currently part of the State Risk Project delivered through the State Emergency Management Committee. The local phase of the project commenced in 2017, with LGAs provided with training, support and tools to undertake emergency risk management processes, including risks relating to the above list.

Of the actions that were developed as part of the LCCAAP; 13% were completed, 45% are ongoing or business as usual, 32% are still progressing, 3% have stalled and 8% were classed as incomplete. A summarised review of the LCCAAP is provided in an additional document for further consideration, including updates on all actions, list of climate related Town policies and achievements.

8.3 Community support

A survey conducted by the Town as part of its stakeholder engagement process for the Strategic Community Plan 2017-2027 identified that the community values a community-wide approach to climate change resilience planning. The active community members within the Town seem to encourage renewable energy technology, sustainable living and improving the local environment. The Town has recently banned single use plastic bags, commenced using steam weeding on hard surfaces, encouraged verge transformations and created a new community platform for the sharing of compost waste, mulch and produce called Bassengreen. Most of these initiatives have come from community concerns or interest and contribute to community resilience.

Other community support has been through committee groups formed by residents or through the Town's governance structure to aid in making decisions on matters relating to climate action either directly or indirectly. The Town's Sustainability Committee, Local Emergency Management Committee and Asset Management Committee all have community representatives and have been active in encouraging a sustainable Bassendean. The Town's Sustainability Committee has previously reviewed draft emissions reduction plans and is active in promoting renewable energy within the community and the Town's operations.

8.4 Next steps

This discussion paper has been prepared for the Town to demonstrate the many possibilities to strive for important climate action targets and develop a resilient and connected community.

To strive towards being a climate leader, the Town may source inspiration from other councils around Australia and the world to identify what direction it would like to take. This may include setting a more ambitious science derived target such as net zero emissions or to be carbon neutral. The Town could also review its climate change risks through an integrated risk and vulnerability assessment approach to continue its action towards creating a more adaptable and resilient community.

In order to decide what is the most appropriate course of action, the Town may wish to consider the following topics to develop a climate action plan:

- The Town's position on climate change action
- Level of community engagement in the climate action process
- Choosing a climate related framework that will work the best to support the Town's position on climate action
- The Town's barriers to climate action (e.g. limited budgets)
- Setting a new ambitious emissions reduction target and what that target includes (i.e. setting clear emissions boundaries, either corporate or community-wide)
- Does more emissions data need to be sourced to set an appropriate target and what type of data?
- How to get the best out of its climate partnerships without excessive reporting
- Conducting a risk assessment for climate change impacts for the Town's risk register to assist with adaptation

The Town may also wish to consider what strategies, plans or policies are needed to communicate their objectives, targets and position. A Climate Action Plan, for example, could combine both the mitigation and adaptation targets and actions that the Town wishes to pursue. Equally, higher level strategies supported by both existing and new implementation plans and programs may be suitable.

In conclusion, the Town is to be commended on its climate action to date and whatever direction the Town takes next will be another step towards successfully combating climate change and its impacts.

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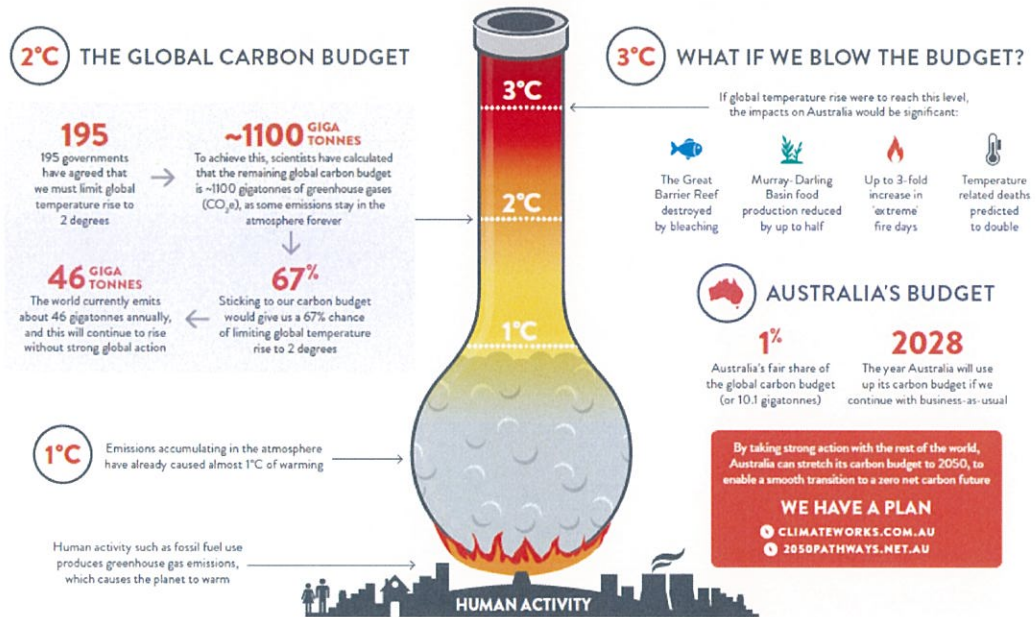
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Appendix A – Carbon Budget Infographic by Climate Works Australia

