



*2020–2030*  
**Corporate Emissions  
Reduction Plan**



City of  
Norwood  
Payneham  
& St Peters

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# Executive Summary

**The City of Norwood Payneham & St Peters recognises that we are experiencing a state of rapid climate change which requires strong action by all levels of government and is committed to improving environmental sustainability outcomes, planning for and mitigating the impacts of climate change and creating a more sustainable community.**

This approach is in line with the Council's strategic development plan *CityPlan 2030: Shaping Our Future* which incorporates four key Outcomes of supporting Social Equity, Cultural Vitality, Economic Prosperity and Environmental Sustainability (see *Diagram 1*.)

As part of the Environmental Sustainability targets contained in the *CityPlan 2030*, the Council has committed to achieving 'zero corporate carbon emissions by 2030' which has led to the development of this Corporate Emissions Reduction Plan (the Plan). The target is based on emissions that are in the Council's operational control including electricity, gas, water, transport, waste, supply chains and refrigerants and has been set to demonstrate leadership in climate action.



*Diagram 1. Quadruple Bottom Line Framework for Community Well-being*

The Plan builds upon existing achievements, projects and partnerships, including implementing the Resilient East Climate Adaptation Plan, Eastern Regional Alliance (ERA) projects such as Waterproofing Eastern Adelaide and working with nine other councils to increase the procurement of goods with recycled content.

## Emission reduction benefits

Reducing carbon emissions from the Council's corporate operations provides a range of direct and indirect benefits to the Council and to the broader community. Reducing carbon emissions also supports national and international commitments in working towards mitigating and adapting to the impacts of climate change. Additional benefits include:

- Direct emissions reductions for harmful greenhouse gas (GHG) emissions and related environmental benefits.
- Improved air quality by transitioning away from fossil fuel combustion sources.
- Improvements in economic prosperity through reduced energy and water costs for operations.
- Increased energy and water security by transitioning to distributed and alternative energy and water supplies.
- Improvements to building assets and facilities will also improve amenity for both staff and the community using these facilities.
- Reputational gains from the Council's adoption of a leadership position, making the City of Norwood Payneham & St Peters a more desirable place to visit, live, learn, work, invest and do business.
- Reduced exposure to utility rate changes including electricity, gas, water, and waste.
- Better staff and community health and general wellbeing through improved air and light quality in the Council's facilities.
- Council innovation and exemplary initiatives will educate and pave the way for other parts of the community to follow suit.

# Achievements to date

## Corporate carbon emissions

The Council has already implemented a number of environmental sustainability initiatives that work towards zero corporate carbon emissions including:

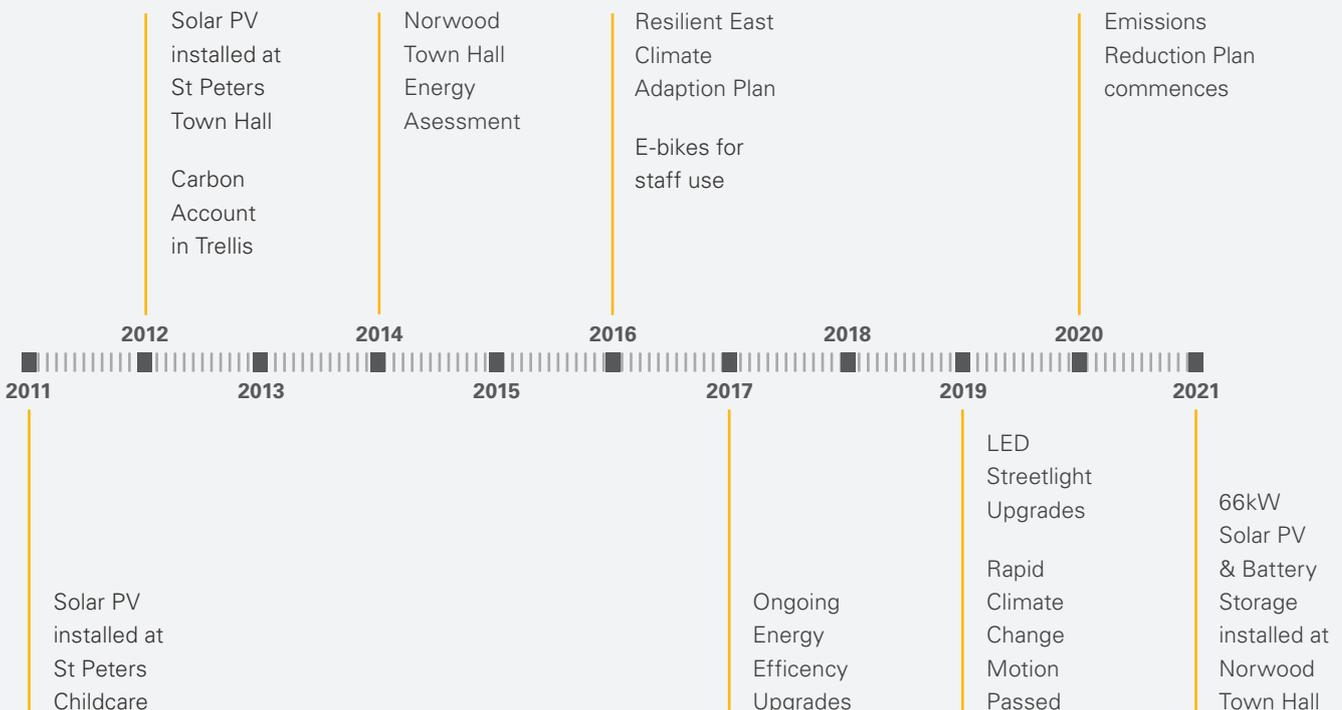
- installing solar photovoltaic (PV) systems on existing facilities;
- monitoring emissions using Trellis since 2012;
- transitioning streetlights to LED, resulting in a 65% reduction in streetlight CO2 emissions;
- implementing energy efficiency upgrades to various Council facilities;
- introducing e-bikes for staff commute to reduce the use of fleet vehicles;
- introducing soft plastic recycling at Norwood Town Hall;
- installing solar PV and battery storage systems on key facilities to maintain emergency management services;
- committing to the 'Buying it back' pilot with nine other councils to increase the procurement of goods with recycled content; and
- procuring materials and services from local businesses.

## Community emissions

Although not part of this Plan, the Council has also been undertaking a range of projects that affect community emissions including:

- increasing street trees and vegetation to reduce heat island effect, providing cooler streetscapes and communities;
- implementing the Sustainable Garden Award program which aims to recognise and celebrate the importance of sustainable gardens and landscapes in the urban environment which also reduces food miles;
- providing education resources and services to the community to reduce the consumption of resources and waste to landfill;
- implementing the Resilient East Climate Adaptation Plan;
- supporting active forms of transport through improved pedestrian and bicycle pathways and improved access to public transport; and
- increasing recycling and landfill diversion rates in collaboration with East Waste.

## Timeline of emissions reduction and climate adptation projects



## Corporate carbon emissions

The baseline corporate carbon emissions profile for the Council, based on data for the 2018–2019 financial year, is approximately 1,890 tonnes of carbon dioxide equivalent per year. The baseline data includes Scope 1, 2 & 3 emissions (see Appendix A), which consists of the below emissions sources. The Council has been monitoring these since 2012.

### Energy

Energy is split into electricity and gas which is used to power buildings, facilities and streetlights including hot water and pool heating. Energy is a significant component to the Council's emissions totalling over 68%.

### Transport

Transport includes fuel used in the Council's corporate fleet vehicles, truck fleet and equipment (e.g. mowers), as well as for a small amount of flights and the use of taxis and Uber.

### Waste

Waste is based on operational waste generated at the Council's various facilities and includes landfill and recycling. Community kerbside waste collection is not included, however, is an important part of the community's emissions.

### Water

Water is supplied by SA Water for mains water and the ERA water harvested stormwater scheme and is used for facilities, swimming pools and to irrigate parks and reserves.

### Supply chain

The Council currently tracks the procurement of A3 and A4 paper and has been purchasing Forest Stewardship Council (FSC), recycled and carbon neutral paper to reduce environmental impacts, as well as reducing the amount of printing. As a result, paper emissions are less than 1% of the total emissions.

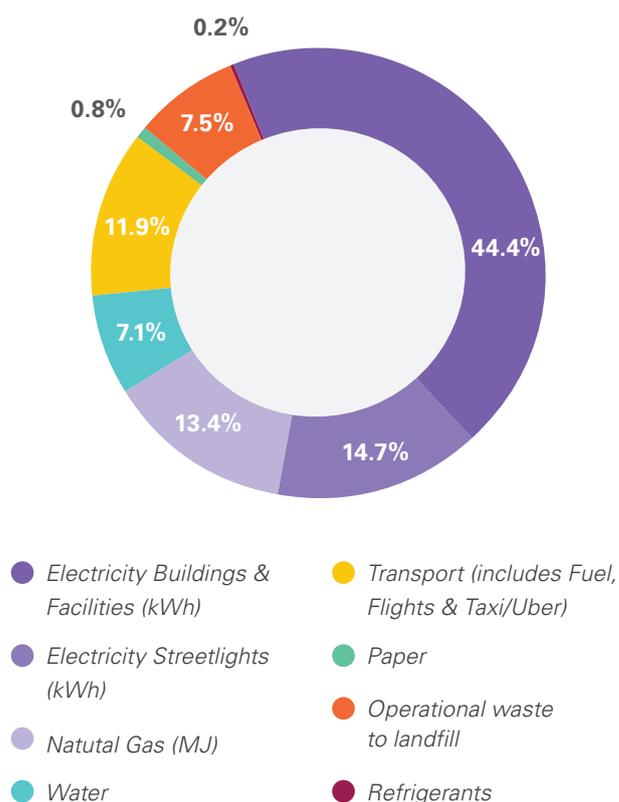
### Refrigerants

Refrigerants are used as a coolant in air-conditioning systems which can leak over time can leak and have a higher Global Warming Potential (GWP) than CO<sub>2</sub>. The Council has been tracking the volume of refrigerants used to re-gas air-conditioners, however, this equates to less than 1% of its total emissions. Refrigerants in fridges and freezers have been excluded in line with the Climate Active Carbon Neutral standards.

### Top 5 emissions

The top 5 emission sources for the Council are electricity, natural gas, transport, waste and water which equate to over 95% of total emissions and are therefore a focus of this Plan. However, as emission reduction projects are implemented, the remaining emission sources become a higher priority as their share of the total volume increases.

### Emissions profile



Although not included in the above emissions profile, the Council is also tracking emission reduction outcomes achieved as part of the procurement of recycled content, including recycled aggregates and the embodied emissions in materials used for infrastructure works. The Council is committed to reducing embodied emissions and will continue to investigate options for working collaboratively with suppliers to identify alternatives and as part of the procurement of goods and services.

