

# City of Burnside 2021-22 Environmental Sustainability Reporting

This document contains the *Greenhouse Gas Emissions* section that was not able to be included in Council's 2021-22 Annual Review of Environmental Sustainability.

## Greenhouse Gas Emissions

1. Council's Environmental Sustainability Strategy sets a priority for strategic and cost-effective reduction of Council's carbon footprint. This priority requires the monitoring of Council's greenhouse gas emissions to inform decision-making and gauge progress.
2. Annual greenhouse gas emissions have been calculated for Council facilities and vehicles for 2021/22 and compared to previous years.
3. Different types of emissions can be included in assessments of greenhouse gas emissions. The following types of emissions have been included in the calculations for the City of Burnside, following Australian Government protocols:
  - 3.1. **Scope 1 emissions** (direct emissions), generated by gas consumption in council facilities and the use of fuel in vehicles or machinery;
  - 3.2. **Scope 2 emissions** (indirect emissions), generated by electricity consumption in council facilities (emissions from electricity are considered indirect because the electricity is produced elsewhere); and
  - 3.3. **Scope 3 emissions** (other indirect emissions), including those emissions generated in the production and transport of gas, electricity and fuel.
4. The focus of Council's work has been on emissions generated by the organisation (e.g., by using electricity, gas and fuel). These emissions may readily be reduced through changes to infrastructure (e.g., solar panel installations, vehicle upgrades or energy efficiency measures) and staff behaviour.
5. In future, additional emissions-causing activities could be added to this inventory, such as waste production, water use and the procurement of other goods and services. However, the additional work required to calculate these other emissions may not be worthwhile, particularly if the suppliers of the goods or services mitigate and offset their own emissions.
6. Table 1 provides the greenhouse gas emissions in tonnes of carbon dioxide equivalent (CO<sub>2</sub>-e). The use of this standard measure allows for comparison across years and to other organisations. The term, 'equivalent' is used because the measure accounts for carbon dioxide (CO<sub>2</sub>) along with other polluting gases such as methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). These three gasses are reported because they all make substantial contributions to global warming. Carbon dioxide makes the greatest contribution of the three gasses and is therefore used as the reference. While their contributions are lesser, the other two gasses have greater warming potential than carbon dioxide. For example, the *National Greenhouse Accounts Factors (2022)* lists the global warming potential of methane at 28 times that of carbon dioxide, and nitrous oxide at 265 times that of carbon dioxide (but far less of these gasses is generated). The global warming potential of all three gasses is accounted for in the carbon dioxide equivalent (CO<sub>2</sub>-e).

**Table 1. City of Burnside greenhouse gas emissions 2018/19 to 2021/22**

<b>Financial Year</b>	<b>EMISSIONS (tonnes CO<sub>2</sub>-e)</b>	<b>Change (% change from previous year)</b>
BASELINE: expected emissions in 2020/21	2,008	Not relevant
2018/19	2,499	Not calculated
2019/20	1,855	-26%
2020/21	1,581	-15%
<b>2021/22</b>	<b>1,407</b>	<b>-11%</b>

7. As it can be difficult to visualise emissions, the tonnage from 2021/22 has been converted into cubic metres. The 1,407 tonnes would occupy around 768,000 cubic metres (at 21°C). To picture that volume of gas, imagine covering the Hazelwood Park Reserve entirely with a blanket of gas. The blanket would be almost six metres thick. For comparison, just three years ago in 2018/19, the blanket would have been over 10 metres thick.

