Mount Barker District Climate Change Action Plan 2019

MOUNT BARKER
DISTRICT COUNCIL

Mount Barker District Council
6 Dutton Road, PO Box 54, Mount Barker SA 5251
Telephone 8391 7200, Fax 8391 7299, Email council@mountbarker.sa.gov.au

Mayor's Message

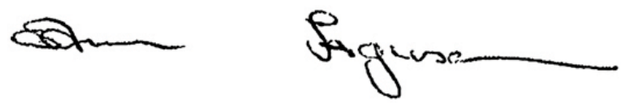
Like any Council, Mount Barker District Council and our community faces the threats and impacts of climate change. We're also one of the fastest-growing Councils in South Australia so we have an opportunity and responsibility to manage this growth sustainably and to not only mitigate and adapt to climate change, but to thrive.

I am pleased to release the Mount Barker District Council Climate Change Action Plan to address the controllable climate risks and reduce our emissions by implementing this plan. By establishing clear priorities, we will strive to consider and incorporate climate change into all council decision-making, processes and functions, extending from business continuity and asset management to the provision of community services.

Addressing the challenges posed by climate change requires action by everyone: all levels of government, business, community groups, households and individuals. By adopting this Plan, Council commits to doing its part and working with others to secure a safe future and the wellbeing of our people, a thriving environment and resilient and sustainable economy.

I encourage the community to join us on the journey to a climate resilient future.

Mayor Ann Ferguson



Abbreviations

COP21	Conference of the Parties (Paris Climate Change Conference)
CO2-e	Carbon Dioxide Equivalent
EV	Electric Vehicle
GHG	Greenhouse gas
HVAC	Heating, Ventilation, Air conditioning
ICLEI	International Council for Local Environmental Initiatives
IPCC	Intergovernmental Panel on Climate Change
KPI	Key Performance Indictor
LGA	Local Government Area
MBDC	Mount Barker District Council
PPR	Principal Project Requirements
PV	Photovoltaic
RMS	Roadside Marker Scheme
WSUD	Water Sensitive Urban Design
WWTP	Waste Water Treatment Plant

Contents

Executive Summary

Mount Barker District

Climate Change

Action Plan 2019

Executive Summary

Climate change is a critical issue for local government, including addressing the associated legal, social, economic and environmental risks. Local governments make decisions that impact present communities as well as future generations. Mount Barker Council has been working on climate change programs for the past 2 decades, although the urgency of acting on climate change was most recently highlighted in Council's Environment Strategy that was developed in 2018. The 'low carbon and resilient' goal set a number of actions for council to pursue in partnership, including the development of this Climate Change Action Plan (the Plan). This plan sets out Council's response to climate action focussing on emission reduction and climate risk mitigation and adaptation.

Council has the obligation to identify climate risks and address these risks by implementing this Climate Change Action Plan across its governance and operations. Through the implementation of this Plan, climate considerations will be implemented into all council decision-making, processes and functions, extending from business continuity and asset management to the provision of community services.

Climate risks include:

Physical Risks

- a decrease in overall rainfall resulting in extended droughts;
- an increase in extreme rainfall events causing storms and flooding;
- an increase in temperatures in all seasons;
- an increase in frequency and intensity of heat extremes; and
- a higher frequency in fire danger days and risk of bushfires.

Financial Risks

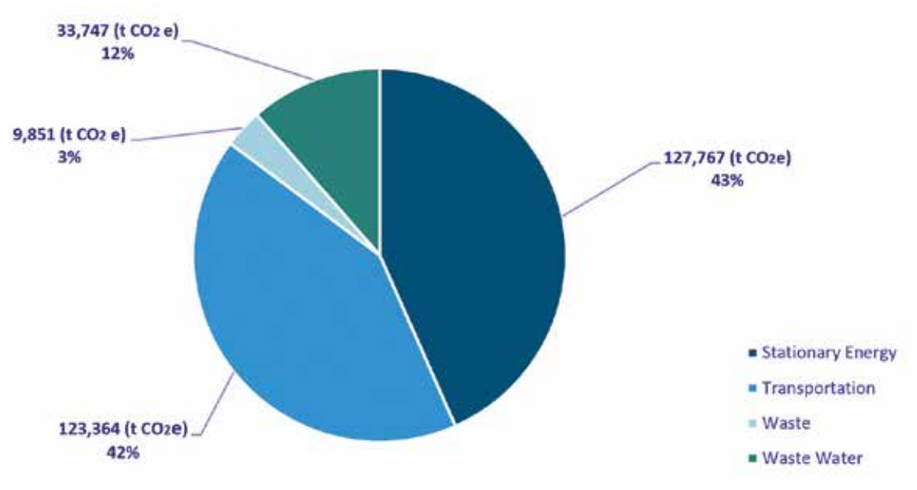
- projects with high climate risk exposure will find it more difficult to gain finance or insurance;
- the collective climate related risk of local government could undermine the credit worthiness of the South Australia;
- costs associated with responding to physical climate risks may be beyond the financial capability of Council; and
- home-owners may be denied insurance as extreme weather events increase and governments may become the 'insurer of last resort.'

Legal Risks

- Councils that fail to mitigate, manage and disclose climate risks in their governance and decision-making will expose themselves to legal liabilities; and
- Councils face legal liabilities from the developments they approve, the way public infrastructure is managed, and their role when natural disasters hit.

Emissions

The total annual emissions in 2017 in the Mount Barker District have been calculated as 295,000 t CO2-e. The largest source of emissions by sector in the district is stationary energy, which mainly comprises electricity consumed by buildings and facilities and accounts for 43% (128,000 tonnes) of total emissions. Meanwhile, on-road transportation is responsible for nearly as many emissions at 42%, whilst wastewater accounts for 12% and lastly solid waste generates 3% of emissions.



The Paris Climate Change Agreement introduced a science-based target to limit global temperature rise to under 2°C by 2050. The actions described in this Climate Change Action Plan demonstrate our commitment to the Paris Pledge for climate action whilst minimising risk to Council and community. The Mount Barker District science-derived target is to reduce emissions by 3% or 7,527 tonnes per year to achieve or exceed a reduction of 37,635 tonnes over a 5 year period.

The development of the Plan, and the actions within, follow a review of Council's previous climate mitigation and adaptation efforts and have been developed in consultation with internal staff and managers. The Plan is influenced and determined by the broader legislative and policy context operating at international, national and state levels and by activity at the regional level. It is guided by the overarching regional Resilient Hills and Coast Climate Change Adaptation Plan which included a comprehensive community consultation process.

The priority actions within the Plan are designed in consideration of the issues and risks brought about through climate change and are organised under the 6 key directions. The top 5 priority actions in each key direction are summarised below.

Natural Environment & Landscapes

- Trial the use of non-local native species which may be more resilient to changing climatic conditions and document positive/negative outcomes.
- Write guidelines for management and retrofitting of existing basins.
- Protect and replenish populations of threatened flora and fauna species Restore, link and buffer priority sites that have high ecological value.
- Liaise with and encourage developers to incorporate maximum open space an natural environments within new developments.
- Promote and demonstrate landscape engineering solutions to create natural flow patterns/systems.

Climate Risk

- Undertake whole of organisation climate risk assessment that enables the identification of priority risks across all functions within Council.
- Agree on a process by which high priority projects, especially large-scale infrastructure projects or new developments, are subject to climate risk assessments prior to approval.
- Review the risk management policy to include climate change.
- Conduct tree canopy mapping to demonstrate heat difference between treed and non-treed landscapes.
- Develop guidelines to incorporate green infrastructure into council projects/buildings.

Urban Development & Planning

- Encourage more efficient and sustainable housing products through incentives, demonstration sites and education resources.
- Investigate partnerships with developers to implement more sustainable residential development.
- Develop best practice guidelines and policy for climate ready buildings and implement in new council buildings.
- Define a policy positon on sustainability objectives and minimum energy efficiency requirements in Principal Project Requirements (PPR) brief for the future swimming pool.
- Increase uptake of Water Sensitive Urban Design (WSUD) features by applying relevant research, implement local trials, develop case studies and develop suitable policy for WSUD features.

Council Operations & Processes

- Undertake a review of key financial planning documents.
- Develop a climate change policy to ensure Council's method for adapting to climate change is consistent.
- Incorporate sustainability/ environment key performance indicators into work plans and Council processes as business as usual.
- Implement the recommendations of the climate change governance assessment report.
- Establish an energy efficiency revolving fund.

Emission Reduction

- Identify a Corporate emissions reduction target to 2030 and consider including a staged pathway of emissions reductions extending to 2050.
- Set district renewable energy or emissions reduction targets and sustainable energy policies to provide a common goal and shared expectations for local residents and businesses
- Install renewable energy on Council buildings including solar photovoltaic (PV) systems and storage systems where feasible and supported by business cases.
- Develop a Council Energy Plan.
- Retrofit Council Buildings based on feasibility including HVAC, lighting, IT infrastructure, appliances based on business feasibility.

Community Engagement

- Develop a Climate Change Stakeholder Engagement Strategy.
- Provide information, education and support to the community on energy efficiency measures, programs and available grants.
- Raise awareness about the benefits of climate-resilient buildings.
- Develop and deliver strategies that will build community resilience.
- Support and encourage sustainable gardening within the community.

2.

Introduction

Introduction

Climate change is a critical issue for local government including the associated legal, social, economic and environmental risks. Local governments make decisions that not only impact present communities, but future generations. Mount Barker has been working on climate change programs for the past 2 decades, although the urgency of acting on climate change was highlighted in Council's Environment Strategy (2018). The 'low carbon and resilient' goal set a number of actions for council to pursue in partnership, including the development of this Climate Change Action Plan. This plan sets out Council's response to climate action focussing on emission reduction and climate risk mitigation and adaptation. Council needs to actively assess and respond to the direct and indirect risks that climate change poses.

Australia is a signatory to the Paris Agreement to keep any global temperature rise to below 2°C. The Intergovernmental Panel on Climate Change (IPCC) released their most recent report in June 2019, making it clear that under current policies, temperatures are on track for between 3.3 and 3.9°C of warming. Anything above 2°C will result in catastrophic changes and impacts on human health and wellbeing, natural systems, ecological communities and on individual species. To avoid the worst impacts of climate change, we must collectively strive to limit temperatures to a warming of below 2°C.

To achieve this, a science-derived emission reduction target needs to be set to demonstrate the scale and urgency of action needed by all levels of government to keep within its allocated carbon budget. This target aligns with the broader global emissions reduction needed to keep the temperature increase below 2°C. For industrialised countries such as Australia, this means approximately an 85% reduction in greenhouse gas (GHG) emissions by 2050, equating to a carbon budget of 10.1 gigatonnes CO2-e (carbon dioxide equivalent) for the 2013-2050 period. For the Mount Barker District, the carbon budget is 4,186, 000 t CO2-e equating to an annual emission reduction target of 7,527 t CO2-e per year, to remain within our carbon allowance. Council has set an initial GHG reduction target of 3% per year. Mount Barker's carbon budget and reduction target is derived based on an annual emission profile of 295,000 t CO2-e, population growth and the Socio-Economic Index for Areas.