# Emission reduction goals

**An holistic review of emission reduction projects has been undertaken to identify priority projects that will have the greatest impact on reducing the Council’s corporate emissions, while providing a range of social, cultural, economic and environmental benefits.**

The projects have been assessed against these outcomes in line with the Council’s Strategic Management Plan, *CityPlan 2030: Shaping Our Future*, to ensure projects are implemented that have a range of benefits.

## Key emission reduction projects and goals include:

		Short term goal (1–5 years)	Long term goal (5–10 years)
<b>Emissions</b>			
	Emissions reduction	>50% corporate carbon emissions reduction by 2025  Review Climate Active Carbon Neutral Certification in 2025	Zero corporate carbon emissions by 2030
<b>Energy</b>			
	Renewable energy	20% onsite renewable energy generation by 2025  100% renewable electricity contract from 2023	
	Energy efficiency	10–15% reduction in energy consumption by 2025	
	Natural gas transition	Natural gas consumption reductions to be achieved as part of Swimming Centres refurbishments as a result of water saving improvements  Facility upgrades investigate electrification of systems (hot water and heating) to transition away from natural gas (fossil fuel) from 2021	Zero fossil fuel consumption by 2030  Swimming pools heating to be reviewed as part of asset replacement programs
<b>Transport</b>			
	Zero emission vehicles	Hybrid electric fleet transition starting 2021  Zero emissions corporate passenger fleet transition starting from 2025	Zero emissions plant and medium vehicles transition from 2025  100% zero emissions fleet by 2030

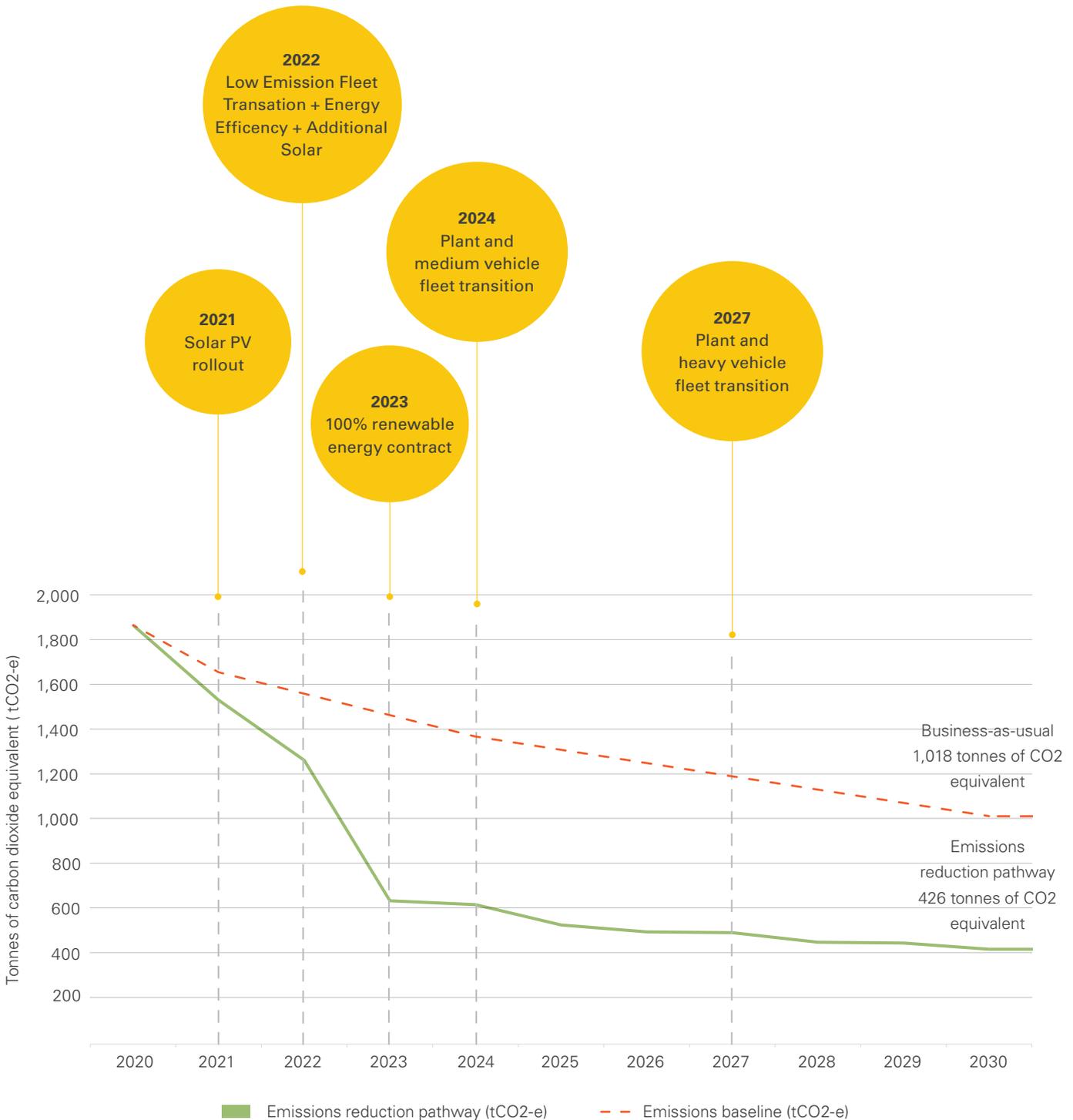
## St Peters Billabong

		Short term goal (1–5 years)	Long term goal (5–10 years)
<b>Waste</b>			
	<b>Landfill waste</b>	>10% increase in landfill diversion rates from Council owned and managed facilities by 2025	
<b>Water</b>			
	<b>Water efficiency</b>	15% reduction in all water consumption by 2025	Make better use of water resources including the harvesting and reuse of stormwater (i.e. water sensitive urban design)
<b>Supply chain</b>			
	<b>Procurement</b>	100% carbon neutral paper procurement from 2021  Monitor emissions reduction achievements from recycled content procurement and embodied emission reductions	A year-on-year increase in corporate purchases of products or materials that contain recycled content.
<b>Refrigerants</b>			
	<b>Refrigerants</b>	Investigate low Global Warming Potential (GWP) refrigerants for existing and replacement airconditioning systems	Low GWP refrigerants used in all air-conditioners by 2030

# Emissions reduction pathway

Based on the key projects and goals, an emissions reduction implementation plan has been developed through to 2030 to clearly outline the Council’s emission reduction goals and key project timeframes for implementation. See graph below.

The Council aims to reduce its corporate carbon emissions by over 50% by 2025 compared to the business-as-usual emissions projection and by 2030, the Council will aim to reduce its emissions by over 70%.



# Zero corporate carbon emissions

**The Council acknowledges that there will always be emissions associated with its operations that it will be unable to reduce to zero through reduction and efficiency initiatives. As a result, carbon offsets will be required to achieve the target of reaching zero corporate carbon emission by 2030.**

The Council will investigate offsets that meet a number of additional co-benefits including offsets provided by Australian and South Australian projects, revegetation programs that provide habitat for endangered and threatened species and options for the Council to partner on offset projects with other councils and organisations.

In addition, the Council will investigate tracking its street tree planting program to demonstrate the equivalent amount of carbon emissions that will be captured through this program.

Following the implementation of emission reduction projects and achieving the Council’s initial goal of a greater than 50% reduction in corporate carbon emissions by 2025, the Council will review its carbon profile and consider pursuing full Climate Active Carbon Neutral certification and purchasing carbon offsets at this time. With the inclusion of carbon offsets at either 2025 or 2030, the Council’s carbon emissions profile has been modelled and is shown below in the graph.





St Peters Billabong, Linear Park

# Introduction

## *Purpose*

This Emissions Reduction Plan (the Plan) has been prepared to assist the City of Norwood Payneham & St Peters in understanding and managing its current corporate carbon emissions footprint and to set a plan to transition to the *CityPlan 2030* target of 'zero corporate carbon emissions by 2030'.

The Plan:

- sets out the Council's goals and targets in managing carbon emissions; analyses emission trends over time; and provides a pathway to achieving zero corporate carbon emissions by 2030;
- establishes a plan to guide Council towards zero corporate carbon emissions while reducing the need to purchase offsets. It includes the identification of a suite of key projects and supporting initiatives to achieve these goals; and
- incorporates existing sustainability strategies and initiatives such as the energy efficiency and solar projects undertaken to date, and ongoing policies, that contribute to emissions reduction opportunities.

## *Commitments*

In November 2019, the Council adopted a motion that recognised that the Council is in a state of rapid climate change which required strong action at all levels of government. This was in response to increased public and Elected Members' awareness and concerns over climate change and environmental impacts, and the Council's role in recognising and responding to these impacts.

The motion incorporated a budget submission to develop an emissions reduction plan which was ultimately adopted and led to the development of this Plan.

The Council's *CityPlan 2030*, endorsed in December 2020, has set a target of achieving 'zero corporate carbon emissions by 2030'. This is a clear commitment to reducing the Council's emissions which will allow the Council to lead by example.

### ***CityPlan 2030 includes an aspiration for the Council to be 'a leader in environmental sustainability'.***

This is supported by environmental sustainability objectives which aim to work towards this aspiration:

- sustainable and efficient management of resources;
- thriving and healthy habitats for native flora and fauna;
- sustainable streets and open spaces; and
- mitigating and adapting to the impacts of climate change.

This Plan has been developed in line with these aspirations and goals while also considering the broader *CityPlan 2030* Strategic Planning Framework which utilises a Quadruple Bottom Line Approach to ensure the Council can achieve outcomes that support social, economic, cultural and environmental sustainability (see *Diagram 1*).

# Carbon emissions & neutrality

## Defining zero corporate emissions

Carbon accounting is often used as the holistic benchmark of environmental impact as they encompass and reflect the benefits from other sustainability initiatives, such as energy efficiency, water conservation, waste reduction and transport management. Carbon reduction or abatement is the term used to describe actions taken to reduce and/or offset all emissions associated with an activity, in this case all emissions from the Council’s corporate activities.