### **Changes in greenhouse gas emissions**

8. Table 1 notes **an 11 per cent decrease in emissions from 2020/21 to 2021/22**. Key drivers are discussed below.
9. **State-wide savings from the grid:** improvements in electricity emissions factors (i.e., cleaner energy production in South Australia) account for an 83-tonne reduction in emissions. When more renewable energy is produced in South Australia it benefits all users of energy across the energy grid. These changes are not driven by Council but demonstrate the benefit in Council advocating to State and Federal governments to increase the production of renewable energy.
10. **Reductions in consumption of electricity and gas:**
- 10.1. Council electricity consumption was down by 8 per cent, reducing the greenhouse gas emissions by 57 tonnes;
- 10.2. Council gas consumption was down by 19 per cent, reducing the greenhouse gas emissions by 75 tonnes;
11. **Changes in how emissions from fuel are calculated:** there was a 5 per cent reduction in consumption of fuel (including both diesel and unleaded fuels). Such a reduction is good news and would typically lead to a reduction in emissions. However, there is an increase in the emissions recognised from this consumption. The increase is related to how emissions were calculated. In previous years, the National Greenhouse Accounts Factors only included a small volume of emissions associated with the production and transport of fuel. These are the Scope 3 emissions for fuel, sometimes called “well-to-pump” emissions. A new study of well-to-pump emissions has revealed that there are far more emissions associated with this activity than previously considered. Therefore, the 2022 National Greenhouse Accounts Factors have increased the Scope 3 factor for fuel from 3.6 to 17.2 kg CO<sub>2</sub>-e/GJ. The impact of this adjustment is an additional 65 tonnes of emissions for the City of Burnside, despite a decrease in the consumption of fuel. While the reduction in consumption demonstrates that the City of Burnside is moving in the right direction, the increase in emissions demonstrates there is more work to do. This work is already recognised in Council’s plans to go Carbon Neutral by 2030. The impact of emissions from fuel will be reduced as Council continues to invest in more efficient and electric vehicles.

**Sources of greenhouse gas emissions**

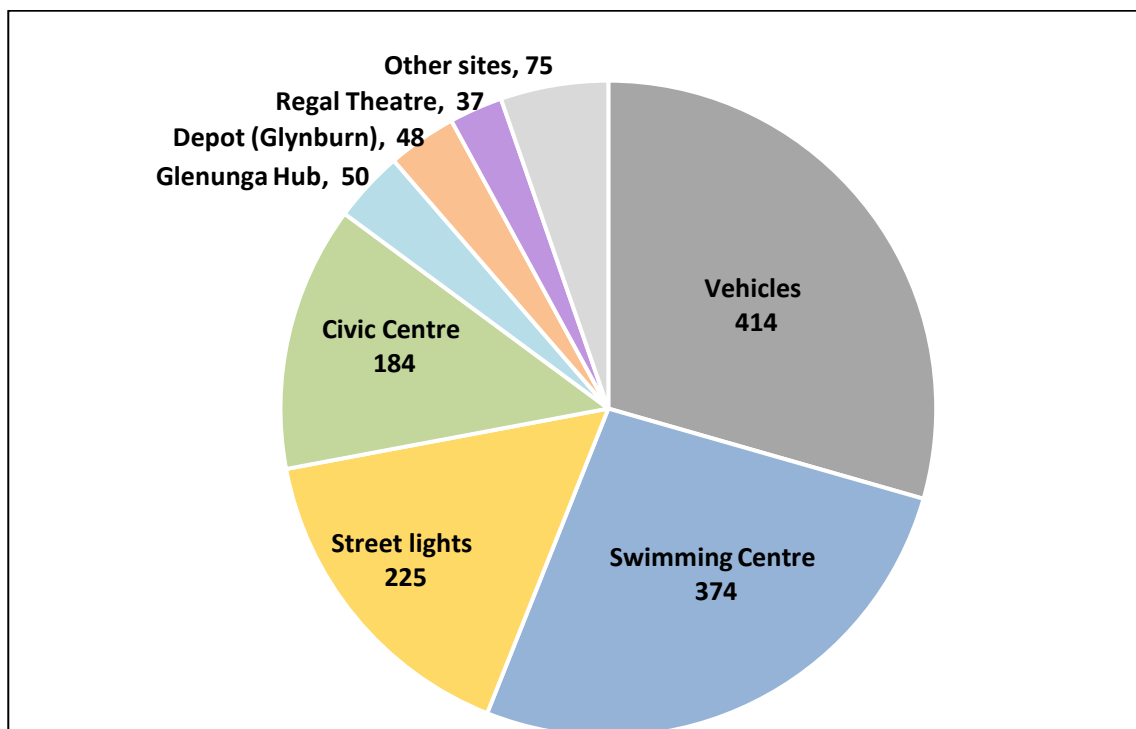
12. Table 2 provides data on the types of energy use that generated Council’s greenhouse gas emissions. Most emissions resulted from the use of electricity. Additionally, most of the reduction in greenhouse gas emissions can be attributed to reductions in emissions from electricity.