Historically, climate change in local government has been managed as an environmental problem that has been driven typically by environment teams. However climate risk is now recognised and accepted as a whole of society issue and has, or will impact all areas of Council and community. Exposure of Council and the impacts of climate change on the various Council sectors and their communities is occurring and is visible now.

Climate risk includes not only physical risks but also legal and financial risks which ultimately will impact on social, cultural, economic and environmental wellbeing in the Mount Barker District.

Climate risks include:

Physical Risks

- a decrease in overall rainfall resulting in extended droughts;
- an increase in extreme rainfall events causing storms and flooding;
- an increase in temperatures in all seasons;
- an increase in frequency and intensity of heat extremes; and
- a higher frequency in fire danger days and risk of bushfires.

Financial Risks

- projects with high climate risk exposure will be more different to gain finance or insurance;
- the collective climate related risk of local government could undermine the credit worthiness of the state;
- costs associated with responding to physical climate risks may be beyond the financial capability of Council; and
- home-owners may be denied insurance as extreme weather events increase and governments may become the 'insurer of last resort.'

Legal Risks

- Councils that fail to mitigate, manage and disclose climate risks in their governance and decision-making will expose themselves to legal liabilities; and
- Councils face legal liabilities from the developments they approve, the way public infrastructure is managed, and the role when natural disasters hit.

Councils are at the forefront of dealing with climate risk and some are now declaring a "climate change emergency".

Mount Barker district Council declared a climate emergency on 4 November 2019 recognising that we are in a state of climate emergency, requiring urgent action from all levels of government, including local government.

Council has the obligation to identify climate risks and address these risks by implementing this Climate Change Action Plan across its governance and operations. Through implementation of this Plan, Climate considerations will be implemented into all council decision-making, processes and functions, extending from business continuity and asset management to the provision of community services. The actions outlined in this plan have been developed with managers and key staff, both as a part of the development of this climate change action plan and as a part of the Climate Change Adaptation Governance Assessment, with consideration of budget requirements, strategic alignment and best practice approaches. The plan considers and guides the management of corporate climate risks and GHG emissions reductions whilst supporting the community to mitigate their own individual risks and be resilient in the face of any unavoidable climate change impacts.
corporate climate risks whilst supporting the community to mitigate their own individual risks and be resilient to face any unavoidable climate change impacts.

3.

Purpose

Purpose

Local Governments operate and govern a variety of services, functions and projects throughout their communities. Mount Barker District Council plans for and approves land use changes, constructs infrastructure, manages built and natural assets, manages waste and wastewater, ensures community wellbeing, responds to emergencies and supports business development. Within these functions there is a responsibility to identify climate risk and respond to mitigate these risks.

Under the Local Government Act 1999, each Council is responsible for acting in the interests of its community in an informed and responsible manner and for providing public services in a socially and ecologically sustainable manner. To achieve this, one of Council's statutory functions is to protect its area from natural and other hazards and to mitigate the effects of such hazards.

Managing climate risk will require ongoing action by Council across all functional areas that are impacted by climate change – Planning and Development, Infrastructure, Community Services and Corporate Services. This plan has been developed to guide these functional areas to engage, empower and motivate staff, community and business to champion actions that will ensure the district is a healthy and safe place to live, work and visit.

4.

Strategic Context

Strategic Context

How Climate Change is addressed is influenced and determined by the broader legislative and policy context operating at international, national and state levels, and by interests and activity in the community at the regional and local levels.

Council recognises that the climate is changing and that unless we act urgently, catastrophic and irreversible impacts will occur. Governments, business and communities are increasingly recognising the need to take transformative action globally.

Global - United Nations Paris Climate Conference

At the Paris Climate Conference (United Nations COP21) in December 2015, 195 nations agreed to keep average global temperatures to "well below" a 2°C rise from pre industrial temperatures, and to aim to limit the increase to 1.5°C. This first universal climate agreement became law in November 2016.

Australian Government

Australia signed the Paris Agreement that committed it to:

- Reduce emissions by 5 per cent below 2000 levels by 2020.
- Reduce emissions by 26 to 28 per cent below 2005 levels by 2030.
- Double Australia's renewable energy capacity to be achieved in 2020
- Encourage the uptake of renewables through the Renewable Energy Target
- Help improve energy productivity by 40 per cent, by 2030.
- Ensure big business and Australia's largest emitters do their part and continue to reduce emissions.
- Invest in innovation and clean technology to help capture the opportunities of a cleaner future.
- Manage climate risks by building resilience in the community, economy and environment.

State Government

South Australia now has a suite of ambitious targets to guide action over coming decades:

- South Australia will achieve net zero emissions by 2050.
- Adelaide will be the world's first carbon neutral city.
- South Australia will achieve $10 billion in low carbon investment by 2025.
- South Australia will generate 50 per cent of its electricity from renewable sources by 2025.
- South Australia will improve the energy efficiency of government buildings by 30 per cent of 2001 levels by 2020.

Mount Barker District Council

Local government has historically played a significant role in emissions reduction at community and local level. In 2002, Mount Barker District Council began climate change action and endorsed a motion to join the Cities for Climate Protection Program, a campaign of the International Council for Local Environmental Initiatives (ICLEI). This program provided a strategic framework for reducing emissions through five milestones.

From there, Mount Barker District Council developed an Environmental Action Plan in 2003 in response to increasing environmental pressures in the District and the need to develop a more coordinated response to the broad range of existing and emerging environmental management issues. Climate Change was one of the six key environmental themes addressed in the plan.

Relevant Mount Barker 2035 District Council Strategic key objectives are to:

- Continually adapt to changing environmental conditions;
- Demonstrate a committed and sustained effort to reduce the ecological footprint of Council and community;
- For stewardship of the environment to be a core commitment and to continuously lead by example in environmental protection and innovation;
- Facilitate the provision of community facilities and infrastructure to meet current and future needs;
- Ensure up-to-date knowledge and understanding of environmental conditions and context;
- Identify and respond to environmental risks and vulnerabilities; and
- evolve strategy, policy and operational practices to ensure appropriate adaptive responses to climate change.

The Mount Barker District Council Environment Strategy 2018-2023 is a direct result of the strategic plan direction and has further identified objectives to demonstrate a committed and sustained effort to reduce the ecological footprint of Council and community through becoming:

- Low carbon & resilient
- Biodiverse
- Livable
- Water wise
- Resource efficient

Consequently Council has committed to a number of additional environmental actions that will address the aforementioned objective, one of them being the development of this Climate Change Action Plan.

The Resilient Hills and Coast Climate Change Adaptation Plan was developed by Resilient Hills and Coasts, a collaborative project formed to develop a Regional Climate Change Adaptation Plan for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island region of South Australia. It has helped guide the development of this local Climate Change Action Plan.

In May 2019, Council undertook a Climate Change Adaptation Governance Assessment as part of the Resilient Hills and Coasts partnership which highlighted a number of areas where Council can improve its consideration of climate change. The recommendations from the assessment are considered as a part of this action plan.

The Global Covenant of Mayors for Climate & Energy is an international alliance of cities and local governments with a shared long-term vision of promoting and supporting voluntary action to combat climate change and move to a low emission, resilient society.

The Cities Power Partnership is a coalition of the willing – made up of mayors, councillors and communities committed to a sustainable, non-polluting energy future. The program requires 5 pledges which have been incorporated into this plan.

BreatheLife 2030 mobilises cities and individuals to protect our health and our planet from the effects of air pollution.

This Climate Change Action Plan has been prepared in consideration of all of these National, State and Regional Initiatives as part of council's commitment to climate change. This plan will guide a whole-of-council approach to climate considerations into all decision-making.

Hierarchy of Plans Delivering Action on Climate Change

MOUNT BARKER 2035 - DISTRICT STRATEGIC PLAN

↓

LEAD STRATEGIES

• Environment Strategy •
• Biodiversity Strategy •
• Open Space & Public Realm Strategy •
• Economic Development Strategy •
• Asset Management Plan •

(developed to be consistent with Federal, State and Regional strategies)

↓

ACTION PLANS

• Waste to Resources Management Plan •
• Climate Change Action Plan (this plan) •

↓

MBDC CORPORATE PLAN

(4- year delivery program)

↓

MBDC ANNUAL BUSINESS PLAN

(provides budgets for annual projects and initiatives)

5.

Mount Barker District Emissions Profile

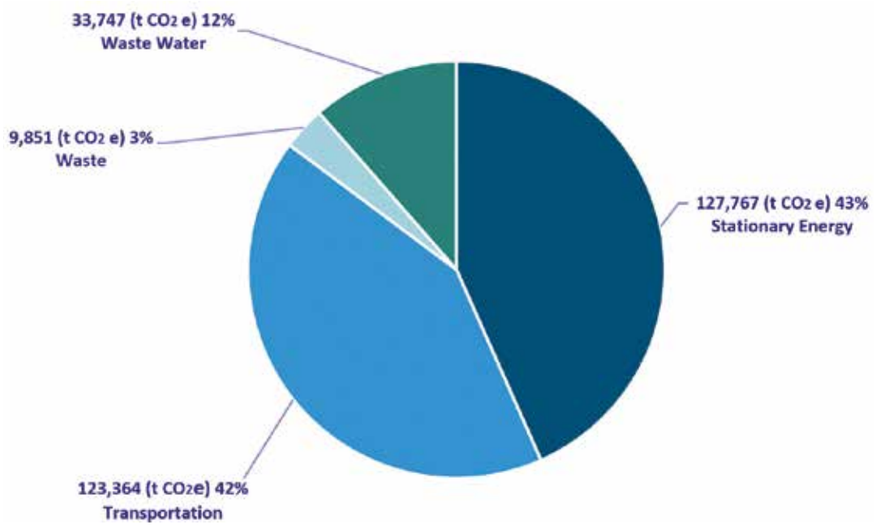
Mount Barker District Emissions Profile

Community Emissions

The total annual emissions in 2017 in the Mount Barker District have been calculated as 295,000 tonnes of carbon dioxide equivalent (t CO2e-). The largest source of emissions by sector in the District is stationary energy, which mainly comprises electricity consumed by buildings and facilities and accounts for 43% (128,000 tonnes) of total emissions. Meanwhile, on-road transportation is responsible for nearly as many emissions at 42%, whilst wastewater accounts for 12% and lastly solid waste generates 3% of emissions.