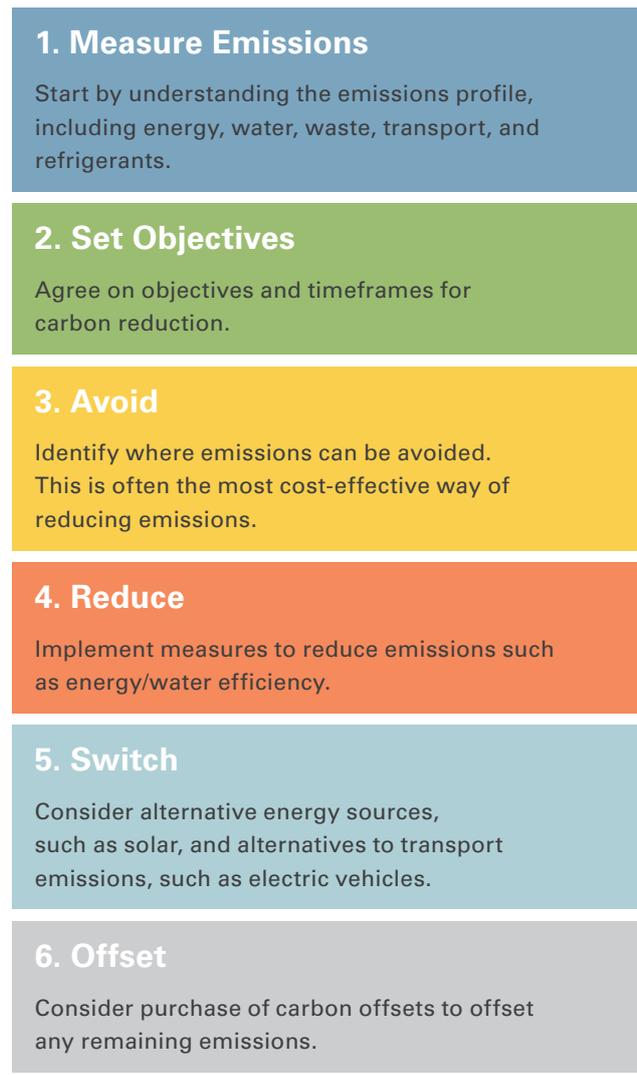
**Climate Active, the leading authority in Australia in certifying carbon neutral organisations (formerly National Carbon Offset Standard - NCOS), provides this definition:**

To become carbon neutral, businesses and organisations calculate the greenhouse gas emissions generated by their activity, such as fuel or electricity use and travel. They reduce these emissions as much as possible by investing in new technology or changing the way they operate. Any remaining emissions can be 'cancelled out' by purchasing carbon offsets.

## Managing carbon emissions

In order to manage and reduce carbon emissions, it is important to understand the source of these emissions. *Diagram 2* below shows the pathway to understanding and managing carbon emissions.

*Diagram 2. Emissions pathway*



## Scope of the Council's corporate carbon emissions

**To measure carbon emissions, a defined boundary needs to be set to understand the emissions for which the Council is responsible.**

Climate Active provides a basis for understanding emissions sources and the Council's control and influence over these sources.

This Plan relates to the Council's corporate carbon emissions, which can be defined as all emissions occurring from activities over which the Council has direct operational control, such as operations within owned and operated buildings, including office buildings, libraries, depots and swimming centres.

It is recognised that the Council also has an influence over emissions in the community, such as community waste collection and community groups using the Council's facilities, however, as these Scope 3 emissions are not under 'operational control' they are excluded from the Council's corporate emissions profile.

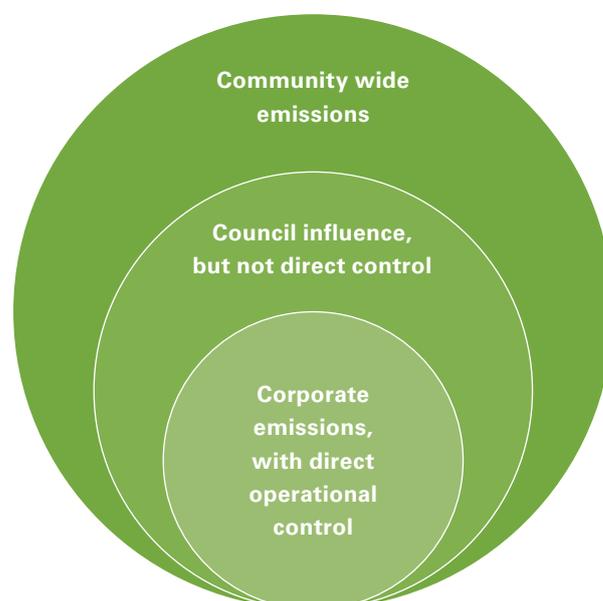
The Council has a unique position to offer leadership and influence in the wider community, and its ability to influence the emissions in the wider community will be the subject of future investigation.

Diagram 3 right shows the Council's corporate emissions profile within its areas of influence.

Projects that the Council is undertaking that affect the community wide emissions include:

- waste collection services are provided by East Waste, who have implemented a number of landfill waste reduction programs and are trialling an electric waste collection truck, providing carbon neutral transport emissions for waste services in the Council area;
- ongoing increase in walking and cycling infrastructure to reduce community transport emissions, including streetscape upgrades and implementation of the City-Wide Cycling Plan;
- a regional bulk solar PV procurement project for households (2019); and
- introduction of a shared device mobility framework to allow shared bicycle (including electric bicycle) schemes to operate within the City.

Diagram 3.  
**Carbon Emissions Boundaries**



# Emission sources

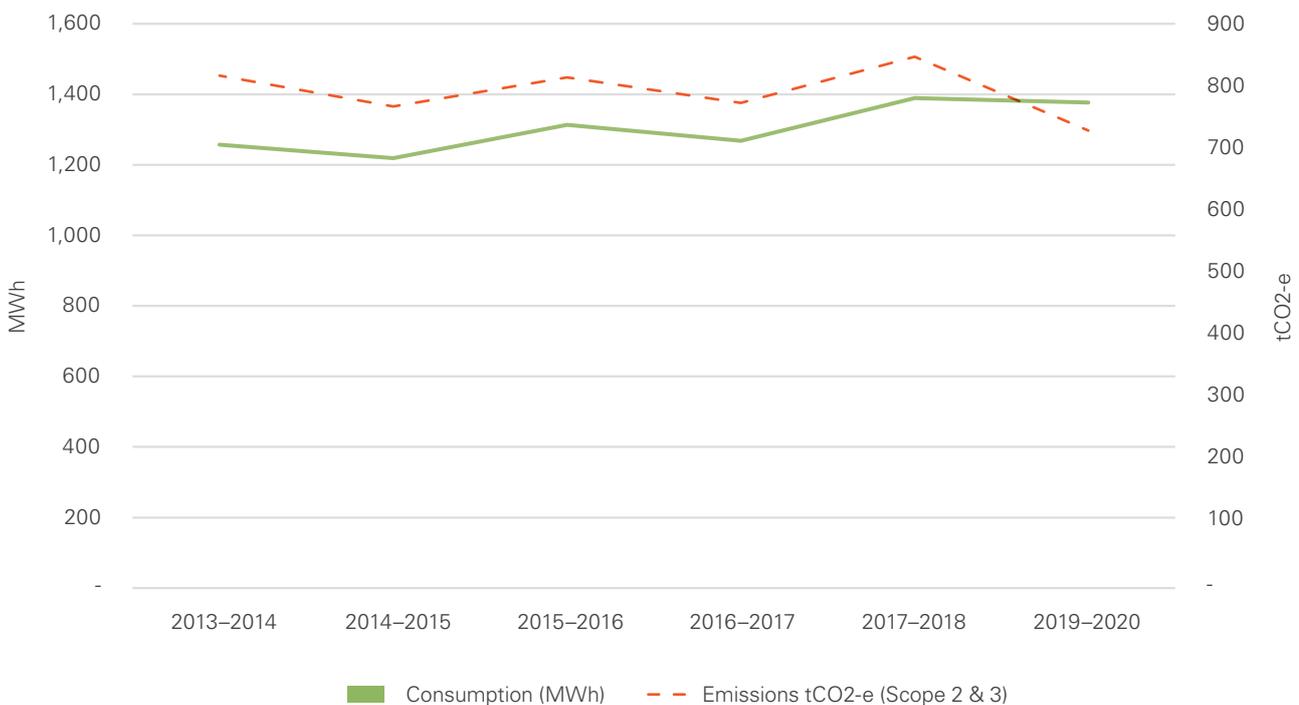
An analysis of the consumption and emissions data from Trellis (carbon accounting tool) and Council reports has been undertaken to develop an emissions profile outlined in this section. A data completeness review was undertaken during the development of this plan to ensure an agreed baseline was in place (refer Appendix C).

## Electricity consumption

**Energy consumption (electricity and gas) was estimated to equate to approximately 30% of the Council’s emissions in 2000–2001.**

An analysis the Trellis data identified that electricity consumption had increased by 10% from 2013–2014 to 2018–2019, however, emissions had reduced by 11% which is due to the increase in renewable energy generation in South Australia, shown in *Graph 1* below.

Graph 1. Electricity Consumption and Emissions



## Electricity consumption by Council's key facilities

**An analysis of electricity consumption for some of the Council's key facilities has been undertaken to identify priority sites for energy efficiency initiatives and to assess the suitability of solar photovoltaic (PV) systems.**

The analysis identified the top 10 Council facilities increased overall consumption by 158MWh from 2013–2014 to 2018–2019 which is a 14% increase. It should be noted that consumption at Payneham Memorial Swimming Pool and Webbe Street Carpark reduced by 19% and 14% respectively, see *Table 2* below.

Increases in electricity consumption for public facilities is often associated with the installation of air-conditioning and the provision of additional community services which improves indoor environments and provides additional social benefits, but, increases energy use. However, the energy efficiency of air-conditioning, lighting and appliances has steadily improved and increases in community services are typically offset by energy efficiency improvements.

For the Council's Swimming Centres, the Council has identified and rectified water leaks which have resulted in the temporary closure of the Swimming Centres which has changed the frequency of use and operating hours. As a result, the energy consumption profiles are not expected to be accurate. The Payneham Memorial and Norwood Swimming Centre Upgrades program is expected to address both energy and water efficiency, however, will lead to an increase in consumption due to larger facilities and an expected increase in use.

It is recommended that an energy efficiency audit in line with AS/NZS 3598.1:2014 is undertaken at these facilities to identify energy efficiency improvements. This will also assist in ensuring that in the event solar PV systems are installed, they are appropriately sized and match the facility's optimised demand profile. In addition, Swimming Centres can offer large opportunities to reduce both energy and water consumption and as they are in the top 5 for energy consumption, an holistic audit should be undertaken to identify opportunities.

*Table 2. Electricity consumption (MWh) by Council's key facilities*

Facility	2013–2014	2018–2019	+ / -	%
Norwood Town Hall	455,796	487,882	32,086	7%
Payneham Library & Community Facilities	120,080	123,748	3,668	3%
Norwood Swimming Centre	84,878	101,470	16,592	20%
Payneham Memorial Swimming Pool	91,866	74,293	-17,573	-19%
St Peters Library (incl. total complex)	95,685	171,497	75,812	79%
St Peters Child Care Centre	50,137	52,749	2,612	5%
Webbe Street Carpark	59,145	50,930	-8,215	-14%
NPSP Works Depot	49,816	63,251	13,436	27%
Patterson Sportsground & Clubrooms	43,873	76,923	33,050	75%
Dunstan Grove - Linde Reserve	43,364	49,797	6,433	15%
<b>Total MWh</b>	<b>1,094,639</b>	<b>1,252,540</b>	<b>157,901</b>	<b>14%</b>

Electricity consumption associated with streetlights has reduced by 552MWh which equates to:

**34%** consumption reduction + **29%** emissions reduction



OG Road and Payneham Road Intersection

## Electricity consumption - streetlights

Electricity consumption associated with streetlights has reduced by 552MWh, which equates to a 34% in consumption reduction and a consequent reduction of emissions by 29%. Total emissions associated with streetlighting is estimated to be 474 tCO<sub>2</sub>-e.