**Table 2. City of Burnside greenhouse gas emissions by type, 2018/19 to 2021/22**

Year	Electricity EMISSIONS (tonnes CO <sub>2</sub> -e)	Gas EMISSIONS (tonnes CO <sub>2</sub> -e)	Fuel EMISSIONS (tonnes CO <sub>2</sub> -e)	TOTAL EMISSIONS (tonnes CO <sub>2</sub> -e)
2018/2019	1,754	370	375	2,499
2019/2020	1,131	331	394	1,855
2020/2021	831	384	367	1,581
<b>2021/2022</b>	<b>683</b>	<b>309</b>	<b>414</b>	<b>1,407</b>

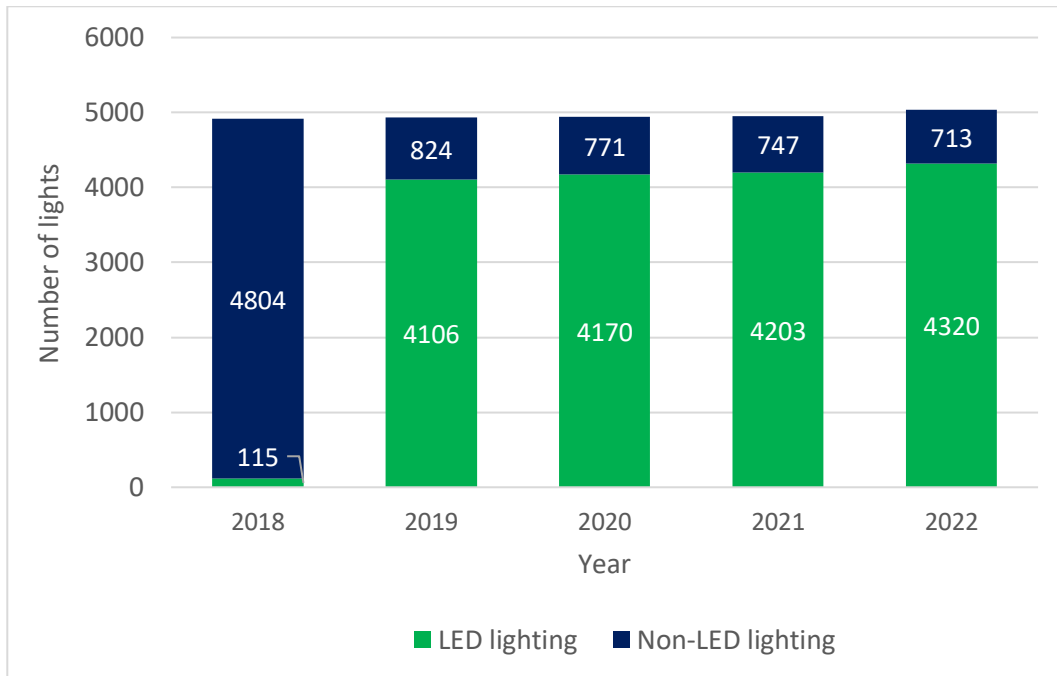
13. Figure 1 depicts the greenhouse gas emissions by Council source for 2021/22, demonstrating the major sources of Council emissions. Points of interest are:

- 13.1. The combined emissions of the swimming centre and vehicles account for over half of Council’s greenhouse gas emissions. The swimming centre emissions include both the gas and electricity used at the facility.
- 13.2. The ‘vehicles’ category includes all fuel for diesel and unleaded vehicles. For the first time, this category is the greatest contributor to Council’s emissions. The reason for an increased proportion of emissions from fuel is the increase in emissions attributed to well-to-pump emissions for fuels (described in section 11).
- 13.3. The greatest single source of emissions is the gas pool heater. The gas pool heater contributed more greenhouse gas emissions than the network of street lighting in the City of Burnside.