Category	Emissions (t CO2e)	Percentage (%)
Stationary Energy	127,767	43%
Transportation	123,364	42%
Waste Water	33,747	12%
Waste	9,851	3%
Total	294,730	100%

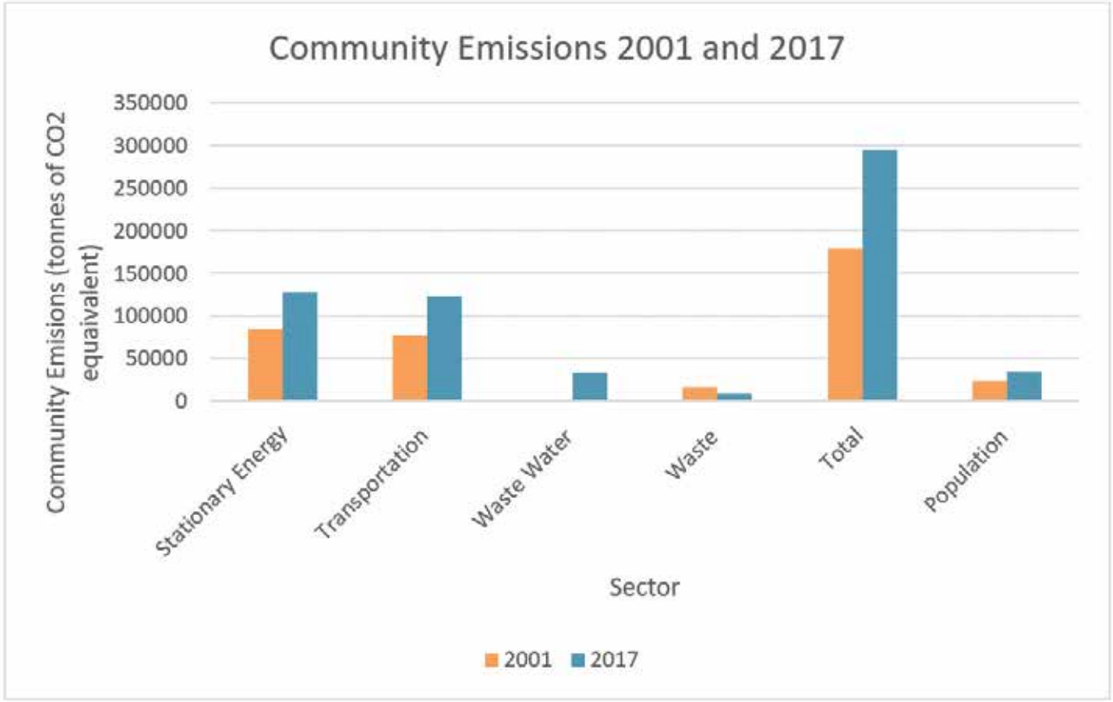
Breakdown of emissions in Mount Barker Community



Breakdown of Mount Barker District Greenhouse Gas Emissions in tonnes of Carbon Dioxide (CO2) Equivalent

Council first quantified its greenhouse gas emissions as a part of the Cities for Climate Protection Program and a re-inventory was completed in 2001. Due to continuity and consistency of data, 2001 has been referred in this plan as the baseline year. This figure is referred to as Council's 'carbon emission baseline'. The baseline can be considered as an indicator that can be used for comparative purposes to determine if emissions are increasing or decreasing. Total emissions have increased by 61% from 2001 to 2017 with all sectors increasing apart from waste, which decreased by 60%. Emissions have largely increased because of population growth however emissions per capita has also increased from 7.5 tonnes per person per year in 2001 to 8.5 tonnes per person per year in 2017.

Category	2001	2017
Stationary Energy	85165	127767
Transportation	77079	123364
Waste Water	625	33747
Waste	16358	9851
Total	179227	294729
Population	23804	34726

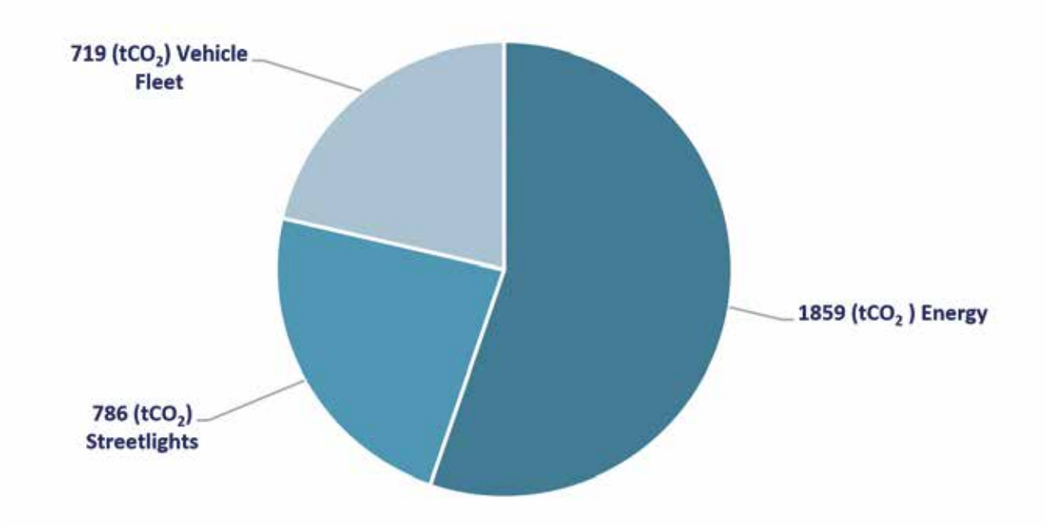


Mount Barker District Emissions Profile

Corporate Emissions

Corporate emissions are those generated through the operations of Council. Emissions generated by Council are divided into council building and facility energy, streetlights and vehicle fleet. Total emissions are 3364 tonnes of carbon dioxide equivalent with energy accounting for over half of corporate emissions. Street lighting emissions and vehicle fleet account for approximately 23% and 21% of total corporate emissions respectively.

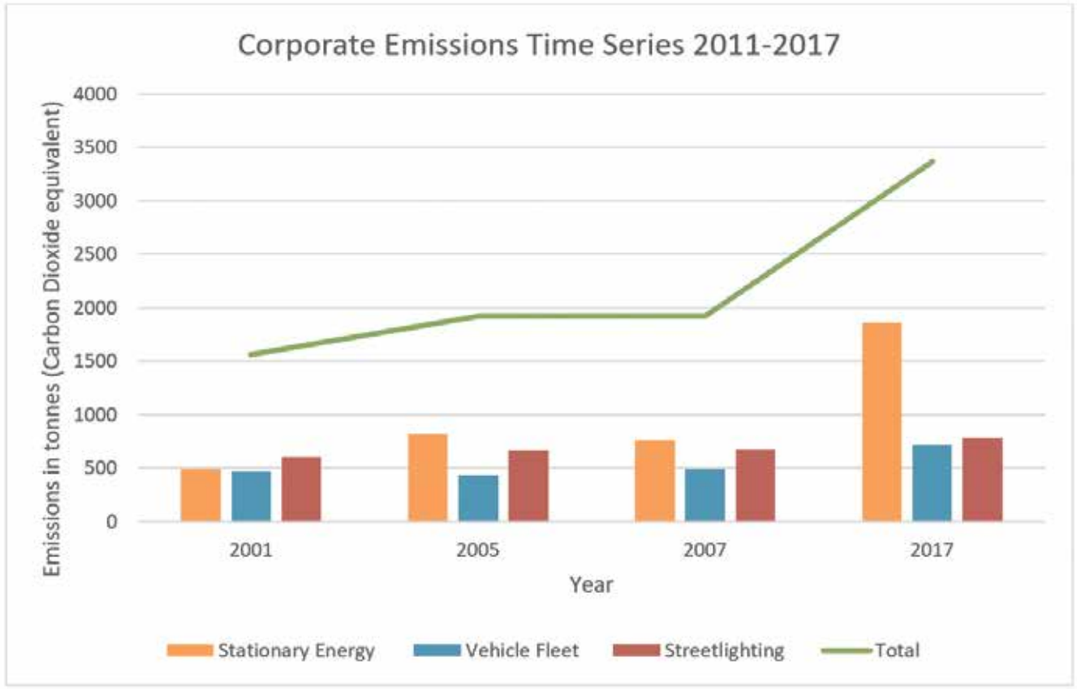
Category	Emissions (t CO2e)	Percentage (%)
Stationary Energy	1859	55.26%
Streetlights	786	23.37%
Vehicle Fleet	719	21.37%
Total	3364	100%



Breakdown of 2017 Mount Barker District Council Corporate Emissions in tonnes of carbon dioxide equivalent (CO2e-)

Overall emissions since 2001 have increased by 46%, with the majority of the increase emanating from energy usage from buildings, which increased by 27%. This is likely due to the increase in community facilities due to population growth and an increase in staff.

	Emission Inventory Year			
Category	2001	2005	2007	2017
Stationary Energy (Buildings)	497	820	760	1859
Vehicle Fleet	465	435	491	719
Streetlighting	601	663	671	786
Total	1563	1918	1922	3364



6.

Emission Reduction Target

Emission Reduction Target

The Paris Climate Change Agreement introduced a science-based target to limit global temperature rise to under 2°C by 2050. The actions described in this Climate Change Action Plan demonstrate our commitment to the Paris Pledge for climate action whilst minimising climate risk to Council and community.

Mount Barker District's carbon emission reduction target is estimated based on current population, population growth and the Socio-Economic Index for Areas and has been determined based on our share of a collective global emission reduction target. The Mount Barker District science-derived target is to reduce emissions by 3% or by 7,527 tonnes per year to achieve or exceed a reduction of 37,635 tonnes over a 5 year period. The reduction target is for both community emissions and corporate emissions.

Remaining budget for Council	**4,186, 000.7 (t CO2-e)**
Remaining years without change (years)	**16.7 (years)**
Required rate of reduction (p.a.)	**3.0%**
Required annual reduction	**7,527 (t CO2-e)**
Required 5-year reduction (2017-2022)	**37,635 (t CO2-e)**

7.

Monitoring and Review

The Climate Change Action Plan covers until 2024, the next 5 years. The Mount Barker GHG emissions inventory is likely to change significantly over time due to aspects entirely out of Council control, such as changes to the state emissions factor and an increase in population. For this reason, Council has set a specific target based on our carbon budget and will conduct targeted monitoring on emissions activities, tracking progress of emissions reductions every second year. Measuring the direct impacts of actions implemented allows Council to report on successes, regardless of a fluctuating profile. This reporting will also be an opportunity for revising and updating the plan as new information, research and results come to light, and as we learn from the implementation of the plan.

Monitoring and evaluation will be done throughout the life of each project. A simple, repeatable metric will be applied to each action so it can be reviewed frequently, quickly and at low cost.

Council wants to demonstrate its environmental and climate leadership with transparency and vigour. Measuring, reporting, and verifying the GHG emissions associated with our operations data and reporting is done via the Climate Registry's Carbon Footprint Registry.

8.

A Plan for Action

A Plan for Action

The development of this plan and the actions within follow a review of Council's previous climate mitigation and adaptation plans and have been developed in consultation with internal staff and managers. It is influenced and determined by the broader legislative and policy context operating at international, national and state levels and by activity at the regional level. It is guided by the overarching regional Resilient Hills and Coast Climate Change Adaptation Plan which included a community consultation process.

The actions within this plan are designed in consideration of the issues and risks brought about through climate change and in consideration of mitigating (reducing) emissions. Many of the actions identified are already being implemented or are able to be implemented within existing resources. Others will be subject to other funding sources, partnerships and grants.

The impacts of climate change include:

- Increased damage to or loss of Council buildings, infrastructure and assets due to physical climate change impacts such as flooding, bushfires and extreme winds;
- future climatic changes making it increasingly difficult to maintain the amenity of, and service level to, the District's parks, reserves, leisure facilities, landscaped areas and natural areas;
- the District's natural landscapes, habitats and biodiversity becoming under increasing pressure from climate change impacts including decreased rainfall, increased temperatures and differing seasonal changes;
- the health and safety of residents and communities from more intense extreme weather events, vector diseases, food safety and water quality issues;
- current design, maintenance and replacement practices for council buildings, infrastructure and assets may not be suitable for future climatic conditions;
- Council may not have the necessary knowledge, planning or resources in place to adequately respond to future climate change impacts;
- there may be a decrease in the wellbeing, safety and productivity of Mount Barker District Council staff;
- an increased need for services as well as an increased cost to deliver those services, for example, cost of utilities, and waste management;
- Council's statutory land use planning documents not adequately considering future climate change impacts; and
- a decrease in the wellbeing of residents and communities due to increased cost of living, more uncomfortable climates and a lack of readiness and resilience to adapt to future climatic conditions.