It is expected that additional consumption savings will be realised in 2019–2020 as the LED replacement program did not start until September 2018 and therefore only partial consumption reductions would be captured.

Table 3. Electricity Consumption - Streetlights

Facility	2015–2016	2016–2017	2017–2018	2018–2019	% change from 2013–2014 to 2018–2019	
					+ / -	
Electricity consumption (kWh)	1,628,921	1,616,993	1,562,708	1,076,819	-552,102	-34%
Emissions per kWh	0.53	0.51	0.44	0.44	0.53	-
Emissions (Scope 3 tCO <sub>2</sub> -e)	863.33	834.67	687.59	473.80	-293	-34%

## Natural gas consumption

An analysis the Trellis data identified that natural gas consumption had decreased by 40% from 2013–2014 to 2018–2019 which is a significant reduction, see Table 4 below. It is likely that the reduction in natural gas consumption resulted in the increase in electricity consumption as older heating systems (e.g. gas boilers and radiant heaters) have been replaced with electric systems.

It is recommended that opportunities to reduce natural gas consumption or transition to all-electric options are considered due to natural gas being a fossil fuel with associated emissions. Although there are opportunities being explored to reduce the emissions associated with natural gas by utilising green hydrogen, the high percentage of renewables in South Australia currently supports electric options as a lower emissions option.

Table 4. Natural Gas Consumption

Facility	2013–2014	2014–2015	2015–2016	2016–2017	2017–2018	2018–2019	% change from 2013–2014 to 2018–2019	
							+ / -	
Consumption (GJ)	6,774	5,675	3,511	4,792	5,515	4,085	-2,689	-40%
Emissions factor	10.40	10.40	10.40	10.40	10.40	10.40		
Emissions – tonnes CO <sub>2</sub> -e (Scope 3 tCO <sub>2</sub> -e)	70	59	37	50	47	42	-28	-40%

## Potable water consumption

Water consumption has increased by 763,631kL or 80% from 2016–2017 to 2019–2020 (refer *Table 5*). This is a significant increase in water consumption and at 2020–2021 SA Water prices, equates to \$202,485 per annum. Although weather conditions and rainfall impacts irrigation requirements, an 80% increase is beyond typical increases due to weather, which may result in a 20–30% increase in consumption during summer periods of drought and warmer conditions.

It is expected that the Council’s Swimming Centres would be contributing a large amount to the water consumption from water usage within the pools, community showering, etc. In addition, the pool structures are old and significant water leaks have already identified by the Council.

Table 5. **Water Consumption Emissions**

Facility	2016–2017	2017–2018	2018–2019	2019–2020	+ / -	% change from 2013–2014 to 2018–2019
Water consumption (kL)	92,428	126,760	154,623	166,059	73,631	80%
Emissions per kL	0.0022578	0.0022578	0.0022578	0.0022578	0.0022578	-
Emissions (Scope 3 tCO <sub>2</sub> -e)	208.68	286.20	349.11	374.93	166.24	80%



Image 1.  
**Patterson Sportsground**

Doughnut patterns indicate sprinklers are not providing a uniform cover, resulting in increased water consumption to maintain turf.



Image 2.  
**Payneham Oval**

Large patches of green indicate leaks or uneven sprinkler heads, reducing irrigation system efficiency.



Image 3.  
**Adey Reserve**

Large areas of green versus dry patches indicate that the irrigation system has failed or does not operate in some areas.

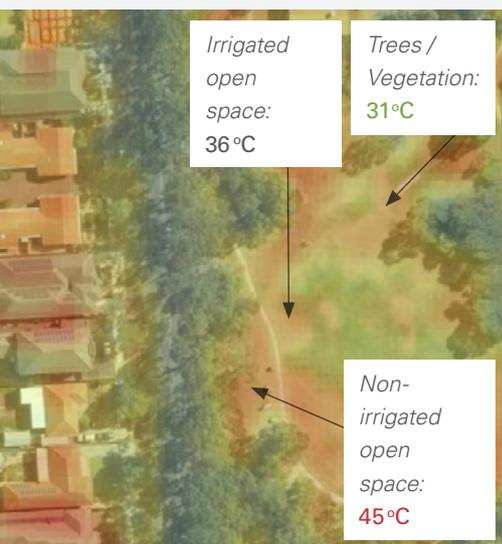
Due to the Council paying a lower rate than the standard \$3.24 per kL, the financial cost of the leaks is minimised. However, emissions associated with the water consumption should be considered.

Based on a high-level review of reserves and open spaces which are managed by the Council, there may be an opportunity to improve the efficiency of irrigation systems. In the images (*Image 1, 2 & 3*) there are examples of large green patches and doughnut patterns, which tends to indicate inefficient irrigation systems with leaks around sprinkler heads and that the sprinklers are not provided a uniform cover. This may be resulting in increased water consumption to maintain open green space which in turn, would be increasing emissions for the Council.

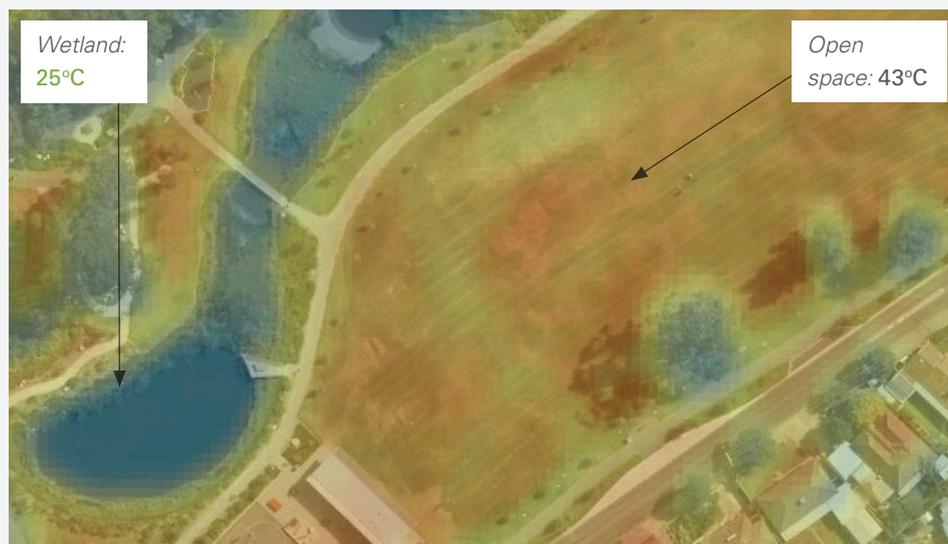
Irrigation efficiency and maintaining green open space for community use should also be considered from an urban heat perspective, with irrigated areas providing areas of respite and lower surface temperatures.

*Image 4* is Adey Reserve which compares the surface temperature for green irrigated areas versus dry non-irrigated areas. It is recommended water efficiency improvements for open spaces consider both the benefit from reducing consumption and emissions, while also considering opportunities to improve climate resilience by providing areas for community respite. In addition, increasing landscaping and vegetation with drought resistant plantings will assist in reducing water consumption while maintaining community open space.

Felixstow Reserve is another example where there is a large difference between turfed open space and the adjacent vegetation and wetlands (refer *Image 5*). Note that based on the heat mapping, it appears that the thermal imaging was taken when the open green space was not yet irrigated.



*Image 4.*  
**Adey Reserve**  
Heat mapping



*Image 5.*  
**Felixstow Reserve**  
Heat mapping

## Non-potable water consumption

**Non-potable water for irrigation of reserves and open space is expected to be supplied by the ERA Aquifer Storage and Recovery (ASR) Scheme in the 2020–2021 summer period.**

Although harvested stormwater schemes have a lower filtration and treatment requirement than recycled effluent or mains water, the supply is still required to be treated both naturally (wetland filtration) and mechanically (filtration)

prior to being injected into the aquifer and has the same associated pumping requirements for supply. As a result, shifting to ASR has an environmental benefit from reducing the use of Murray River and Murray Darling Basin for irrigation purposes, however, has minimal impact on emissions. Therefore, the ASR water has not been excluded from the emissions analysis.

## Transport

**Transport emissions for the Council's fleet vehicles are captured in Trellis and have been incorporated in the emissions profile. Note, due to data not being continually uploaded to Trellis, the emissions profile has been based on 2014–2015 data and may have changed over time which has not been reflected.**

The Council's fleet currently consists of 20 corporate passenger vehicles for staff and pool vehicle uses. *Table 6* outlines potential hybrid electric and fully electric vehicle (EV) replacement options based on similar capabilities and sizing. When coupled with a 100% renewable energy supply, EVs have zero emissions associated with both charging and operating the vehicles.

It should be noted that there are new hybrid electric and fully electric vehicles continually entering the market and replacement options are expected to change throughout the fleet transition stages.

The Council has elected to implement a staged transition program with a mixture of hybrid electric and fully electric vehicles procured from 2021 and the transition has been incorporated into emissions projections. In addition, the replacement of medium and heavy vehicle replacements has been incorporated from 2025 when new hybrid and fully EVs are expected to become more prevalent.

A Low Emissions Fleet Transition Plan has been developed to transition to EVs and plan for the delivery of associated charging infrastructure required for charging and operations. The Council will also continue to work with other providers and partners in seeking to increase the availability of publicly accessible e-vehicle charging stations.



EV Replacement:  
Toyota Corolla Hybrid

Table 6. Council Vehicle Fleet and EV Replacements

QTY	Vehicle/Make	Potential hybrid replacement	Potential EV replacement
<b>CEO'S Office</b>			
1	Mazda CX 8 Asaki	Toyota Kluger Hybrid Electric 2021	Equivalent EV
1	Holden Astra Sportwagon	Mitsubishi Outlander PHEV / Toyota RAV4 GXL Hybrid	Hyundai Kona / MG ZS EV
1	Volkswagen Caddy Van	N/A - Transition straight to EV	Renault Kangoo Z.E.
<b>Corporate Services</b>			
1	Toyota Corolla ZR	Toyota Corolla Hybrid	Hyundai Ioniq / Nissan Leaf
<b>Governance &amp; Community Affairs</b>			
1	Toyota Corolla ZR	Toyota Corolla Hybrid	Hyundai Ioniq / Nissan Leaf
1	Toyota Corolla SX	Toyota Corolla Hybrid	Hyundai Ioniq / Nissan Leaf
1	Holden Astra Sportwagon	Mitsubishi Outlander PHEV / Toyota RAV4 GXL Hybrid	Hyundai Kona / MG ZS EV
1	Volkswagen Caddy Van	N/A - Transition straight to EV	Renault Kangoo Z.E.
1	Holden VF 11 Ute	N/A - Transition straight to EV	Renault Kangoo Z.E.
<b>Urban Planning &amp; Environment</b>			
1	Toyota Camry SX	Toyota Camry Hybrid	Hyundai Ioniq / Kona / MG ZS EV
1	Toyota Corolla Ascent	Toyota Corolla Hybrid	Hyundai Ioniq / Nissan Leaf
3	Holden Astra Sportwagon	Mitsubishi Outlander PHEV / Toyota RAV4 GXL Hybrid	Hyundai Kona / MG ZS EV
<b>Urban Services</b>			
1	Toyota Camry SX	Toyota Camry Hybrid	Hyundai Ioniq / Kona / MG ZS EV
3	Toyota Corolla Ascent	Toyota Corolla Hybrid	Hyundai Ioniq / Nissan Leaf
1	Toyota Hiace Van	N/A - Transition straight to EV	SEA E4V Delivery Van
1	Toyota Corolla SX	Toyota Corolla Hybrid	Hyundai Ioniq / Nissan Leaf

# EastWaste

East Waste have set a target of increasing landfill waste diversion to 70% by 2020 for member councils, however landfill diversion rates for the state reached 84% in 2018–2019 and therefore it is expected that East Waste and the Council would be well on the way to reaching this target.