**Figure 1. City of Burnside greenhouse gas emissions by Council source, 2021/22**

14. Greenhouse gas emissions from streetlights reduced from 253 tonnes in 2020/21 to 225 tonnes in 2021/22. This reduction is largely attributable to reductions in grid emissions (i.e., cleaner energy production in South Australia). It is noteworthy that the Council continues to improve the network of streetlights, with 117 new LED streetlights during the financial year. Figure 2 depicts that most streetlights were replaced during 2018/19, with ongoing additions to the LED network since then. Additionally, solar path lighting was installed and is operational at Kensington Gardens Reserve/Kensington Wama.



**Figure 2. Streetlights in the City of Burnside, by type (LEDs and non-LEDs)**

15. Council's vehicle fleet continues to transition towards hybrid and electric vehicles. Seven hybrid cars were purchased during 2021/22. **The fleet now includes 11 hybrid cars and two PHEVs (plug-in hybrid electric vehicles).** PHEVs typically have larger batteries so they can run as electric vehicles longer than standard hybrids, but still have internal combustion engines so are not reliant on the charging of batteries. All new vehicles purchased are now hybrids where suitable vehicles are available. Suitable utility (utes) and some specialised vehicles are not yet available, but are expected in coming years.
16. Replacement of the HVAC (Heating Ventilation and Air Conditioning) unit at the Regal Theatre occurred during June 2022. The new system is substantially more efficient than the aging system it has replaced, with savings in consumption of electricity expected in future years.
17. Replacement of the heating system at the George Bolton Swimming Centre has been delayed due to complexity and procurement of the project, as advised to Council Members via Information Document 9 September 2022 and endorsed by Council during April 2022 (C120422/13135). Work on this project is ongoing as it is an important step in the Council reaching carbon neutral.
18. Air conditioning times at the Burnside Civic Centre were reviewed and adjusted during November 2021, saving 10 to 20 per cent of operational time in some workspaces.

## **Carbon offsets**

19. During 2020/21, the City of Burnside committed to becoming carbon neutral by 2030, with a clear plan of how to achieve this goal (Council Motion C12708). The carbon neutral plan has financial and environmental benefits, saving both money and emissions in the long term. The plan included the development of the **Burnside Carbon Offset Scheme, or B-COS** (Council Motions C12708 and C12646).
20. B-COS commenced during 2021/22:
  - 20.1. Visitors to George Bolton Swimming Centre and the Regal Theatre paid a small fee (10 cents per visit). While the contribution from each visitor was small, collectively the funds enable Council to offset the emissions from these facilities. Additionally, residents who have additional landfill bins paid a fee to offset the emissions associated with landfill (\$13.40 per additional bin per annum). It is important to note that the fee for bins only applies to approved landfill bins in addition to the typical three-bin system, of which there only around 60 in the Council area.
  - 20.2. During the year, \$10,367 (ex-GST) was collected for B-COS. These funds will be used to plant over 2,500 trees. This planting is expected to offset 518 tonnes of greenhouse gas emissions. The offset will be achieved over the life of the trees and can only be claimed once, for the 2021/22 financial year. More funds will be raised and more trees will be planted in subsequent years to continue claiming offsets from this scheme.
  - 20.3. The organisation 'Trees for Life' will plant the first batch of trees during the 2023 planting season. It was initially planned for planting to occur during the year that funds were collected, based on an estimate of revenue for the scheme. However, COVID-19 has made it impossible to estimate visitor numbers to Council facilities, so tree planting will now be conducted in the following year, ensuring accurate accounting and offsetting.
  - 20.4. The trees will be planted outside of the Adelaide metropolitan area. Direct seeding is the most cost-effective way to plant the quantity of trees required to offset the greenhouse gas emissions of Council services. The trees cannot be planted on City of Burnside land because there is not space for the direct seeding of thousands of trees per annum within the Council.
  - 20.5. While the primary purpose of the tree planting is to offset greenhouse gas emissions, many additional benefits will be realised, including the creation of habitat for wildlife and the generation of jobs in South Australia.
  - 20.6. While a specific location has yet to be confirmed, preliminary investigations indicate that locations close to Adelaide are available. Once planted, the locations can be advertised to ensure the plantings are tangible.
  - 20.7. Promotion of B-COS will occur with the first planting during the first half of 2023.