To achieve our goal of a 3% emission annual reduction and to reduce risk, a range of priority actions have been identified in the following section through 6 key directions, namely:

- Natural Environment & Landscapes
- Climate Risk
- Urban Development & Planning
- Council Operations and Processes
- Emission Reduction
- Community Engagement

8.1 Natural Environment & Landscapes

Mount Barker District Council is located east of metropolitan Adelaide in the Mount Lofty Ranges. It covers an area of 597km2 and includes villages, townships and rural areas. The current population is 33,117 with an average density of 0.59 people per hectare. Approximately 95% of the land has been developed for agricultural, urban or industrial uses and less than 10% of the original vegetation remains. The remnant vegetation that does remain is fragmented along creeks, roadways, small reserves or on private land.

Despite extensive clearing, the district still has valuable biological assets and provides habitat for numerous species on public and private land and protected areas. Natural assets include:

- 25,000-30,000 street and reserve trees.
- 22 volunteer-run Bush for Life sites.
- Two nationally-threatened ecological communities: Iron-grass Lomandra species Natural Temperate Grassland; and Peppermint Box Grassy Woodland.
- 377 parcels (700 ha) of community and crown land under Council's Community Land Register, many of which contain remnant native vegetation.
- 364 road marker scheme (RMS) sites.

Water resources in the district are under pressure due to increased development, population growth and climate change. Good management of water resources will support community needs while enabling ecosystems to thrive. Council's role lies in managing and promoting waterways, applying water sensitive urban design principles and encouraging water conservation.

The climate risk to our natural environment and landscapes are physical risks such as rising temperatures and changes in rainfall which will cause rapid habitat and ecosystem changes, species distributional shifts and extinctions, particularly if species are unable to respond quickly to the changing environment.

To assist species adapt to a changing climate and to ensure healthy ecosystems, it is essential to protect and restore terrestrial and aquatic habitat, and increase greenness, linkages and buffers whilst reducing threats from development and from pest animals and plants.

To address the Natural Environment and Landscape in a changing climate, Council will:

- Continue and increase revegetation programs to green corridors, parks, reserves and streets using local indigenous species where possible.
- Trial the use of non-local native species which may be more resilient to changing climatic conditions and document positive/negative outcomes.
- Protect populations of threatened flora and fauna species (e.g. seed banking, plant relocation, no herbicide use, increase habitat).
- Restore, link and buffer priority sites that have high ecological value.
- Liaise with and encourage developers to incorporate maximum open space and natural environments within new developments.
- Write guidelines for management and retrofitting of existing detention basins on public land.
- Promote and demonstrate landscape engineering solutions to create natural flow patterns/systems.

8.2 Climate Risks

Climate change in local government has historically been managed as an environmental problem that has been driven by environment teams, focusing more on physical risks to environmental systems. Climate change is a complex issue that will exacerbate existing risks and present new ones. Climate change is emerging as a financial and legal risk that Council needs to be aware of and manage.

The expected or legislated role of local government in climate change adaptation is becoming clearer and may lead to increased regulatory and compliance requirements and increased potential for liability.

The expected or legislated role of local government in climate change adaption may be unclear or may change leading to increased regulatory and compliance requirements and increased potential for liability.

Physical Risks:

- A decrease in overall rainfall resulting in extended droughts;
- an increase in extreme rainfall events causing storms and flooding;
- an increase in temperatures in all seasons;
- an increase in frequency and intensity of heat extremes; and
- a higher frequency in fire danger days and risk of bushfires.

Financial Risks:

- Projects with high climate risk exposure will be more different to gain finance or insurance;
- the collective climate related risk of local government could undermine the credit worthiness of the state;
- costs associated with responding to physical climate risks may be beyond the financial capability of Council; and
- home-owners may be denied insurance as extreme events increase and governments may become the 'insurer of last resort.'

Legal Risks

- Councils that fail to mitigate, manage and disclose climate risks in their governance and decision-making will expose themselves to legal liabilities; and
- Councils face legal liabilities from the developments they approve, the way public infrastructure is managed, and the role when natural disasters hit.

To address climate risk, council will:

- Amend the Council Emergency Management Plan to ensure that climate change is referred to in the introduction.
- Review the risk management policy as soon as possible and include climate change.
- Conduct tree canopy mapping to demonstrate heat difference in hard surfaces and vegetation.
- Set a tree canopy cover target for selected urban areas
- Develop guidelines to incorporate green infrastructure into council projects/buildings.
- Identify, map and manage climate threats (e.g. fire, floods pests and diseases).
- Investigate policy changes to planning approvals to enhance 'greenness' of retail and commercial centres to reduce urban heat island effect.
- Ensure Council's insurance covers key climate risks.
- Ensure future infrastructure (roads and stormwater) can function with increased climate risks (flooding etc.) and considers future climate conditions.
- Undertake whole of organisation climate risk assessment that enables the identification of priority risks across all functions within Council.
- Agree on a process by which high priority projects, especially large-scale infrastructure projects or new developments, are subject to climate risk assessments prior to approval.
- Seek to clarify the role of Council as compared with State Government in relation to managing climate risk.

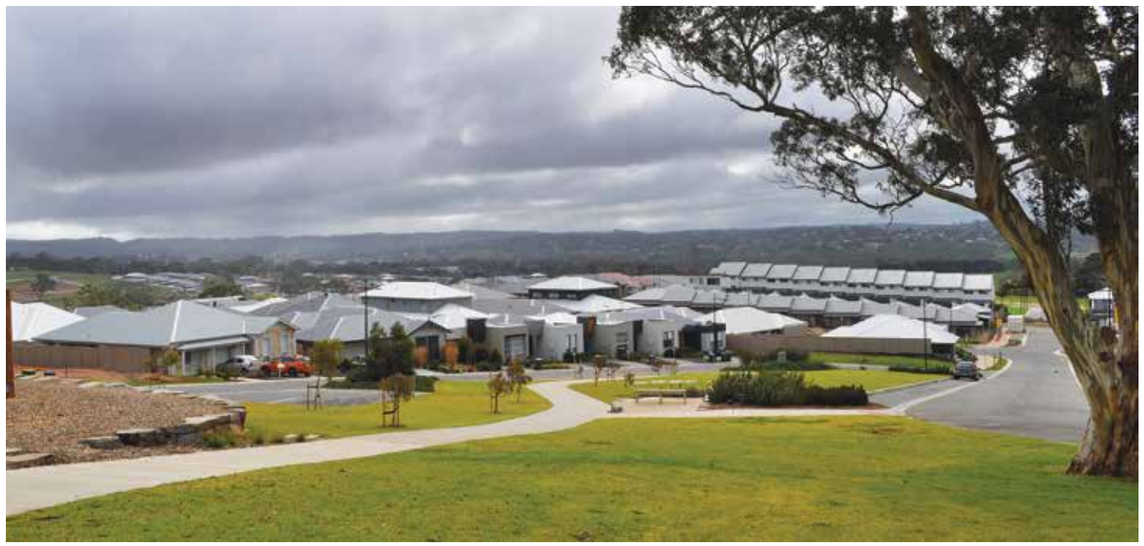
8.3 Urban Development & Planning

Urban Development and Planning at a local level considers current hazards such as high bushfire zones, areas prone to flooding and current weather patterns. However, processes and legislation needs to consider the shift in climatic conditions and the potential impacts this has on council, its processes and the community.

Climate change will lead to increased incidences of flooding, extreme heat days and bushfires. Existing and future built assets will be impacted by these hazards and land use planning can play a critical role in ensuring appropriate responses. Strategic and local planning decisions can either increase or decrease the exposure of human settlements to climate change impacts. Approaches need to be proactive rather than reactive, limit the negative impacts of climate change and take advantage of opportunities.

To address urban development and land use planning in a changing climate, Council will:

- Encourage more efficient and sustainable housing products through incentives, demonstration sites and education resources.
- Investigate partnerships with developers to implement more sustainable residential development.
- Model sustainable, minimal footprint design and construction in its own developments.
- Acknowledge climate change in the context/ introduction in the local provisions of the Development Plan.
- Lobby state government to improve public transport options throughout the district to help reduce emissions.
- Adopt & implement "Sustainable Public Lighting Guidelines" for new open space and developments/subdivisions.
- Use strategic and statutory planning processes to promote renewable energy.
- Pursue opportunities for renewable energy generation projects/ trials/partnerships.
- Define a policy positon on sustainability objectives and minimum energy efficiency requirements in Principal Project Requirements (PPR) brief for the future swimming pool.
- Increase uptake of Water Sensitive Urban Design (WSUD) features by applying relevant research, implementing local trials, developing case studies and suitable policy (sporting fields, cooling public realm etc.) for WSUD features.



8.4 Council Process & Operations

Council processes and operations considers the current environment and climate, council setting and department priorities, risks, community requirements, assets and service provisions. Increasingly, processes and operations need to consider the impact of the future change in climatic conditions and the potential impacts this has on Council, its operations, assets and the community.

In May 2019, Council undertook a Climate Change Adaptation Governance Assessment process. The subsequent report highlighted a number of areas where Council can improve its consideration of climate change. Recommendations from the assessment are considered as a part of this action plan.

Climate change will impact many of the processes within Council and considerations will need to be incorporated into plans and work programs. The cost of direct and indirect impacts will cascade through the economy and affect costs associated with a Council's activities, assets and responsibilities. The actions below aim to inform the short-term change in council operations and procedures which will lead to long term culture change, however climate change action requires initial and ongoing outlay of resources and commitment of staff time which needs to be considered:

Council will:

- Work through a process to consider and implement the key recommendations of the climate change adaptation governance assessment report.
- Incorporate strong consideration of climate change in all Council functions of the Strategic Plan.
- Develop a climate change policy to ensure Council's method for adapting to climate change is consistent.
- Investigate Electric Vehicles for the Council Fleet.
- Prepare a feasibility discussion paper on Mount Barker becoming a Carbon Neutral City.
- Incorporate sustainability/environment key performance indicators into work plans and Council processes as business as usual.
- Develop and implement The 'Waste to Resources Management Plan' to improve municipal waste management practices.
- Develop an internal council plan and education program to improve recoverable resources such as office waste, green waste, infrastructure works waste and reduce energy and water consumption.
- Increase waste water reuse.
- Establish an energy efficiency revolving fund.
- Establish a template to evaluate project whole-of life-costs including climate risks and responses.
- Require consideration of climate risk into council's budget bid process.