East Waste truck at Materials Recovery Facility

## Waste to landfill

**Waste data is captured in Trellis, however, this includes both community and Council operational waste. The Council is serviced by East Waste with a kerbside landfill, co-mingled and organics recycling service provided.**

Additional specialised waste drop-off servicing including hard rubbish, e-waste, oils, hazardous waste, batteries and paints, sealants and adhesives are also supported by East Waste and the Council.

East Waste has set a target of increasing landfill waste diversion to 70% by 2020 for member councils, however, landfill diversion rates for the State reached 84% in 2018–2019 and therefore, it is expected that East Waste and the Council would be well on the way to reaching this target. It is recommended that the Council continue to work with East Waste to monitor and improve landfill diversion rates. To enable carbon emissions to be calculated for the Council operations, total building area (m<sup>2</sup>) has been used to calculate an annual waste generation figure based on the City of Sydney's Guidelines for Waste Management in New Developments. The building area captured in the Council's Building and Reserve Asset Register has been used to calculate annual waste volumes and has been incorporated into the below emissions profile. As some of these assets are not occupied as per the City of Sydney benchmarks, a realistic assessment of operation hours has been assumed.

For the Council's operations, it is recommended that waste management initiatives are implemented to increase landfill diversion rates and reduce contamination which has been identified as a key issue by East Waste across all councils. It is also recommended that the Council tracks operational waste separate to community waste to provide more accurate data on its corporate carbon emissions. For example, install Radio Frequency Identification Chips in operational bins so that East Waste can capture and report the data.

## Refrigerants

**Refrigerant emissions associated with air-conditioning are captured in Trellis and have been incorporated in the emissions profile based on air-conditioning re-gassing.**

Due to data being based on actual records of refrigerant regassing maintenance records, the administrative and resourcing requirements required to capture and upload refrigerant data can be problematic to manage.

However, using an estimate in line industry standards may result in higher emissions being reported than if the Council's air-conditioning systems are appropriately managed and have lower leakage rates.

It is recommended that the Council continue to collate refrigerant re-gas quantities on an annual basis through their maintenance contractor.

## Supply chain

**The Council currently tracks the purchase of A4 and A3 paper used in corporate offices which is captured in Trellis. The Council has been transitioning to carbon neutral and 100% recycled paper options and it is recommended that this is mandated from 2021.**

In addition, the Council is actively involved in projects that aim to increase the procurement of recycled content, including considering emission reduction opportunities by procuring materials with reduced embodied emissions for infrastructure works. The Council currently monitors these programs and will continue to investigate opportunities to reduce embodied emissions as part of its procurement policies and specifications.

# Emissions profile

The following section outlines the emissions profile for the Council to use as a baseline to work towards the Council’s target of zero corporate carbon emissions by 2030.

## Corporate carbon emissions profile

The following section outlines the combined emissions profile for the Council based on the previous sections analysis. These figures demonstrate that energy is a significant portion of the Council’s emissions and should be a priority for implementing emissions reduction projects.

Table 7. Corporate Emissions Summary

Category	Sub-category	Emissions (tCO <sub>2</sub> -e)	%
Energy	Electricity Buildings & Facilities	840	44.4%
	Electricity Streetlights	277	14.7%
	Natural Gas	42	13.4%
Water	Water	134	7.1%
Transport	Fuel	225	11.9%
	Flights	0.5	0.03%
	Taxi / Uber	0.1	0.01%
Supply chain	Paper	14.6	0.8%
Waste & Resources	Operational waste to landfill	142	7.5%
Fugitive emissions	Refrigerants	4.7	0.2%
<b>Total (tCO<sub>2</sub>-e)</b>		<b>1,890</b>	<b>100%</b>

## Emissions projections

Based on emissions profile outlined in *Table 7*, the Council’s emissions have been projected out to 2030 in line with existing government commitments to provide a baseline.

The projections are based on the following (with no additional emission reduction measures implemented by the Council):

- renewable energy projections for South Australia which are the main driver for emissions reduction over time;
- renewables are expected to reach over 75% by 2025 and over 90% by 2030, with some projections expecting;
- >100% renewables by 2030;
- electric vehicle (EV) uptake projections for Australia;
- landfill waste diversion reducing marginally from 2020–2030 and then stabilising:
  - Landfill diversion was 84% in 2018–2019. A 90% landfill diversion rate has been set for 2030;
- vehicle efficiency (internal combustion engine vehicles) have been projected to increase marginally prior to being replaced by hybrid vehicles and EVs; and
- water emissions are projected to remain constant.

*Graph 2* demonstrates the relative impact of the main emissions reduction projects outlined in this plan.

# Emissions reduction projects

A detailed review of the Council's existing projects and opportunities to reduce carbon emissions has been undertaken with the following emission reduction projects identified for implementation.



*Electric bikes for staff use*

## *Approach to project assessment*

**In line with the Council's Quadruple Bottom Line based approach to decision making, emission reduction projects have been assessed based on their social, cultural, economic and environmental impact.**

This is to ensure an optimal suite of capital and non-capital initiatives are implemented that will help the Council achieve 'zero corporate carbon emissions by 2030' while also contributing to other priorities.

Each project has been reviewed with the following considerations in mind:

- key benefits, including primary benefits of carbon abatement, but also social and economic benefits;
- initial capital cost;
- operations and maintenance considerations;
- simple payback;
- timeframes for planning and implementation (to inform the Plan); and
- key risks and other considerations.

# Emissions reduction implementation plan

The following emissions reduction implementation plan has been developed to enable the Council to effectively plan for and deliver emission reduction initiatives including supporting actions that the Council can implement. Refer to Appendix D for full summary.

## Emissions reduction initiative Summary

2020–2021 2021–2022 2022–2023 2023–2024 2024–2025 2025–2026 2026–2027 2027–2028 2028–2029 2029–2030

Key Activities										
Onsite Solar PV	Maximise rooftop solar PV at the following facilities:									
	<ul style="list-style-type: none"> <li>Norwood Town Hall</li> <li>St Peters Library</li> <li>St Peters Child Care Centre</li> <li>Works Depot</li> <li>Payneham Library and Community Centre</li> </ul>									
Energy efficiency audits and initiatives	Continue to implement energy efficiency upgrades and undertake energy audits of key facilities									
	Develop ESD guidelines / checklist for new building projects and refurbishments									
Zero emissions fleet transition	Corporate passenger fleet hybrid vehicle transition									
	Corporate passenger fleet electric vehicle fleet transition									
	Plant and maintenance – heavy / medium vehicle transition									
Electric vehicle charging stations	Electrical infrastructure study (pre-works)									
	Corporate and public EV charging station implementation									
100% renewable energy contract	Work with the Local Government Association Procurement to secure a 100% renewable energy supply to achieve zero emissions electricity									
Increased landfill waste diversion	Implement waste reduction initiatives to reduce waste to landfill from operations									

Rollout period

Completion year



Emissions reduction initiative		Summary									
Key Activities		2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030
Water efficiency improvements	Implement water efficiency projects such as irrigation system upgrades and optimisations, upgrading to water efficient taps, toilets, shower heads and fixtures and identifying water leaks.					✓					
Procure Carbon Neutral supplies	Implement procurement procedures where carbon neutral office supplies are mandatory where available (e.g. A4/A3 paper).										
Review Climate Active certification and carbon offsets	Undertake a review of the Council's emissions profile, carbon offset opportunities and consider pursuing Climate Active Carbon Neutral Certification.					✓					
<b>Supporting Activities</b>											
Communication and promotion	Ongoing marketing an communication of the plan and associated projects.										
Carbon Neutral Council events	Investigate opportunities to certify Council run events as Carbon Neutral.				✓						
Develop a Sustainable Procurement Policy	Investigate developing a sustainable procurement policy or working with key teams to include sustainability measures in all procurement processes.		✓								
Sustainable staff commute support and survey	Implement programs to support staff to transition to sustainable and active forms of transport including walking, riding and public transport. Develop an annual staff survey to track staff commute and the transition to low / zero emission modes of transport										
Sustainable behaviour program	Implement a sustainable behaviour program to promote sustainable practices both at work and at home.										
Community Emissions Reduction Plan	Investigate a Community Emissions Reduction Plan to reduce community emissions to zero in line with the Council. The Council is already implementing community emission reduction opportunities and will continue to investigate options to support the community in reducing emissions, both at work and at home.					✓					