THE CARBON BUDGET



The carbon budget is the finite amount of greenhouse gases we can emit to limit global temperature rise to 2°C



Appendix B – Table 1: Climate action and targets by state

Table 1: List of commitments and summary of recent information from state governments in relation to climate action

State/Territory	Targets*	Policies/plans/programs
ACT	100% renewable electricity by 2020 Net zero emissions by 2050	<p>The ACT is currently developing a new climate change strategy after community consultation on continuing its commitment to the target of net zero emissions. A discussion paper was developed in December 2017. The ACT Climate Change Council has recommended changing its net zero emissions target to 2045 or earlier due to the growing risks of dangerous climate change.</p> <p>The ACT's current climate change strategy and action plan sets the pathway to the target of 40% emissions reduction.</p> <p>The ACT also has a Carbon Neutral Government Fund to support projects to reduce operating costs of government facilities.</p>
NSW	Net zero emissions by 2050	<p>NSW has a Climate Change Policy Framework to reduce carbon emissions and adapt to climate change.</p> <p>NSW, in combination with its Climate Change Policy Framework, have supported resilience projects such as its Five Million Trees initiative, coastal risk management programs, flood risk management strategies and primary industry climate change strategy. Other adaptation projects include assessing regional communities' vulnerability, supporting the NSW Adaptation Research Hub and providing funding for local governments to identify climate risks and vulnerabilities (NSW OEH 2015). The government has also recently developed new programs to provide clean and affordable energy for the people of NSW.</p>
NT	50% renewable energy by 2030	<p>The NT recently developed a discussion paper for community consultation on its Climate Change Strategy. Consultation is still ongoing.</p> <p>The NT currently has a Climate Change Policy and a range of initiatives for government and businesses.</p>
QLD	50% renewable energy by 2025 Net zero emissions by 2050	<p>Queensland has developed a Queensland Climate Transition Strategy and Climate Adaptation Strategy.</p> <p>The Queensland government has also developed sector adaptation plans that help prioritise climate change adaptation activities across the key sectors of the community. Consultation was conducted with sector and industry stakeholders.</p>

SA	Net zero emissions by 2050	The Climate Change and Greenhouse Emissions Reduction Act 2007 made South Australia the first Australian state to legislate targets to reduce greenhouse emissions. They also have a Government Climate Change Strategy, Blue Carbon Strategy and adaptation framework and action plan SA has a Premier Climate Change Council.
TAS	100% renewable energy by 2022 Net zero emissions by 2050	Tasmania has a Climate Change Action Plan called Climate Action 21. The government is committed to funding the delivery of the action plan including money invested in its Energy Efficiency Loan Scheme (Tasmanian Government. 2018).
VIC	40% renewable energy by 2025 Net zero emissions by 2050	Victorian Government has a framework that sets out a shared vision for a new zero emissions, climate resilient Victoria in 2050 and also has implemented the Climate Change Act 2017 that legislate the states commitment. The Victorian Government, along with Sustainability Victoria has also launched the Take2 program which encourages organisations and residents to pledge to take action on climate change. The program supports all Victorians to achieve the states target by providing business, families and community organisations the resources they need to get started (Sustainability Victoria. 2018).
WA	State government has announced that they will develop a new climate change policy in 2018.	In WA, the State Government released its Climate Change Strategy in 2012. It outlined key climate change challenges and established a framework for agencies to develop adaptation responses. The strategy stated that an emissions reduction target was not considered appropriate for WA as, at the time, the State fell under national targets for climate change mitigation. In 2012, the Australian government's target was to reduce emissions by 5% by 2020 compared to 2000 levels under the Kyoto Protocol. The State Government does have a Low Emissions Energy Development fund that provides projects with funding of up to 25% for low emissions technology such as wave energy, biomass, and bioenergy.