8.5 Emission Reduction

The current total annual emissions in the Mount Barker District have been calculated as 295,000 t CO2-e. The largest source of emissions by sector in Mount Barker is stationary energy, which mainly comprises electricity consumed by buildings and facilities and accounts for 43% (128,000 tonnes) of total emissions. Meanwhile, on-road transportation is responsible for nearly as many emissions at 42%, whilst wastewater accounts for 12% and solid waste 3%. Climate Change will ultimately cause a decrease in the wellbeing of residents and communities due to increased cost of living, more uncomfortable climates and a lack of readiness and resilience to adapt to future climatic conditions. As the climate changes the increased use of heating/cooling in buildings and houses that are not climate ready will increase district GHG emissions. The transition to “clean energy and transport” and reducing waste will assist in lowering emissions.

To minimise emissions, Council will:

- Identify a target to 2030 and state how it intends to broadly meet the target and consider including a staged pathway of emissions reductions out to 2050.
- Investigate offsetting vehicle fleet and plant equipment emissions through an offset program.
- Roll out energy efficient lighting (particularly street lighting) across the municipality.
- Set district renewable energy or emissions reduction targets and sustainable energy policies to provide a common goal and shared expectations for local residents and businesses.
- Install renewable energy on Council buildings including solar photovoltaic (PV) systems and storage systems where feasible and supported by business cases.
- Develop a Council Energy Plan.
- Retrofit Council Buildings based on feasibility including HVAC, lighting, IT infrastructure, appliances based on business feasibility.
- Establish EV Charge points throughout the district.

8.6 Community Engagement

Community Engagement is a planned process whereby Council works with the wider community to address issues affecting its well-being. Mount Barker District Council prides itself on ensuring our community can participate in making the decisions that affect them and for council to provide education and awareness regarding issues of importance

Climate change will affect the whole community and strong community connections will be essential for safety and resilience. Extreme weather events, fire risks, increased financial demand, vulnerability and disruption of services are some of the risks that the community has or will experience as a result of unavoidable climate change.

Council will work with the community to build awareness of climate risks and resilience by:

- Develop a Climate Change Stakeholder Engagement Strategy,
- Encourage transport options such as walking, cycling and public transport.
- Provide information, education and support to the community on energy efficiency measures and programs, climate-resilient buildings and available grants.
- Develop programs to support and encourage residents, business and schools to reduce waste to landfill.
- Provide education and awareness to business groups and ratepayers on climate risk.
- Support and encourage sustainable gardening within the community.

The Climate Change Action Plan helps council implement a staged process for adapting to and mitigating climate change. Good practice plans also identify the actions required for specific risks and has mechanisms in place to respond to direct and indirect climate change risks. The actions tables below represent the actions in the previous section, chapter 9.1-9.6 and considers resourcing, key performance indicators and departmental responsibility.

The actions are a compilation of those from the 6 key directions above and aims to:

- clarify roles and responsibilities,
- identify prioritised activities and focus areas,
- allocate resourcing,
- identify triggers for action or change/review,
- establish monitoring and evaluation mechanisms, and
- effectively manage any maladaptation risks.

8.7 Summary of Actions

The Climate Change Action Plan helps council implement a staged process for adapting to and mitigating climate change. Good practice plans also identify the actions required for specific risks and has mechanisms in place to respond to direct and indirect climate change risks. The following actions tables represent the actions in the previous section, chapter 9.1-9.6 and considers key performance indicators and departmental responsibility. Further work will be required to prioritise actions and incorporate resourcing strategies within individual projects.

The actions are a compilation of those from the 6 key directions above and aims to:

- clarify roles and responsibilities,
- identify activities and focus areas,
- identify triggers for action or change/review,
- establish monitoring and evaluation mechanisms, and
- effectively manage any maladaptation risks

Planning & Development

Council Area	Action	KPI	Key Direction
Economic Development & Sustainable Futures	Continue revegetation programs to green corridors, parks, reserves and streets using local indigenous species where possible	Number of plants/trees planted. Total area planted.	**Natural Environment & Landscapes**
	Trial non-local native species which may be more resilient to changing climatic conditions & document outcomes	Number of trials conducted	
	Protect populations of threatened flora and fauna species	No loss of threatened species. Number of threatened species recorded	
	Restore, link and buffer priority sites with high ecological value	Increase in area/ sites with continuous linkage in high habitat areas	
	Conduct canopy mapping to demonstrate heat difference in hard surfaces and vegetation	Number of areas mapped	**Climate Risk**
	Set a tree canopy cover target for selected urban areas	Target established	
	Develop guidelines to incorporate green infrastructure into council projects/buildings	Guidelines developed and endorsed	
	Identify, map and manage climate threats (e.g. fire, floods pests and diseases)	Mapping of climate threats completed	
	Develop an internal plan and education program to improve recoverable resources such as office waste, green waste, infrastructure works waste and reduce energy and water consumption	Plan developed	**Council Processes & Operations**
	Prepare a feasibility discussion paper on a Mount Barker Carbon Neutral City	Feasibility paper prepared	
	Incorporate climate related KPI into work plans/strategic plan and council processes as “business as usual”	KPI’s developed and regularly reviewed and reported	
	Incorporate strong consideration of climate change in all Council functions of the Strategic Plan	Strategic Plan includes Climate change throughout document	
	Establish an energy efficiency revolving fund	Revolving energy fund established with associated energy and financial savings and projects regularly reported	
	Work through a process to consider and implement the key recommendations of the climate change adaptation governance assessment report.	Recommendations implemented	
	Develop a climate change policy to ensure Council's method for adapting to climate change is consistent	Policy developed and endorsed	
	Identify a target to 2030 and state how it intends to broadly meet the target and consider including a staged pathway of emissions reductions out to 2050	Target established and endorsed	**Emission Reduction**
	Develop a “Council Energy Plan”	Plan developed	
	Establish Electric Vehicle charge points throughout the district	Number of EV charge points established in district	
	Provide information, education and support to the community on energy efficiency and emission reduction measures and programs, climate-resilient buildings climate resilience, and available grants	Number of programs delivered	
	Develop programs to support and encourage residents, business and schools to reduce waste to landfill	Number of programs delivered	
	Develop a Climate Change Stakeholder Engagement Strategy	Strategy developed and endorsed	
	Support sustainable gardening within the community	Number of educational programs/ projects implemented	
City Development	Liaise and encourage developers to incorporate maximum open space and natural environments within new developments	Amount of open space incorporated	**Natural Environment & Landscapes**
	Develop guidelines to incorporate green infrastructure into council projects/buildings in coordination with Economic Development and Sustainable Futures	Guidelines developed and endorsed.	**Climate Risk**

Planning & Development

Council Area	Action	KPI	Key Direction
Policy & Strategy	Acknowledge climate change in the context/ introduction in the local provisions of the Development Plan.	Climate change incorporated	**Urban Planning & Development**
	Adopt & implement "Sustainable Public Lighting Guidelines" for new open space and developments/subdivisions with Maintenance and Operations	Guidelines developed and endorsed.	
	Encourage more efficient and sustainable housing products through incentives, demonstration sites and education resources.	Number of projects/programs implemented	
	Use strategic and statutory planning processes to promote renewable energy - both at the residential, commercial and larger scale	Amount of renewable energy installed in the district. Amount of CO2 abated	
	Investigate policy changes to planning approvals to enhance 'greenness' of retail and commercial centres to reduce urban heat island effect	Policy changed	
	Model sustainable, minimal footprint design and construction in its own developments	Number of sustainable developments	
	Define a policy positon on sustainability objectives and minimum energy efficiency requirements in Principal Project Requirements (PPR) brief for the future swimming pool	Energy efficiency requirements incorporated into PPR	

Infrastructure

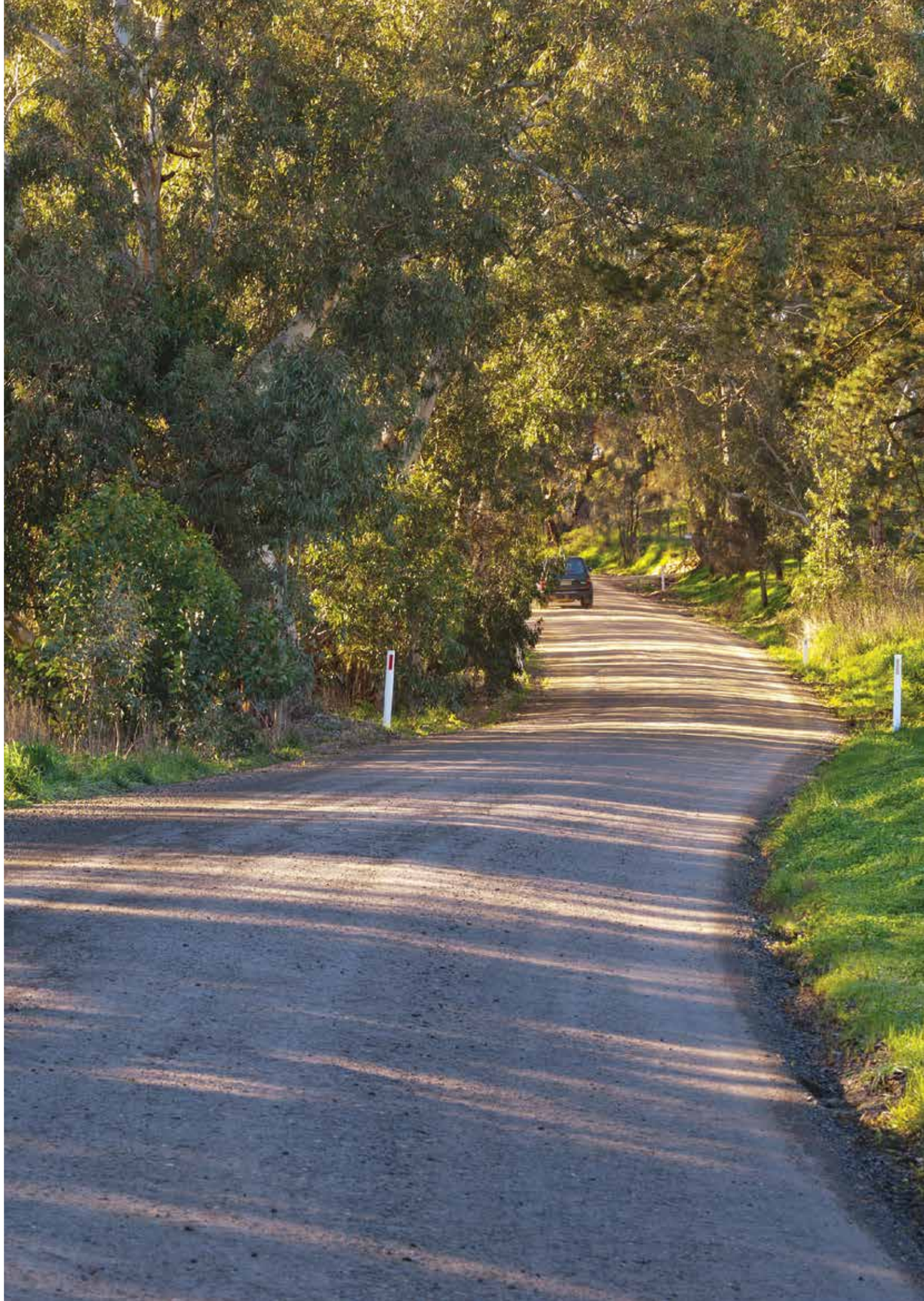
Council Area	Action	KPI	Key Direction
Maintenance & Operations	Continue revegetation programs to green corridors, parks, reserves & streets with Economic Development & Sustainable Futures and Infrastructure Delivery	Number of plants/trees planted. Total area planted.	**Natural Environment & Landscapes**
	Trial non-local native species which may be more resilient to changing climatic conditions & document outcomes with Economic Development & Sustainable Futures and Infrastructure Delivery	Number of trials conducted	
	Investigate a volunteer vehicle and program for watering & maintenance	Increase in revegetation success	
	Restore, link and buffer priority sites with Economic Development & Sustainable Futures and Infrastructure Delivery	Increase in area/ sites with continuous linkage in high habitat areas	**Climate Risk**
	Adopt & implement "Sustainable Public Lighting Guidelines" for new open space and developments/subdivisions with Policy & Strategy	Guidelines developed and endorsed.	**Urban Planning & Development**
	Develop and implement The "Waste to Resources Management Plan" to improve municipal waste collection practices	Plan developed and endorsed	**Council Processes & Operations**
	Develop internal council plan and education program to improve recoverable resources such as office waste, green waste, infrastructure works waste	Plan developed and implemented	
	Roll out energy efficient lighting (particularly street lighting) across the municipality	Number of energy efficient streetlights installed. Amount of kWh reduced.	**Emission Reduction**
	Install solar photovoltaic (PV) systems and storage systems on Council owned buildings where feasible and supported by business cases in conjunction with Economic Development & Sustainable Futures	Number of PV systems installed. Amount of kWh reduced.	
	Retrofit Council Buildings – HVAC, lighting, IT infrastructure, appliances based on business feasibility in conjunction with Economic Development & Sustainable Futures	Amount of kWh/emissions reduced.	
	Establish EV Charge points throughout the district in conjunction with Economic Development & Sustainable Futures	Number of EV charge points established in district	
	Develop programs to support and encourage residents, business and schools to reduce waste to landfill	Number of educational programs/ projects implemented	**Community Engagement**
Infrastructure Planning	Write guidelines for management and retrofitting of existing basins.	Guidelines developed and endorsed	**Natural Environment & Landscapes**
	Promote and demonstrate landscape engineering solutions to create natural flow patterns/systems	Number of demonstration projects implemented	
	Develop guidelines to incorporate green infrastructure into council projects/buildings with Economic Development and Sustainable Futures	Guidelines developed and endorsed.	**Climate Risk**
	Ensure future infrastructure (roads and stormwater) can function with increased climate risks (flooding etc.) and considers future climate conditions	Review of infrastructure completed	
	Increase uptake of WSUD features by applying relevant research, implement local trials, develop case studies and develop suitable policy (sporting fields, cooling public realm etc.) for WSUD features	Number of WSUD projects implemented	**Urban Planning & Development**
	Lobby state government to improve public transport options throughout the district	Increase in public transport routes	
	Pursue opportunities for renewable energy generation projects, trials and partnerships	Number of projects implemented	
	Investigate offsetting vehicle fleet and plant equipment emissions through an offset program	Amount of emissions offset	**Emission Reduction**
	Provide programs and encourage transport options such as walking, cycling and public transport (bike hire etc.)	Number of programs implemented	**Community Engagement**
Infrastructure Delivery	Continue revegetation programs to green corridors, parks, reserves and streets with other relevant teams to mitigate the heat island	Number of plants/trees planted. Total area planted.	**Natural Environment & Landscapes**
	Re-establish and manage natural flow patterns (e.g. securing low flows) with Infrastructure Planning	Number of natural flow patterns re-established	
	Promote and demonstrate landscape engineering solutions to create natural flow patterns/systems with Infrastructure Planning	Number of demonstration projects implemented	