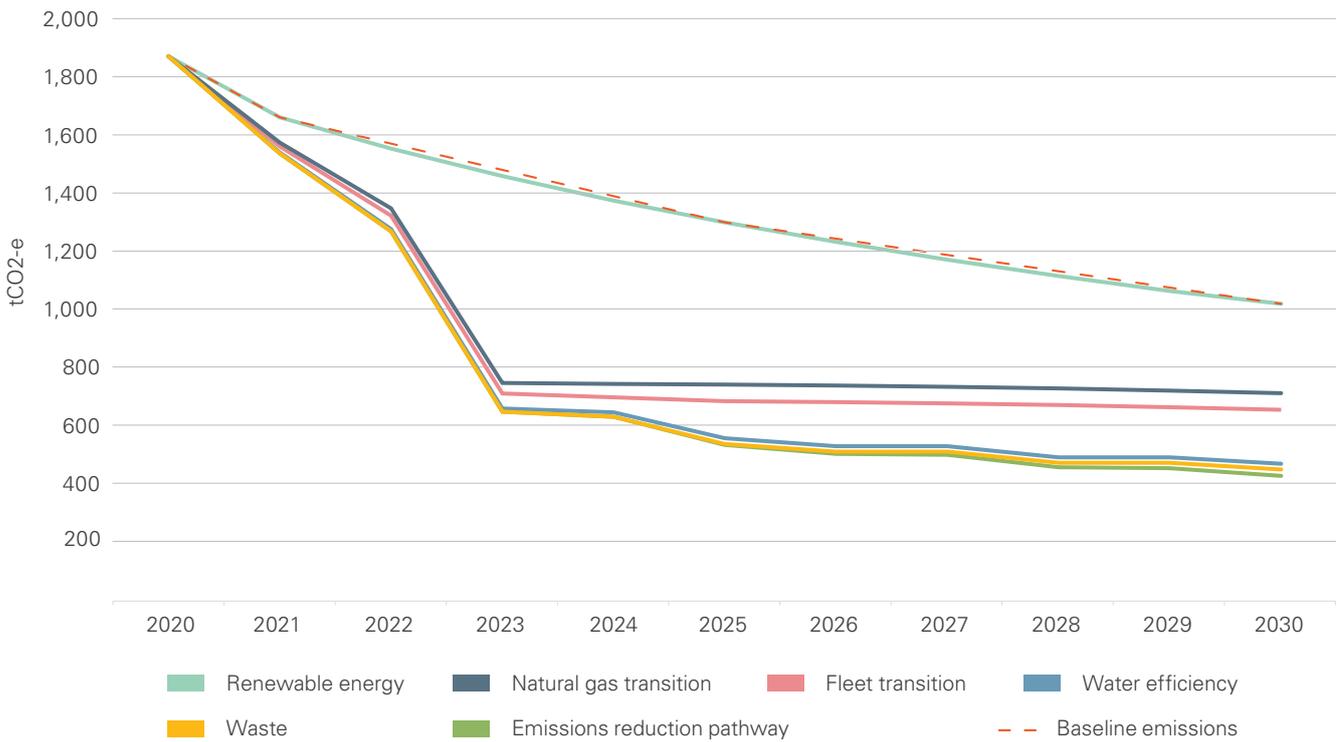
Rollout period



Completion year



Graph 2. Impact of Main Emissions Reduction Projects



# Financial analysis

A financial analysis of emission reduction projects has been undertaken to ensure that the initiatives support the Council's operations and demonstrate the efficient use of the Council's financial capacity. This analysis has also incorporated the Council's Quadruple Bottom Line approach with the social, cultural, environmental and economic impacts considered.

Table 9. Detailed Emissions Reduction Project Summary

The Council's four outcomes used to measure the Quadruple Bottom Line Assessment are as follows:

● Social Equity    ● Cultural Vitality    ● Economic Prosperity    ● Environmental Sustainability

Project Information		Financial Analysis			Emissions reduction (relative to total emissions)	Quadruple Bottom Line Assessment
Emissions Reduction Initiative	Summary	Capital investment	Operational saving	Payback		
<b>Direct emissions reduction initiatives</b>						
Onsite Solar PV	Maximise rooftop solar PV at the following facilities: <ul style="list-style-type: none"> <li>Norwood Town Hall</li> <li>Payneham Library and Community Centre</li> <li>St Peters Library</li> <li>St Peters Child Care Centre</li> <li>Works Depot</li> </ul>	\$256,500	\$66,673	4	15%	● ●
Energy efficiency audits and initiatives	Undertake energy efficiency audits and implement efficiency recommendations.  Key initiatives could include LED lighting upgrades, air-conditioning replacements, appliance upgrades, insulation, shading and glazing upgrades and building sealing.	\$2,000 per facility (Level 1 Energy Audit)	TBC Per project	TBC Per project	3–5% per annum over 5 years	● ● ●
Environmental Sustainable Design (ESD) guidelines – new builds and refurbishments	Implement ESD guidelines for all new buildings and refurbishments to increase resource efficiencies and reduce emissions.	\$8,000–\$10,000	TBC Per project (3–5% operational saving per project possible)	TBC Per project	3–5% reduction per project	● ● ●

Table 9. Detailed Emissions Reduction Project Summary continued

The Council's four outcomes used to measure the Quadruple Bottom Line Assessment are as follows:

- Social Equity
- Cultural Vitality
- Economic Prosperity
- Environmental Sustainability

Project Information		Financial Analysis			Emissions reduction (relative to total emissions)	Quadruple Bottom Line Assessment	
Emissions Reduction Initiative	Summary	Capital investment	Operational saving	Payback			
<b>Direct emissions reduction initiatives continued</b>							
Zero emissions fleet transition	Corporate passenger fleet hybrid vehicle transition	20–30% increase in upfront capital	20–30% decrease in running costs	5 year return on investment	10–15%	●	●
	Corporate passenger fleet hybrid vehicle transition - electric vehicle fleet transition	EV prices to be monitored and confirmed over the next 2–3 years. New models and price reductions are expected in this timeframe.					
Electric vehicle charging stations	Plant and maintenance - Heavy/medium vehicle transition				0% but required to support EVs	●	●
	Undertake electrical infrastructure review	\$25,000–30,000	N/A	N/A			
	Install EV charging stations at key facilities to support zero emission fleet transition.	\$100,000	N/A	N/A			
100% renewable energy contract	Support a 100% renewable energy contract as part of Local Government Association (LGA) procurement negotiations to support both building and EV fleet consumption. Expected implementation in 2023.	N/A	Reduction in electricity costs expected	N/A	>25% (Following Solar PV rollout)	●	●
Increased landfill waste diversion	Increase waste diversion rates through improved waste management practices. Key initiatives could include new waste infrastructure (internal bins and signage), implementing procurement guidelines to avoid/reuse and staff training sessions.	N/A			1–2%	●	●
Water efficiency improvements	Undertake water efficiency audits of facilities and reserves to reduce water consumption.  Key initiatives could include irrigation system upgrades and optimisations, upgrading to water efficient taps, toilets, shower heads and fixtures and identifying water leaks.	\$2,000 per reserve (Can incorporate water efficiency for Council facilities in energy audits)	TBC per site	TBC	1–2%	●	●
Procure Carbon Neutral supplies	Implement procurement procedures where carbon neutral office supplies are mandatory where available (e.g. A4/A3 paper).	N/A Minimal cost difference and already in place for most paper supplies			<1%	●	

The Council's four outcomes used to measure the Quadruple Bottom Line Assessment are as follows:

● Social Equity  
 ● Cultural Vitality  
 ● Economic Prosperity  
 ● Environmental Sustainability

Project Information		Financial Analysis			Emissions reduction (relative to total emissions)	Quadruple Bottom Line Assessment
Emissions Reduction Initiative	Summary	Capital investment	Operational saving	Payback		
<b>Supporting emissions reduction initiatives</b>						
Communication and promotion	Ongoing marketing and communication of the plan and associated projects. Includes graphic design improvements (if required).	\$5,000	N/A	N/A	N/A	<span style="color: green;">●</span> <span style="color: teal;">●</span>
Sustainable staff commute & survey	Implement programs to support staff to transition to sustainable and active forms of transport including walking, riding and public transport.  Develop an annual staff survey to track staff commute and the transition to low/zero emission modes of transport.	N/A	N/A	N/A	N/A	<span style="color: green;">●</span>
Natural gas transition	Incorporate an assessment of transitioning to allelectric for facilities as part of energy efficiency improvements, refurbishments and new construction projects.  Investigate transitioning natural gas building systems (heating/hot water) to all-electric by 2030. Investigate transitioning pools to all-electric as part of refurbishments.	TBC per project			Natural gas = 13% of emissions	<span style="color: green;">●</span> <span style="color: purple;">●</span>
Carbon neutral certification	Investigate developing a full carbon inventory in line with Climate Active standards and becoming certified carbon neutral. To be reviewed following emission reduction measures being implemented.	\$8,000 Climate Active fee + Consultant fees	N/A	N/A	N/A	<span style="color: green;">●</span> <span style="color: teal;">●</span>
Community Carbon Neutral Plan	Investigate a Community Emissions Reduction Plan to reduce community emissions in line with the Council.	TBC Review in 2025			N/A	<span style="color: green;">●</span> <span style="color: teal;">●</span>
Carbon Neutral Council events	Investigate Climate Active Carbon Neutral events to showcase actions being undertaken by the Council.	TBC Per event	N/A	N/A	N/A	<span style="color: green;">●</span> <span style="color: teal;">●</span>
Develop a Sustainable Procurement Policy	Investigate developing a sustainable procurement policy or working with key teams to include sustainability measures in all procurement processes.	N/A Can be developed within existing resources			N/A	<span style="color: green;">●</span>
Sustainable behaviour program	Implement a sustainable behaviour program to promote sustainable practices both at work and at home.	N/A Can be developed within existing resources			N/A	<span style="color: green;">●</span> <span style="color: teal;">●</span>

# Carbon offsets

Climate Active provides a list of eligible offset units under the Carbon Neutral standard’s rules, to ensure genuine and credible emission reductions. These include but are not limited to Australian Carbon Credit Unit (ACCU), Verified Carbon Standard (VCS) and The Gold Standard offsets.

Under the Climate Active standards, any remaining emissions left after emission management and reduction projects must be offset by purchasing carbon offsets (also known as carbon credits). These offsets are generated when reduction in carbon is made elsewhere to compensate for the carbon emissions generated by the Council.

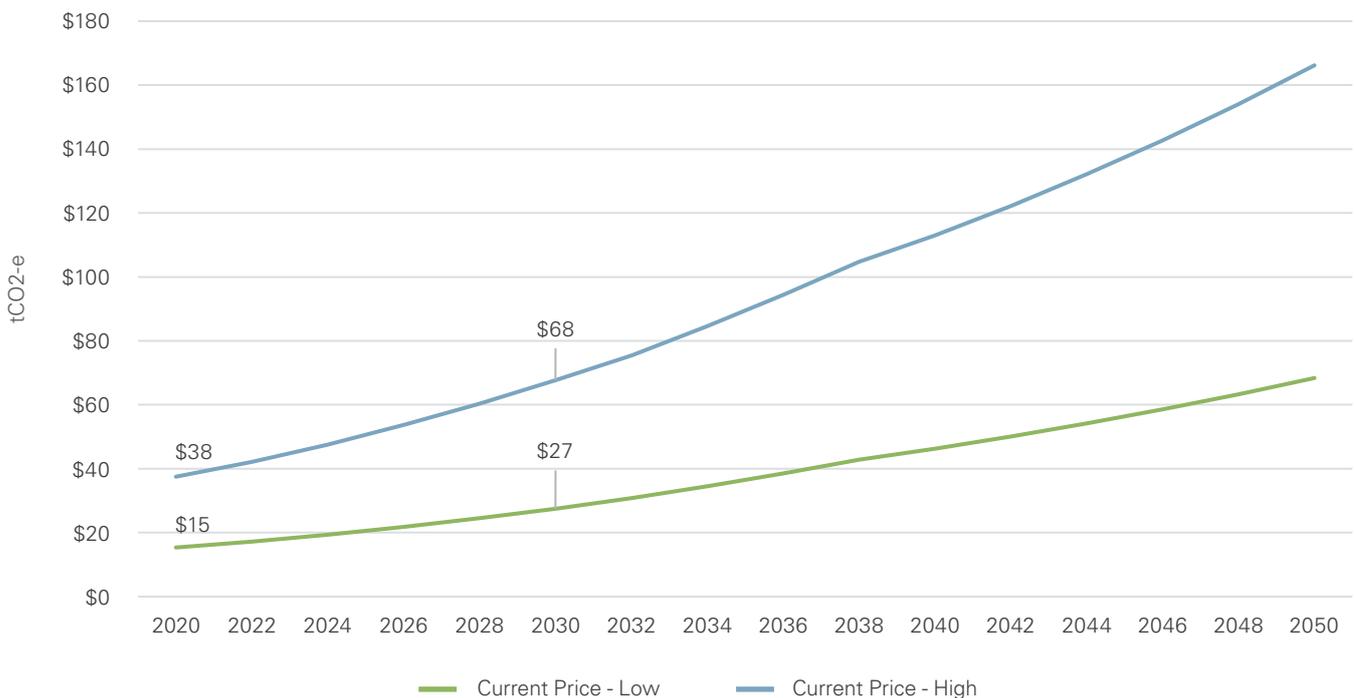
Until recently there were very few carbon offset projects in South Australia, making it difficult to purchase local offsets. However, Australian and overseas approved offsets are available, in support of forestry, agriculture and renewable energy projects.