Appendix C – Table 2: LGA climate action across Australia

Table 2: LGAs nationally and in WA and their climate action related documents including development process and partnerships.

LGA	Year	Strategic Document	Development Process	Notes and Targets
<i>National</i>				
City of Melbourne	2014	Zero Net Emissions Strategy	<ul style="list-style-type: none"> External stakeholder engagement and collaboration Focus areas, issues and challenged identified by over 30 organisations External reference group provided input and guidance Six-week community consultation in 2013 	Originally developed in 2003. Certified carbon neutral organisation in 2011. Target of net zero emissions by 2020. Detailed four-year implementation program to accompany the strategy.
	2017	Climate Change Adaptation Strategy Refresh 2017	<ul style="list-style-type: none"> Discussion paper Online Survey Community and stakeholder workshops Individual meetings Risk assessment Community Engagement Summary Report that contributed to document 	Part of C40 Cities Initiative, ICLEI, 100 Resilient Cities Network and Global Covenant of Mayors. The development of the City's Future Melbourne 2026 plan that detailed community aspirations with nine key goals also aided in developing the refreshed strategy.
	2018	Climate Change Mitigation Strategy 2050 (supersedes Zero Net Emissions Strategy)	<ul style="list-style-type: none"> Developed in collaboration with C40 Cities and other cities in a C40 climate action planning pilot program Science based targets based on Paris Agreement (emissions below 1.5°C) Based on community wide approach Peer reviewed process 	Strategic Priorities include: <ul style="list-style-type: none"> 100% renewable energy Zero emissions buildings and precincts Zero emissions transport Reducing the impact of waste.
Melbourne's East	2014	Adapting to Climate Change in Melbourne's east	<ul style="list-style-type: none"> Regional risk assessment for member councils of the Eastern Alliance for 	Used risk matrix from Australian Greenhouse Office "Guide for Business

LGA	Year	Strategic Document	Development Process	Notes and Targets
			<p>Greenhouse Action</p> <ul style="list-style-type: none"> • Series of workshops and interviews conducted across the councils • Extensive desktop review of existing climate risk assessments • Gap analysis of current Council plans, strategies and risk registers • Recommendations for Council risk registers • 329 risks identified 	and Government" 2006.
City of Greater Dandenong (VIC)	2017	<p>City of Greater Dandenong Sustainability Strategy 2016-2030</p> <p>Sustainable Dandenong Website</p>	<ul style="list-style-type: none"> • Online based website with focus on City's vision of being the one of the most sustainable cities in Australia by 2030. • Whole of organisation approach • Sustainability forms base of council operations • 10 themes and goals • Extensive consultation internally and externally using engagement policy • Second round of consultation after draft developed • Engagement techniques in strategy • Climate adaptation and mitigation all included including actions to develop a climate change strategy and implement risk management frameworks 	<p>Part of Cities Power Partnership. Locked in with website consultant and still going through some teething problems. Staff are responsible for updating targets and actions within the platform.</p> <p>http://sustainable.greaterdandenong.com/</p>
City of Sydney	2016	Adapting for Climate Change – A long term strategy for the City of Sydney	<ul style="list-style-type: none"> • Establishment of a Science Reference Group to oversee scientific inputs and project methodology to form basis of the strategy 	Part of Cities Power Partnership and 100 Resilient Cities

LGA	Year	Strategic Document	Development Process	Notes and Targets
			<ul style="list-style-type: none"> Risk assessment workshops 32 risk statements identified by Science Reference Group 232 suggested actions were developed in risk assessment workshops that were converted into a workable strategy. 	
	2007	Sustainable Sydney 2030	<ul style="list-style-type: none"> Set of goals to make Sydney as green, global and connected as possible by 2030 Community consultation Snapshot of progress has been developed recently 	<p>Target to reduce carbon emissions by 70% by 2030.</p> <p>Certified carbon neutral in 2011.</p>
City of Adelaide	2013	Climate Change Adaptation Action Plan 2013-2015 Adaptation Policy	<ul style="list-style-type: none"> Review of Climate Change Adaptation Plan 2011-2013 Regional climate change planning process with councils within the Eastern Region Alliance New action plan developed Resilient East produces the regions Regional Climate Change Adaptation Plan and conducts vulnerability assessments among other reports for the region. 	Partner in Resilient East Climate Change Adaptation Project, Cities Power Partnership and Global Covenant of Mayors and part of research projects with Cooperative Research Centre for Low Carbon Living.
	2015	Carbon Neutral Adelaide Strategy 2015-2025 Carbon Neutral Adelaide Action Plan 2016-2021	<ul style="list-style-type: none"> Strategy developed to establish aspiration for Adelaide to be the world's first carbon neutral city <i>Carbon Neutral Adelaide Foundation Report</i> developed by consultants to analyse emissions reduction pathways and priorities recommended 	<p>Target of net zero emissions by 2050.</p> <p>Sector agreement under the <i>Climate Change and Greenhouse Emissions Reduction Act 2007</i>.</p>