Corporate Services

Council Area	Action	KPI	Key Direction
Finance & Governance	Undertake whole of organisation climate risk assessment that enables the identification of priority risks across all functions within Council.	Financial implications audit completed	**Climate Risk**
	Review the risk management policy to include climate change	Risk management policy updated	
	Ensure Council's insurance covers key climate risks	Climate risks covered by insurance	
	Seek to clarify the role of Council as compared with State Government in relation to managing climate risk and advise relevant staff managers and elected members	Education Program implemented	
	Establish a template to evaluate project whole-of life-costs including climate risks and responses.	Template developed	**Council Processes & Operations**
	Require consideration of climate risk into council's budget bid process.	Climate risk incorporated in budget process	
	Establish a revolving energy efficiency fund with Economic Development & Sustainable Futures	Revolving energy fund established with associated energy and financial savings and projects regularly reported	
	Provide information to ratepayers regarding property risks and climate hazards	Information provided	**Community Engagement**

Community Services

Council Area	Action	KPI	Key Direction
Community Wellbeing	Assist Economic Development and Sustainable Futures in developing and delivering strategies that will build community resilience	Number of educational programs/ projects implemented	**Community Engagement**
Health & Public Safety	Incorporate climate risks into the public health plan consistent with the "South Australian Health Plan – Preparing for Climate Change"	Climate risks incorporated into public health plan	**Climate Risk**
	Amend the Council Emergency Management Plan to ensure that climate change is referred to in the introduction	Emergency Management Plan updated.	
	Engage with the community and build awareness regarding changing risks to health and public safety	Number of educational programs/ projects implemented	**Community Engagement**
People & Culture	Incorporate climate risk considerations in positon descriptions, inductions and training	Climate risks incorporated into positon descriptions, inductions and training	**Council Processes & Operations**



9.

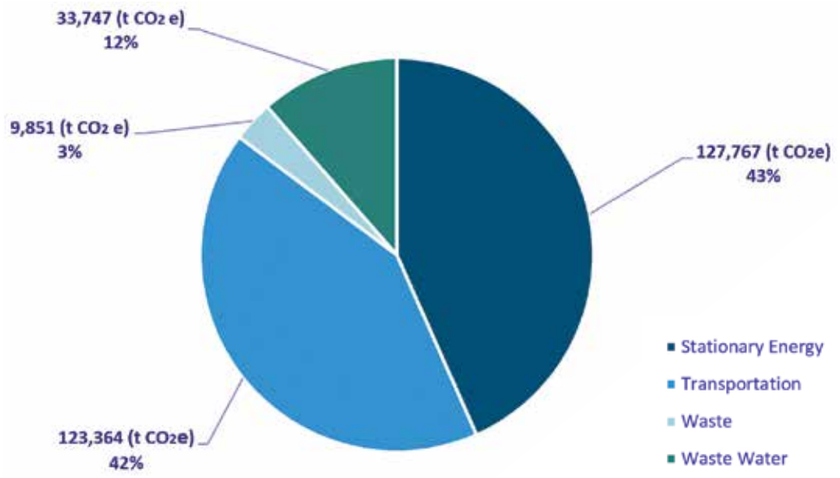
Appendix

9.1 Mount Barker District Community Emissions Profile

The total annual community emissions in the Mount Barker District have been calculated as 295,000 t CO2-e. The largest source of emissions by sector in Mount Barker is stationary energy, which mainly comprises electricity consumed by buildings and facilities and accounts for 43% (128,000 tonnes) of total emissions. Meanwhile, on-road transportation is responsible for nearly as many emissions at 42%, whilst wastewater accounts for 12% and solid waste 3%.

Category	Emissions (t CO2e)	Percentage (%)
Stationary Energy	127,767	43%
Transportation	123,364	42%
Waste Water	33,747	12%
Waste	9,851	3%
Total	294,730	100%

Breakdown of emissions in Mount Barker Community

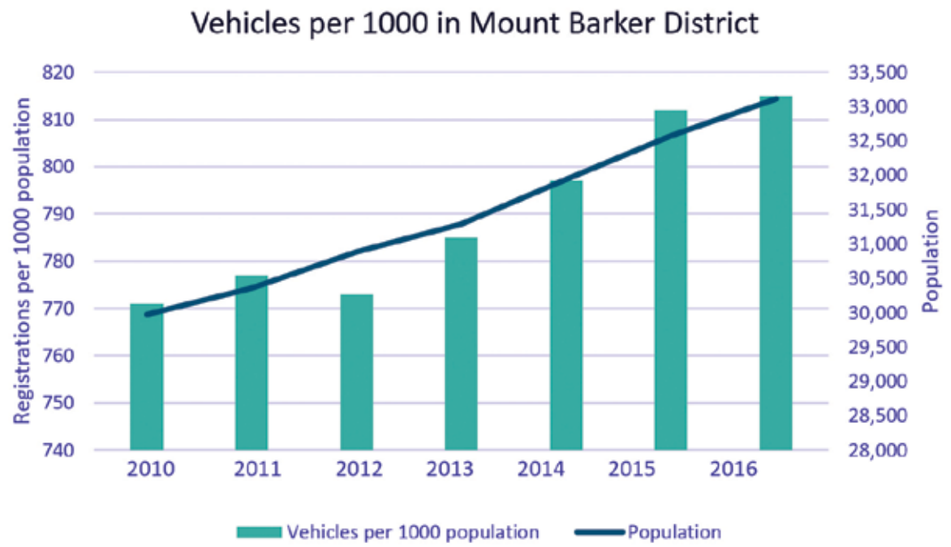


Breakdown of Mount Barker District Greenhouse Gas Emissions in tonnes of Carbon Dioxide (CO2) Equivalent

Transport

The district currently has 324km of sealed roads and 439km of unsealed roads. Public transport use is provided by bus only and is limited by connections from rural areas and some townships to Mount Barker. Private vehicle use is the dominant transport mode.

Air pollution from motor vehicles is directly related to the number of vehicles on the road. Motor vehicle registration increased at a faster rate than population from 2010 to 2014. In 2010 there were 771 vehicles per 1000 population. By 2016 there were 815 vehicles per 1000.

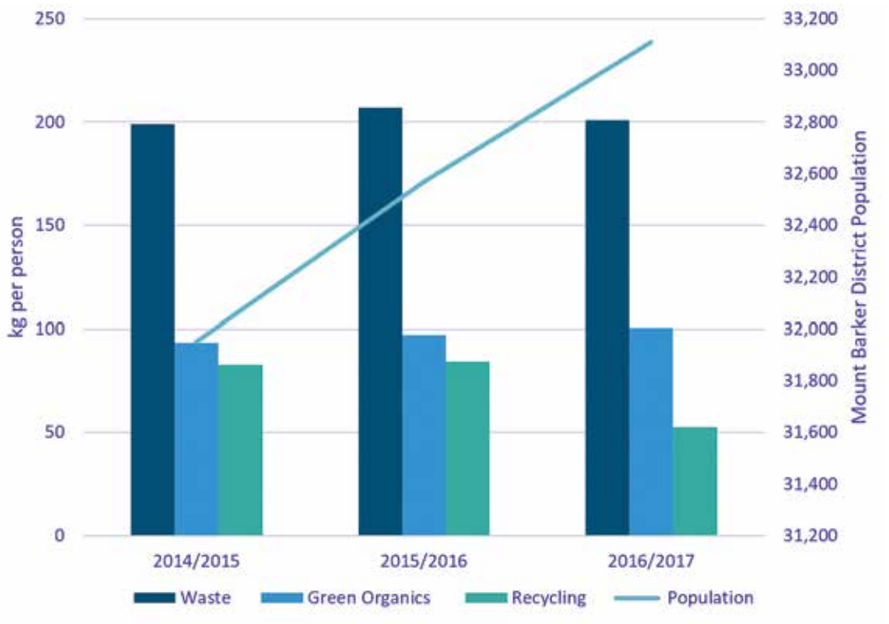


Number of vehicles registers per 1000 population in the Mount Barker District between 2010-2016

Waste

The overall diversion rate of green waste and recyclables as a percentage of the total waste generated (i.e. waste to landfill, recyclables and green organics) has remained relatively steady over the past several years since 2011 at around 47%, although the total waste tonnage has increased. This means almost half of all material collected from the kerbside services was recycled or composted and not disposed to landfill. There are opportunities to improve our performance by reducing waste production per capita and increasing the level of diversion from landfill. As a council service, waste management is considered to be a part of the corporate and community emissions profile.