The cost of offset unit purchase is variable and market dependent. As a result, the price fluctuates depending upon the availability of the standard of offset required, the market demand at the time the purchase needs

to be made, and the quantity of offsets required to be purchased. As demand increases and availability decreases, the price increases. The price also decreases as the quantity required increases. Essentially, basic supply and demand principles apply.

The current market price range for accredited Grade A carbon offset units that support Australian projects ranges from \$15 per tonne to \$38 per tonne. Based on projections undertaken by the Australian Government Treasury Report on Carbon Pricing advises that the current carbon offset range for Australia is a core price of \$20 per tonne, and a high price of \$62 per tonne. The Treasury modelling undertaken indicates that as the demand for carbon offset units increases over time, availability will decrease, and the price will therefore increase accordingly. *Graph 4* provides a graph of carbon price projections which have been updated to reflect current prices compared to the original Treasury projections.

Graph 4. Carbon Offset Price Projections



## Carbon offset examples

### Carbon Offset Projects – Case Studies

Australia's largest accredited biodiversity offset is the Yarra Biodiversity Corridor Offset, a revegetation project located 400 km north of Perth. Managed by 'Carbon Neutral Consultants', this project involved planting seedlings in the wheatbelt region, to revegetate formerly cleared land.

[www.carbonneutral.com.au/yarra-yarra-biodiversity-corridor](http://www.carbonneutral.com.au/yarra-yarra-biodiversity-corridor)

In Tasmania, a large area of old growth forest previously designated for logging has been protected as a biodiversity forest, called the New Leaf Carbon Project. 28,000 hectares have been protected, and many companies, including Virgin Australia, buy carbon offsets from this project.

[www.marketplace.carbonmarketinstitute.org/new-leaf-carbon-project-2](http://www.marketplace.carbonmarketinstitute.org/new-leaf-carbon-project-2)

The South Australian Department of Environment & Water (DEW) has been working on biodiversity projects to produce SA carbon offsets, including the Kangaroo Island Biodiverse Carbon Credit Pilot Project and an area of revegetation on the River Murray. The recent extension of Charlestown Conservation Park, in the Adelaide Hills, has been registered as a carbon conservation park with the Clean Energy Regulator, with the purpose of generating carbon offset credits through sequestration. It is difficult to obtain published information on these projects, however, DEW has indicated that there may be opportunities for partnership with local organisations to create additional local biodiversity offsets. It is recommended that further consultation is undertaken with DEW and Department of Premier and Cabinet to gain further clarity on what may be possible going forward.

### Carbon Sequestration in Trees

Planting of trees is an excellent way of sequestering carbon from the atmosphere. The Council has an active tree planting program, and there are obvious environmental benefits from this. If the Council were to attempt to plant an area to sequester all of the Council's corporate emissions, approximately 20,000 trees would need to be planted.

It should be noted that there is no way to verify the carbon offsets (or credits) from a planted area such as this without registering it as a carbon offset project, and there is no clear pathway to do this currently in Australia. Only approved carbon offsets can count towards a carbon neutral claim, or certification under Climate Active. It is important to note that tree planting is an excellent environmental initiative for many other reasons than contributing to carbon offsets, such as reducing heat island effect, increased biodiversity, etc., and should be considered as part of the wider environmental planning for the Council area.

The Department of Environment & Water is currently operating biodiversity projects as carbon offsets, and it is possible that a partnership may be able to generate approved offsets. Alternatively, the Council could look to purchase established and approved biodiversity offsets elsewhere to support planting and reforestation projects in other places.

## Carbon offset pathways

**Following confirmation of the preferred pathway for carbon offsets, the below is an example of the Council achieving zero corporate carbon emissions in either 2025 or 2030.**

Based on the carbon offset price projections, the annual cost of carbon offsets is expected to range from approximately \$8,000 in 2025 or \$12,000 in 2030 based on low price projections, see *Graph 5* below.

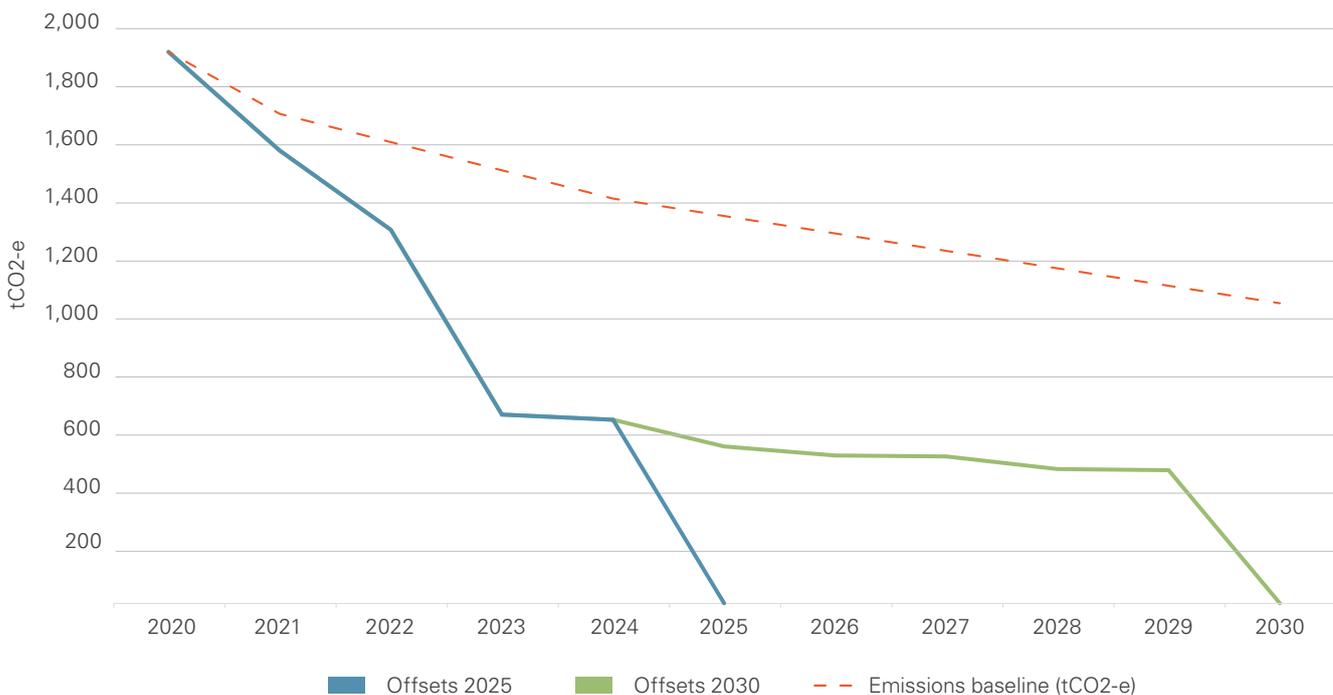
It is recommended that the Council considers becoming carbon neutral in 2025 as the majority of the emission reduction projects would have been completed and there will only be a minor difference in total emissions between 2025 and 2030. In addition, as per the above projections, the costs of offsets are expected to increase over time and therefore it will be cheaper to become Carbon Neutral in 2025 which will demonstrate leadership.

## Community emissions

**Although outside of the scope of this document, it is recommended that the Council continue to implement community emission reduction programs and consider developing a Community Emission Reduction Plan which outlines key actions that the Council can take to support the community in reducing emissions.**

A Community Emissions Reduction Plan has been incorporated into the implementation plan as an ongoing initiative with a milestone of 2024–2025 for the Council to consider developing a formal plan. However, based on community consultation, it is expected that community emissions may become a higher priority in a shorter timeframe due to the scale of community emissions compared to the Council’s corporate emissions.

*Graph 5. Carbon Offset / Zero Emission Pathways*



# Appendix A

## *Climate Active summary*

The Federal Government, in partnership with the property sector and the business sector, has developed the Climate Active (formerly National Carbon Offset Standard (NCOS)) for organisations. The organisational standard is a voluntary standard to manage greenhouse gas emissions and to achieve carbon neutrality. It provides best-practice guidance on how to measure, reduce, offset, report and audit emissions that occur as a result of the operations of an organisation.

### Climate Active

The purpose of Climate Active is to provide a structured, auditable pathway for organisations to work towards carbon neutrality. The Climate Active standard encourages the measurement, management and reduction of greenhouse gas emissions as far as is practicable, with the remaining emissions cancelled out by the purchase of accredited offset units.

The following operational emissions are to be accounted for:

1. **Energy** (including lighting, heating and cooling, occupant energy use, plant equipment, other infrastructure and shared services). This includes all energy sources (grid electricity, on-site generated electricity, gas, diesel fuel etc.) and all emissions scopes (Scope 1, 2 & 3);
2. **Refrigerants** including air conditioning system leakage and replacement and refrigeration systems;
3. **Water** consumed, and wastewater discharged (including Scope 3 emissions associated with off-site water treatment);
4. **Transport** to and from a precinct (including occupant commuting, occupant travel to and from a place of work, property management vehicles, forklifts, shuttle services etc.); and
5. **Waste** leaving the precinct (including all waste streams, and Scope 3 emissions associated with off-site waste recycling, processing, combustion, or disposal to landfill)

### Emissions Scope

The organisation emissions include all emissions that the organisation has control over. They fall into the three globally accepted categories:

**Scope 1** – direct emissions resulting from the organisation’s ownership and control, for example energy generated on site, fuel used in generators and company vehicles.

**Scope 2** – the consumption of electricity generated elsewhere.

**Scope 3** – emissions from electricity consumption and fuel use (indirect emissions from the extraction, production and transport of fuel burned at generation), and emissions from waste, business travel and accommodation, office paper and water use. Other scope 3 emissions sources that may be relevant include staff commuting, food and catering, postage and freight, stationery, office printing, cleaning services, IT services (e.g. data centres) and telecommunication services.

Any exclusions must be disclosed and justified.