LGA	Year	Strategic Document	Development Process	Notes and Targets
			Community consultation incorporated into action plan	
<i>Western Australia</i>				
City of Perth	2015	Environment Strategy	<ul style="list-style-type: none"> Community engagement for the development of the City's Strategic Community Plan identified climate change as a key risk. Evidence based approach to understand local, state and global environmental challenges Supported by an implementation Plan with actions, priorities, partnerships and responsibilities. The City of Perth Environment Policy sets the environmental position of the City. Includes both mitigation and adaptation 	Part of Global Covenant of Mayors, ICLEI, and World Energy Cities Partnership. Local Government Climate Change Declaration signatory. Operational Target 2030 – All City of Perth Asset Management Plans incorporate climate response considerations by 2030. Community Target 2030 – The city scores 50% or above in disaster resilience assessed by the United Nations Office for Disaster Risk Reduction by 2030.
Town of Victoria Park	2016	Climate Change Adaptation Plan	<ul style="list-style-type: none"> Climate change risk and adaptation workshop run by consultant Risk assessment identified and rated 95 risks Identified 71 adaptation actions Use of climate change scenarios to inform risk assessment process Workshop Issues Paper developed before workshop for Town officers with background information on findings from initial risk identification. Operational control focused and not community action focused 	Local Government Climate Change Declaration signatory. Part of the Cities Power Partnership and Carbon Neutral Program.

LGA	Year	Strategic Document	Development Process	Notes and Targets
			<ul style="list-style-type: none"> Climate Change Risk Register produced 	
City of Cockburn	2015	Greenhouse Gas Emissions Strategy 2.0 2011-2020 Climate Change Adaptation Action Plan (SMRC)	<ul style="list-style-type: none"> Strategy includes emissions reduction targets from forecasting future emissions. 	Local Government Climate Change Declaration signatory. Member of Cockburn Sound Coastal Alliance.
City of Stirling	2013	Climate Change Adaptation Plan – A community guide	<ul style="list-style-type: none"> Risk assessment approach Climate Change Adaptation Working group 	Local Government Climate Change Declaration signatory.
City of Joondalup	2014	Climate Change Strategy 2014-2019	<ul style="list-style-type: none"> Risk assessment approach Mitigation and adaptation Climate change mitigation framework developed Literature review to establish context Risk assessment workshop Post workshop survey and follow-up meetings 	Targets for mitigation and adaptation for both corporate and community. Part of Global Covenant of Mayors.
City of Melville	2012	Climate Change Adaptation Plan	<ul style="list-style-type: none"> Climate Change risk assessment exercise No risks rated extreme 	Part of Cities Power Partnership. Also has an Environmental Policy that was last updated in 2018 directly addressing adaptation and mitigation objectives
City of Mandurah	-	Carbon Neutral Strategy	<ul style="list-style-type: none"> No information available 	By 2020 the City of Mandurah will be carbon neutral within all operations of its corporate profile, and will not offset more than 50% of 2010 total gross emissions. Target will be achieved through consistent investment in renewable energy technology and energy efficiency

LGA	Year	Strategic Document	Development Process	Notes and Targets
				measures. Member of ICLEI Oceania, and Local Government Climate Change Declaration signatory.
SMRC	2009	Climate Change Risk Management and Adaptation Action plan for Southern Metropolitan Councils	<ul style="list-style-type: none"> Context setting Risk assessment and adaptation option identification (2 workshops) Ten impacts were analysed Two risks rated extreme Risk register Resource constraints limited level of detail for a number of risks. 	Regional Council including LGAs of Rockingham, Canning, Cockburn, Kwinana, Melville, East Fremantle, and Fremantle.
<i>Eastern Region</i>				
EMRC	2013	Regional Climate Change Adaptation Action Plan 2013 - 2016	<ul style="list-style-type: none"> Regional Risk Assessment with EMRC and member councils in 2010 Local actions developed for local plans 	LCCAAPs developed for City of Bayswater, City of Belmont, Shire of Mundaring, City of Swan and Shire of Kalamunda are still in action or yet to be superseded.
	2016	Regional Environment Strategy 2016 - 2020 (RES)	<ul style="list-style-type: none"> Desktop analysis to establish context and identify gaps in existing strategic framework Individual stakeholder consultation Staff workshop with member councils and EMRC environmental staff Stakeholder workshop Workshop results developed into a workshop proceedings and discussion note outputs Development of goals and objectives based on the United Nations Sustainable 	The EMRC RES reports to the Sustainable Development Goals and conducts annual reports on progress.