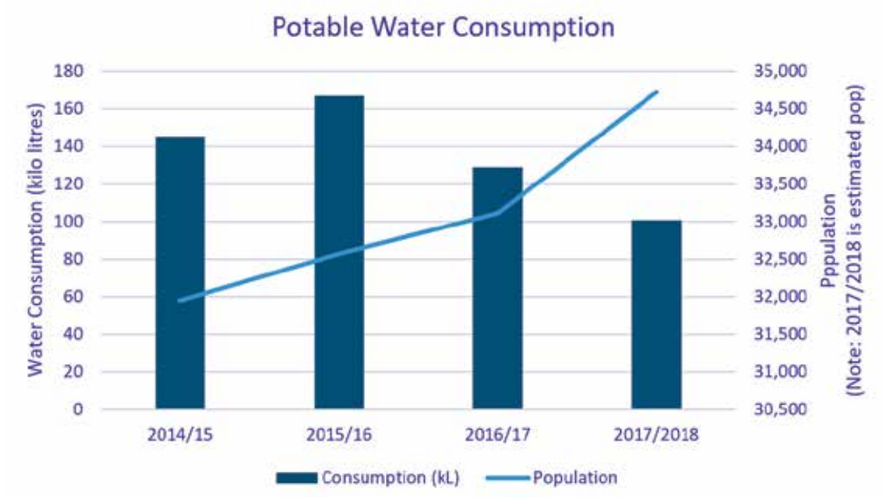
	2014/2015	2015/2016		2016/2017	
MBDC Population	31,950	32,570	↑ 2.1%	33,110	↑ 1.7%
Total Waste to Landfill	6,365 tonnes	6,755 tonnes	↑ 6.1%	6,980 tonnes	↑ 3.3%
Waste per person	199 kg	207 kg	↑ 4.0%	211 kg	↑ 1.9%
Green Organics per person	93.5 kg	97 kg	↑ 4.0%	100.5 kg	↑ 3.6%
Recycling per person	83 kg	84.5 kg	↑ 1.5%	85.5 kg	↑ 1.3%



Annual waste breakdown per capita from 2014-2016.

Water Management

Water resources in the district are under pressure due to increased development, population growth and climate change. Good management of water resources will support community needs while enabling ecosystems to thrive. Council's roles lie in promoting local riparian health, applying water sensitive urban design principles and encouraging water conservation. Despite an increase in population over the past 10 years, potable water consumption has decreased in 2016/2017 and further decreased in 2017/2018.

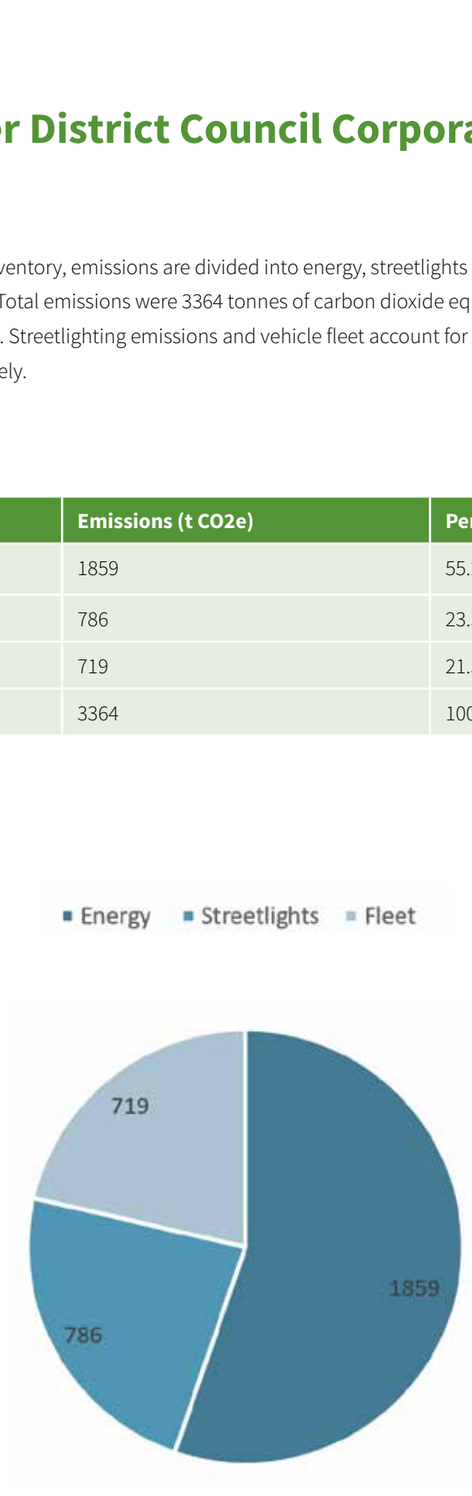


Potable water consumption versus population from 2014-2017

9.2 Mount Barker District Council Corporate Emissions Profile

For the purpose of the corporate inventory, emissions are divided into energy, streetlights and vehicle fleet. Waste has been included in community emissions. Total emissions were 3364 tonnes of carbon dioxide equivalent with energy accounting for over half of corporate emissions. Streetlighting emissions and vehicle fleet account for approximately 23% and 21% of total corporate emissions respectively.

Category	Emissions (t CO2e)	Percentage (%)
Stationary Energy	1859	55.26%
Streetlights	786	23.37%
Vehicle Fleet	719	21.37%
Total	3364	100%



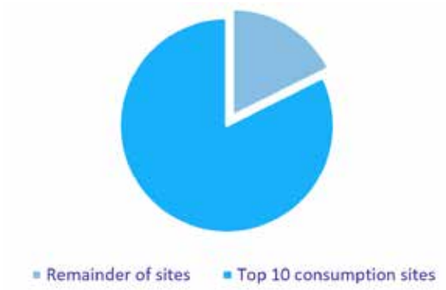
Breakdown of Mount Barker District Council Corporate Emissions in tonnes of carbon dioxide equivalent (CO2e-)

Energy Usage

Council's Strategic Plan identified that key strategic action was identified as a committed and sustained effort to reduce the ecological footprint of Council and community. Consequently Council has committed to a number of additional environmental programs that will improve the environmental footprint of council's operations and throughout the community. As a part of this key strategic action, the Environment Strategy was developed and endorsed in January 2018 which has identified 5 key action areas.

One of the key areas is 'Low-carbon and efficient'. Within this key action area is the environmental goal "to increase Council's renewable energy sources and improve energy efficiency and the related action is to 'Development of an energy action plan that prioritises recommendations of the LGA energy efficiency audit and includes opportunities for the local green economy'. The energy plan and the LGA energy efficiency actions have been incorporated into this climate change action plan.

Internally, the largest users of energy collectively and individually are the assets associated with the wastewater treatment plant (WWTP) and the Local Government Centre. Other sites use considerably less compared to the WWTP and associated pump stations. The top 10 energy using sites accounted for 93% of the total corporate emissions in the 2017/2018 financial year, as seen below.



Proportion of energy consumption for Council Assets 2017/2018 (top 10 sites versus total consumption of all sites (excluding streetlighting)

Asset	Address	FY13-14	FY14-15	FY15-16	FY16-17	FY17-18
Waste Water Treatment Plant	Springs Road, Mt Barker	1,335,949	1,502,439	1,684,660	1,436,733	1,747,408
Recycled Water Treatment Facility	75 Little Dublin East Road, Nairne	606,142	646,198	525,857	534,595	617,704
Local Government Centre	6 Dutton Road, Mt Barker (3 meters)	216,875	200,426	209,063	160,652	134,787
Hogan Road CWMS Pump Station	Hogan Rd, Nairne	64,088	90,047	89,395	88,267	72,776
Dunn Park Oval	Cameron Road, Mount Barker	72,659	57,401	55,604	53,634	49,359
Pyrites Road Pump Station	Pyrites Road, Brukunga (2 meters)	45355	47225	42896	49359	47,371
Wetlands Pump Station	Bald Hills Road, Mount Barker	46,418	63,687	4,754	72,034	46,818
Works Depot	Alexandrina Rd, Mt Barker	14,934	26,064	25,649	25,740	25,844
Flaxley Road Reserve (including Keith Stephenson Park)	Flaxley Road, Mount Barker	21,159	21,729	23,320	18,999	24,139
Crystal Lake	Devereux St, Macclesfield	18,444	17,032	16,612	21,924	21,727
Sum of Top 10 Usage per FY		**2,442,023**	**2,672,248**	**2,677,810**	**2,461,937**	**2,787,933**
% of top 10 sites of overall usage FY		**90.1%**	**91.3%**	**91.6%**	**91%**	**82.4%**
Total of all sites usage per FY		**2,710,296**	**2,924,681**	**2,922,219**	**2,676,048**	**3,384,116**

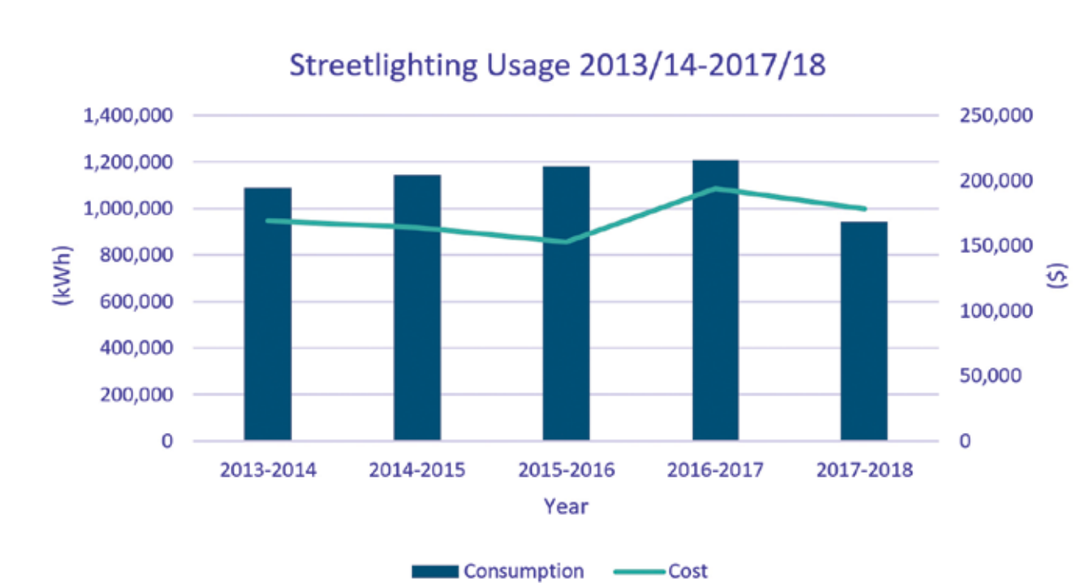
Top 10 Energy Usage Sites for Council Assets

Street Lighting

Streetlighting usage in the 2017/2018 financial year was 945,251kWh with a cost of $395,065, approximately a 23% reduction from the previous year. Streetlights comprise of approximately 28% of all council stationary emissions.