The carbon account must include emissions of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>).

### Climate Active Certification

The annual carbon account needs to be audited by an independent third party which carries NGERs Accreditation at least every three years. Once the emissions inventory has been confirmed, the carbon is then cancelled via the purchase of certified offsets, following which a submission can be made to Climate Active for certification.

Full details regarding Climate Active is available here [www.environment.gov.au/climate-change/government/carbon-neutral/ClimateActive](http://www.environment.gov.au/climate-change/government/carbon-neutral/ClimateActive)

# Appendix B

## Previous emissions data and reduction targets

The following section summarises the data analyses undertaken and key learnings used to inform the development of the Plan.

### Previous emissions inventories

The City of Norwood Payneham & St Peters last developed a Greenhouse Strategy Plan in 2002 which included both the Council and community emissions as well as targets and strategies, to monitor and reduce emissions. The strategy was underpinned by an accredited ISO 14001 Environmental Management System (EMS) which provided a framework and reporting structure for emission reduction initiatives.

In 2000–2001, emissions were estimated as follows:

- Council:
  - 2000–2001 Baseline: 4,548 tCO<sub>2</sub>-e
  - 2012 target: 3,637 tCO<sub>2</sub>-e  
(20% reduction on 2001–2002)
- Community:
  - 1998 Baseline: 414,617 tCO<sub>2</sub>-e
  - 2012 target: 331,690 tCO<sub>2</sub>-e  
(20% reduction on 1998)

The EMS was in place for a number of years, however, following the establishment of internal process for monitoring and improving environmental impacts, an accredited EMS was no longer maintained from 2012. To ensure that the Council's consumption and emissions are monitored and tracked Trellis (previously C3 Balance Carbon) was implemented from 2012. Trellis is an online portal that automatically extracts consumption data from invoices and assigns recognised emission factors to monitor carbon emissions.

The following emissions are being captured and tracked in Trellis which have been used to develop a high-level emissions profile for the Council (see Emissions Profile on page 26).

- Electricity
- Natural gas
- Fuel (council vehicles)
- Waste
- Flights
- Taxis
- Refrigerants
- Paper

Multiple areas in the Council actively monitor the Trellis portal including personnel from finance, assets and the Council's Sustainability Officer, and this is providing tangible benefits, including consumption reductions and cost savings. This model is ideal where multiple internal stakeholders are engaged in monitoring consumption and costs, allowing emission reduction proposals and initiatives to be supported for their environmental, economic and social benefits. For example, initiatives that reduce energy consumption will also reduce operating costs and can provide opportunities to improve social performance by improving council facilities (for example, air-conditioning upgrades can provide an improved indoor environment for staff and/or the community).

### Municipal Emissions Snapshot and Cohort Comparison

In 2017, the Council had a Municipal Emissions Snapshot and Cohort Comparison undertaken to gain an understanding of community emissions. The report estimated that community emissions totalled 547,000 tCO<sub>2</sub>-e in 2016–2017, see *Graph 6*.

The following is a comparison of the 1998 emissions inventory to the 2017 estimate in the Snapshot report, see *Table 9*. The comparison highlights a greater than 30% increase in emissions with industrial energy, waste and transport driving the emission increases. Note that emission factors, data sources and types and calculation methods have changed since the 2002 report and therefore

a direct comparison is unlikely to be accurate. However, the comparison does highlight a trend of increasing community emissions which is expected due to increased waste to landfill, energy usage and private transport occurring across Australia. In particular, our City has experienced an increase in population and the number of dwellings.

It should be noted that the population of our City has increased from 16,269 in the 2001 census to 17,518 in 2016, however when applied to the emissions on a per capita basis, still resulted in a greater than 20% increase in emissions.

Graph 6. Snapshot Community Emissions Estimate

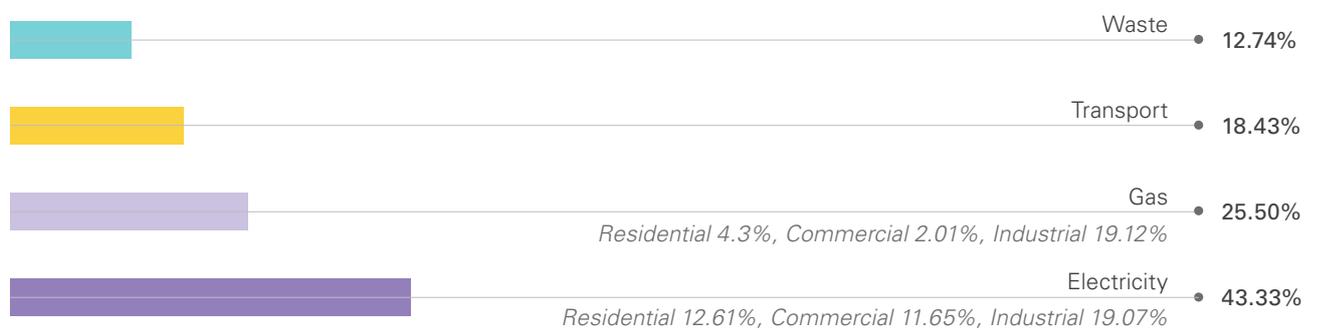


Table 9. Community Emissions Comparison

	Residential	Commercial	Industrial	Transport	Waste	Total
1998	104,299	86,922	121,472	78,820	23,102	414,617
2017	92,900	74,700	208,900	100,800	69,700	547,000
Increase / Decrease	-11,399	-12,222	87,428	21,980	46,598	132,383
% Increase / Decrease	-11%	-14%	+72%	+28%	+202%	+32%

# Appendix C

## Data completeness summary

The information below outlines the data review undertaken in developing the Council's emissions profile. Data completeness was reviewed during the staff workshop held on the 16 December 2020 with the outcome included in *Table 10* below.

Due to the data completeness varying from year to year, it is recommended that the Council implement an ongoing data management and monitoring program for key emission sources as per the below.

Table 10. Data Completeness Summary

Data	Year	Completeness and outcomes
Electricity	2018–2019	Complete data
Electricity - Streetlights	2018–2019	<p>Complete data</p> <p>Question: Electricity consumption and the associated emissions can be allocated in two ways:</p> <ul style="list-style-type: none"> <li>• <b>Option 1:</b> The Council classifies the streetlights as <b>under their operational and financial control</b> as they have requested SAPN to install the lights and can choose to upgrade them to LED if they prefer. In this case, both scope 2 &amp; 3 emissions apply.</li> <li>• <b>Option 2:</b> The Council classifies the streetlights as <b>outside of their operational control</b> as the lights are owned and maintained by SAPN. In this case, only scope 3 emissions apply.</li> </ul> <p>The City of Sydney and Brisbane City Council have both elected to classify the lights as under their operational/financial control and therefore have included Scope 2 and 3 emissions.</p> <p>Other councils such as the City of Yarra, Moreland City Council and Randwick City Council have elected to classify the lights as outside of their operational control and are only including Scope 3 Emissions.</p> <p>Does NPSP want to include or exclude the Scope 2 emissions? It can be argued that the streetlights are a service provided and leased by NPSP. Excluding would be similar to the Council stating that leased vehicles are not in their operational control.</p> <p><b>Workshop outcome:</b> Emissions are to be based on light classification (CLER, SLUOS, etc.). Trellis data has been downloaded and used for the emissions profile based on 2019–2020 data which is a more accurate figure for streetlights following the LED lighting program.</p>
Natural Gas	2018–2019	Complete data

Data	Year	Completeness and outcomes
Water	2018–2019	<p>Water data is based on SA Water quarterly account summaries however difficult to collate on a facility basis due to the accounts being associated with the property valuation number.</p> <p><b>Workshop outcome:</b> It has been recommended that SA Water data is uploaded to Trellis so that water consumption for individual facilities can be tracked including emissions.</p>
Waste	2018–2019	<p>Total waste emissions including community kerbside pick-up.</p> <p><b>Workshop outcome:</b> An estimate of waste emissions based on total floor area of council owned and operate facilities has been undertaken and the City of Sydney’s metrics applied to estimate waste emissions for council operations.</p>
Recycled waste	2018–2019	<p>Currently cost data only and no associated emissions in Trellis. This is unusual as recycled waste still has emissions associated with pick-up/servicing.</p> <p><b>Workshop outcome:</b> Investigate whether recycled waste should have associated emissions in Trellis. Following a review of the Climate Active standards and calculators, it has been determined that recycling and organic waste do not required an emissions factor and therefore have been excluded from the emissions profile.</p>
Flights	2013–2014	<p>Latest data from 2013–2014 however is only showing km travelled. Emissions factor used to estimate emissions.</p>
Refrigerants	2014–2015	<p>Latest data from 2014–2015</p>
Paper	2013–2014	<p>Latest data from 2013–2014</p>
Staff commute	2018–2019	<p>Estimate from Climate Active calculators used based on NPSP annual report for FTEs.</p> <p><b>Workshop outcome:</b> Staff commute has been outlined for information only and excluded from the Council’s emissions profile, however contributes to a significant emissions total. It is recommended that the Council support staff to transition to lower emissions transport options (walking, riding, public transport).</p>

# Appendix D

## Consultation

Consultation with the Council has been undertaken to ensure that an holistic plan is developed which integrates with the Council's existing operations (see *Table 1*).

*Table 1. Consultation Summary*

Consultation Method	Date	Summary
Team meetings and correspondence	October 2020–June 2021	Ongoing meetings and correspondence with project team members have been undertaken to gain feedback and specific information.
Data completeness paper	24 November 2020	A data completeness paper was issued to the project team to ensure the emission profile aligned with the Council's expectations for data sources.
Elected Members workshop	14 December 2020	An Elected Members workshop was held to provide a summary of the emissions reduction plan process and capture priorities for consideration in the plan.
Staff workshop	16 December 2020	A staff workshop was held with key areas including procurement, finance, assets and sustainability.
Project prioritisation workshop	11 February 2021	A project prioritisation workshop was held with the project team to review and agree on recommended priority projects for budget approvals.
Community consultation	12 April–2 May 2021	Community consultation was undertaken via an online survey and a community drop-in session held on 21 April 2021. Community feedback has been incorporated into the plan as agreed with the Council.

## Further Information

For information on the Council's *2020–2030 Corporate Emissions Reduction Plan*, please visit [www.npsp.sa.gov.au](http://www.npsp.sa.gov.au) or phone 8366 4555.

You can also visit the Council's Customer Service Centre at the Norwood Town Hall, 175 The Parade, Norwood.

## Additional Copies

The *2020–2030 Corporate Emissions Reduction Plan* can be viewed online at [www.npsp.sa.gov.au](http://www.npsp.sa.gov.au)

Additional copies may also be obtained by:

- visiting Norwood Town Hall
- visiting any of the Council's Libraries
- emailing [townhall@npsp.sa.gov.au](mailto:townhall@npsp.sa.gov.au)
- contacting the Council on 8366 4555
- writing to the Council at PO Box 204, Kent Town SA 5074

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