LGA	Year	Strategic Document	Development Process	Notes and Targets
			Development Goals	
Shire of Mundaring	2018	Energy and Emissions Reduction Strategy	<ul style="list-style-type: none"> • Desktop and literature review • Staff consultation • Energy and Emissions Working Group established and consulted on target and actions • Endorsed by Council 	Part of the Cities Power Partnership. Target of reducing corporate emissions by 30% by 2030 based on 2016/2017 emissions. This is the Shire's first emissions related strategy and target.

*Information in Table 2 sourced from Councils websites and documents as listed

ADDENDUM TO CLIMATE ACTION DISCUSSION PAPER

Net Zero Emissions

In effect, Net Zero Emissions and Carbon Neutral refer to the same outcome. Emissions produced are balanced by emissions stored or removed.

Carbon neutral means reducing emissions where possible and compensating for the remainder by investing in carbon reduction projects (via offset units) to achieve net zero carbon emissions (Department of the Environment and Energy website).

The NSW state government fact sheet on Achieving Net-Zero Emissions by 2050 illustrates this:

Net-zero emissions means NSW emissions will be balanced by carbon storage. The more emissions are reduced, the less sequestration is needed to achieve net-zero.

Most Net Zero Emissions targets that include community (municipal) emissions are worded to align with the aims of the Paris Agreement. The latest report by the UN's Intergovernmental Panel on Climate Change (IPCC) has stated that global emissions of greenhouse gas pollution must reach zero by about 2050 in order to halt global warming at 1.5 degrees Celsius above pre-industrial levels, hence the global trend to align targets to 2050.

The City of Fremantle is a good example of tailoring carbon neutral and zero carbon targets to suit their needs:

Our Corporate Target: *The City of Fremantle will maintain its pledge of carbon neutrality for corporate emissions to 2020 via a mix of green power purchase options, renewable energy, and energy efficiency measures. A plan will be in place for all buildings to be powered by 100% renewable energy by 2025.*

Our Community Target: *The City of Fremantle will support the community to access a range of green power purchase options, renewable energy and energy efficiency measures and encourage uptake of renewables through education on and promotion of new technologies, with a goal of City of Fremantle becoming zero carbon by 2025.*

Town of Bassendean pathway to Net Zero Emissions

The Town of Bassendean has been reducing its corporate (operational) carbon emissions for some time. As noted in the Discussion Paper, the Town currently has direct operational control over approximately 53% of its emissions, with the remaining 47% being emissions from Street Lighting. The Town is not currently including its emissions from water or waste in these figures.

For the Town to achieve Net Zero for its operational emissions, it will need to:

- continue to implement energy efficiency projects where practical;
- source energy from renewable options such as installing solar power on its assets and purchasing green power;
- reduce its emissions from fuel by transitioning to electric fleet vehicles and small plant;
- negotiate with Western Power to upgrade street lighting to low emissions technology;
- undertake an assessment of its other emissions such as from waste and water; and
- offset any residual emissions through accredited carbon offsets.

Offsets currently vary in cost from around \$10 per tonne CO₂-e to around \$50 per tonne CO₂-e. This cost is likely to rise as more governments and businesses strive to achieve similar net zero targets.

As an example, at an average cost of \$30 per tonne CO₂-e, the Town's cost to offset 1,432 tonnes CO₂-e emissions to achieve Net Zero for 2017/2018 would have been approximately \$42,960.

Other costs to achieve a Net Zero target may include purchasing electricity from renewable sources, upgrading street lighting (which will also change tariffs), installing more solar PV systems, upgrading air conditioning and lighting systems to low emissions technology and pursuing Carbon Neutral certification to demonstrate achievement of the target.