	2013-2014		2014-2015		2015-2016		2016-2017		2017-2018	
	kWh	$	kWh	$	kWh	$	kWh	$	kWh	$
Nairne Floodlight (AGL)		306		332		301		376		438
Street Lighting Contribution (DPTI)		11,423		10,891		10,312		10,842		5,710
12Hr and 24Hr Unmetered Lighting	1,085,609	167,890	1,129,446	160,330	1,165,574	149,640	1,193,658	190,596	930,836	174,807
Few sites with Origin	3,880	1,442	14,085	3,494	14,502	3,292	14,124	3,244	14,415	3,538
Street Light Maintenance to SAPN (SLUoS)		209,110		222,863		230,136		210,357		170,092
Small Sites (Pacific)		4,342		7,784		8,433		8,772		4,480
TOTAL	1,089,489	394,513	1,143,531	405,694	1,180,076	402,115	1,207,782	424,184	945,251	359,065

Street lighting cost and consumption from 2013/14 to 2017/2018



Street Lighting cost and consumption from 2013/14 to 2017/2018 (energy consumption cost only, not costs associated with contribution to other agencies)

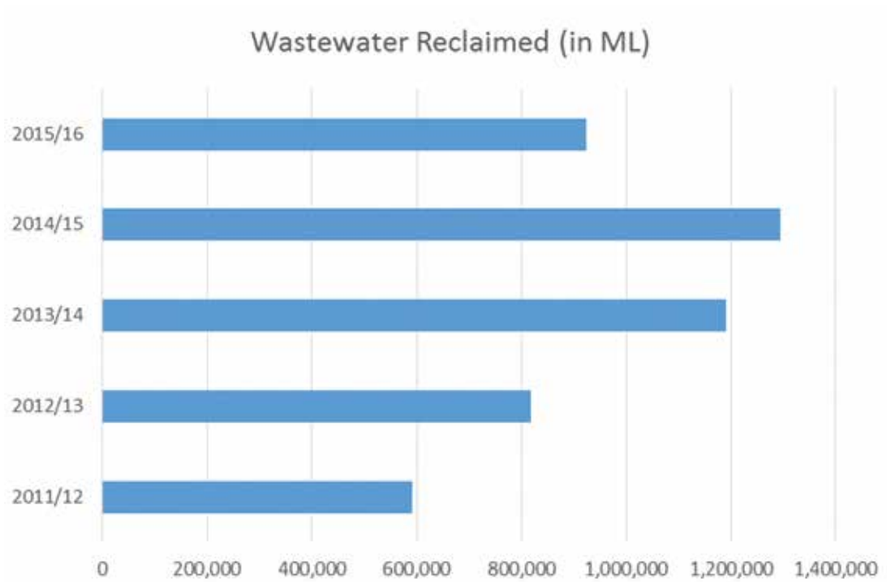
Water

The Mount Barker District Council operates the largest Council wastewater treatment plant (WWTP) and recycled water scheme in South Australia, targeting 100% reuse of treated wastewater. The WWTP has the capacity to treat up to 5.4 ML per day to accommodate the needs of a growing population.

In the early 1990s, Council established the Laratinga Wetland, an artificially created wetland that removes nutrients from the treated effluent from the adjoining WWTP. The wetland also provides habitat for a variety of flora and fauna species. Septic tank effluent from the townships of Mount Barker, Littlehampton, Nairne and Brukunga is directed to Council's treatment plant at Springs Road, Mount Barker. Here, the effluent is treated before being discharged to the Laratinga Wetlands. The water is reused in several ways, including: watering of parks and gardens in nearby housing estates; use in Council's dust suppression program; and, irrigation by market gardeners on Bald Hills Road. Treated effluent from the township of Echunga is directed to the nearby golf course for watering during the summer months. In Macclesfield, treated septic tank effluent from oxidation lagoons is used to water adjoining vineyards.

A public-private partnership was established between Council and Hillgrove Resources to build a pipeline to deliver treated wastewater for re-use as process water in the Hillgrove Kanmantoo copper mine. The pipeline was extended to Callington providing an alternative water source, particularly for irrigation of the Callington oval – a total distance of almost 18km. Take-off points allow other properties along the pipeline route to access recycled water, achieving economic and environmental benefits. The amount of wastewater recycled through the Callington and Mount Barker pipeline schemes over the last five years is illustrated in Figure 5. In 2014/15, 98.8% of the wastewater was reused with only 1.2% discharged. In 2015/16, the amount reused dropped to 90.9%.

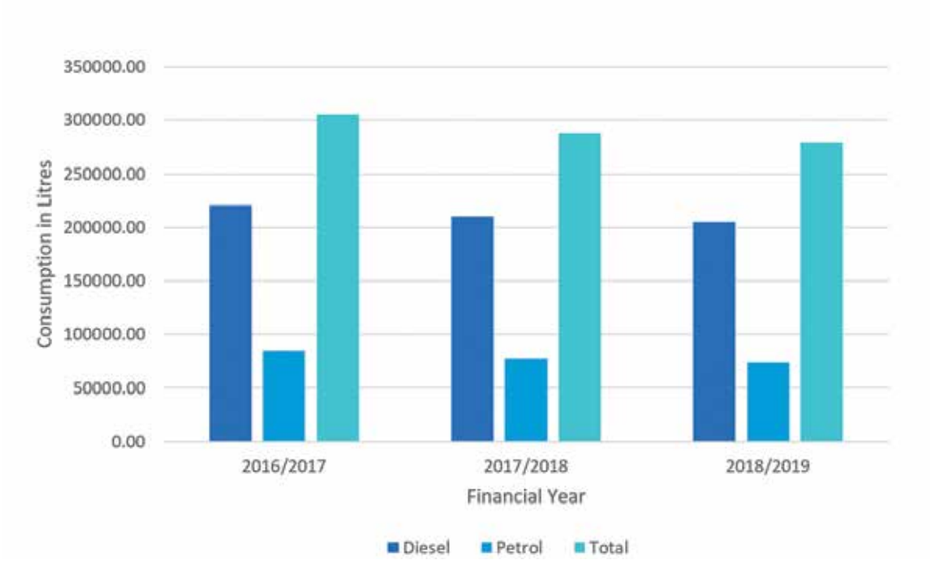
The impending ceasing of operations at Hillgrove mine will have implications on management and storage of excess wastewater in future.



Vehicle Fleet

Corporate fuel consumption peaked in 2015/16 and 2016/17, but has decreased by 26.4% in the 2017/2018 financial year due to more fuel efficient vehicles.

	2016/2017	2017/2018	2018/2019
Diesel (litres)	**220724.37**	**210512.73**	**205256.44**
Petrol (litres)	**84897.12**	**78004.00**	**73858.90**
Total (litres)	**305621.49**	**288516.73**	**279115.34**



9.3 Mount Barker Emission Reduction Target

Australia is a signatory to the Paris Agreement to keep any global temperature rise to below 2°C. For industrialised countries, this means approximately an 85% reduction in GHG emissions by 2050, equating the accepted global carbon budget established by IPCC, is 1,701 Gt CO2-e for the period 2000-2050. Based on this methodology, Climate Council Australia recommended a national carbon budget of 10.1 Gt CO2-e for the period 2013-2050.

Setting a science-derived target demonstrates the scale of action needed by a government to keep within its allocated budget, which aligns with the broader emissions reductions needed to keep the global temperature increase below 2°C.

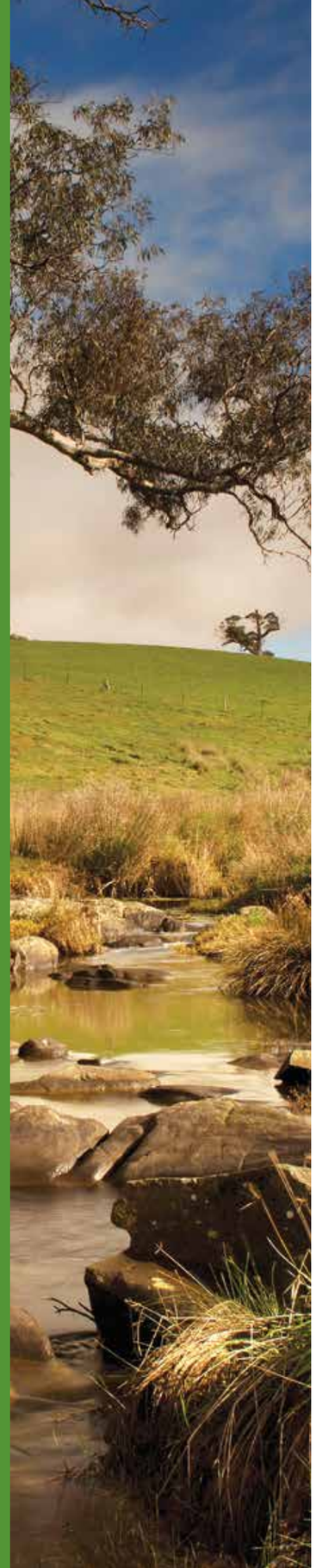
Mount Barker's carbon budget is estimated based on population, emissions growth and the Socio-Economic Index for Areas. The Mount Barker District science-derived target is to reduce emissions by 3% per year of our total allocated emissions budget.

Remaining budget for Council	**4,186, 000.7 (t CO2-e)**
Remaining years without change (years)	**16.7 (years)**
Required rate of reduction (p.a.)	**3.0%**
Required annual reduction	**7,527 (t CO2-e)**
Required 5-year reduction (2017-2022)	**37,635 (t CO2-e)**

Science derived target for Mount Barker District
*** Note that the science-derived target is based on the concept of a carbon budget and not on Mount Barker's district-wide emissions profile. This requires a whole-of-community effort. All levels of government and emissions-intensive industries must be engaged and take action to help reach this municipal target.**

10.

References



- “Mount Barker District Science-Derived Targets for Greenhouse Gas Emissions”, (2017) Ironbark Sustainability
- “Climate Action Toolkit” Climate Council
- Mount Barker District Council Environment Plan (2017)
- Mount Barker District Council Biodiversity Strategy (2016)
- Mount Barker 2035 Strategic Plan
- Mount Barker District Council Waste to Resources Management Plan (2019)
- Dowling, R., McGuirk, P. & Bulkeley, H. (2013). “Governing carbon in the Australian city: Local government responses”, State of Australian Cities Research Network.
- “State of the Environment Report” (2017) Mount Barker District Council
- “Mount Barker District Council Community GHG Inventory” (2017) Ironbark Sustainability
- Resilient Hills and Coasts: Climate Change Adaptation Plan for the Adelaide Hills, Fleurieu Peninsula and Kangaroo Island Region (2016) Resilient Hills and Coasts

MOUNT BARKER
DISTRICT COUNCIL