The Yarra City Council's website describes its journey to become carbon neutral:

We prioritised actions to minimise our greenhouse emissions in the following order:

- *Measure all emissions and evaluate the effectiveness of previous reduction measures*
- *Avoid using energy when possible and eliminate waste*
- *Reduce what energy needs to be used through efficient technology and behaviour change*
- *Green energy sources by switching to low or no emission sources*
- *Sequester and offset all residual emissions that can't be eliminated through avoiding, reducing or changing energy sources.*

If the Town wishes to achieve Net Zero Emissions across its municipality by 2050 to align with the Paris Agreement, it will need to establish a carbon budget (science derived target) which includes community emissions. This is a much more aspirational target, but will need substantially more resources as well as support from its residents and businesses to achieve.



One Planet Community - Rooftop, The Commons, Melbourne

One Planet Program

Act now and get involved in the One Planet Program. Transform your market, and publicise the actions your community will take to live within earth's resources.

One Planet Living is the vision of a world in which people enjoy happy, healthy lives within their fair share of the earth's resources, leaving space for wildlife and wilderness.

The concept of One Planet Living builds on the sustainability work Bioregional has carried out over the past two decades. The One Planet Living framework consists of ten cross cutting principles that provide a simple way to plan, deliver and communicate a strong commitment and action towards living within a fair share of earth.

The framework takes a holistic approach focusing on how people live their lives, going beyond cutting carbon and conservation to nurturing wellbeing and building better communities. All of this is wrapped up in a single story that is easy to convey and understand. The One Planet Program is operated by Bioregional Australia for endorsement as a One Planet Community, One Planet Company or One Planet Council.

The One Planet Program provides a pathway for organisations, government and developments to analyse current status, develop and implement actions, create change and report on continuous improvement towards living within earth's resource limit. The program provides the opportunity for 'recognition' and endorsement by One Planet Living.

The One Planet Program covers three core sectors:

- One Planet Community - for housing, mixed use developments, infill and urban growth areas
- One Planet Company - for organisations, committees of management, community groups and supply chains
- One Planet Council - for local governments and council owned facilities

The Common International Targets set out what each endorsed project aims to achieve by 2030 and beyond, across the Ten One Planet Living principles. For some principles, such as 'zero carbon' and 'zero waste', there are clear quantitative common international targets. For other principles, such as 'culture and heritage', targets are set according to local opportunities and constraints, with both quantitative and qualitative measures.

Sustainability initiatives in
One Planet Council - City of Fremantle.



One Planet Living - Ten Principles

One Planet Living is based on ten easy-to-grasp principles that enable us to plan for, deliver and communicate sustainable development globally. The framework provides a clear, practical pathway for a better way to live and do business.

	Health and happiness	Encouraging active, social, meaningful lives to promote good health and wellbeing
	Equity and local economy	Creating safe, equitable places to live and work which support local prosperity and international fair trade
	Culture and community	Nurturing local identity and heritage, empowering communities and promoting a culture of sustainable living
	Land and nature	Protecting and restoring land for the benefit of people and wildlife
	Sustainable water	Using water efficiently, protecting local water resources and reducing flooding and drought
	Local and sustainable food	Promoting sustainable humane farming and healthy diets high in local, seasonal organic food and vegetable protein
	Travel and transport	Reducing the need to travel, encouraging walking, cycling and low carbon transport
	Materials and products	Using materials from sustainable sources and promoting products which help people reduce consumption.
	Zero waste	Reducing consumption, re-using and recycling to achieve zero waste and zero pollution
	Zero carbon energy	Making buildings and manufacturing energy efficient and supplying all energy with renewables

Process

YEAR ONE

One Planet Analysis



One Planet Action Plan



One Planet Assessment



One Planet Living Endorsement

YEAR TWO

Annual Review & Report

YEAR THREE

Annual Review & Report

Bioregional Australia and our One Planet Trainers provide training across the region in two areas: the One Planet Living Introduction and One Planet Program Training 1 & 2.

In addition, Bioregional Australia provides customised training to Bioregional Australia Members on request. This may include member staff training or project team training.

Bioregional Australia supports and develops licensed One Planet Integrators, One Planet Trainers and One Planet Assessors.

Take the **Professional training** and become a licensed One Planet Integrator with Bioregional Australia, to provide One Planet Program services for organizations and developments. This training is especially useful for personnel applying the One Planet Program in organisations and is a requirement for consultants prior to becoming licensed One Planet Integrators.

For One Planet Program application forms, fees and conditions or for a list of licensed One Planet Integrators in your region, contact us.

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Bioregional Australia is the regional provider of the One Planet Living international framework and programs. We are part of the Bioregional international team working with Bioregional organizations in United Kingdom, Europe, North America and Africa.

Bioregional Australia Foundation, a non-profit foundation, operates under license from Bioregional Development Group in the UK.