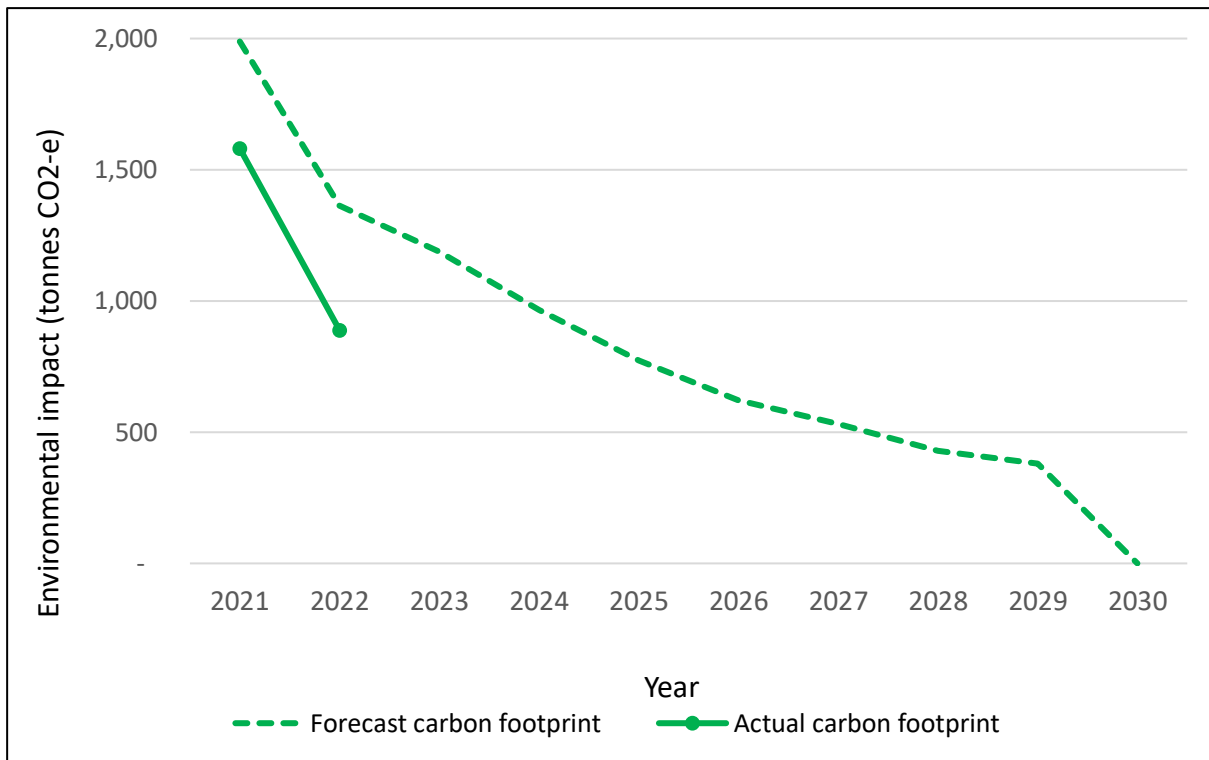
## Council's Carbon Footprint

21. A carbon footprint includes both emissions and offsets. Thus, the footprint represents the quantity of greenhouse gas emissions that have been produced and have not been offset in any way. Offsetting carbon emissions refers to actions taken by an organisation to prevent, reduce or remove carbon emissions elsewhere, to compensate for emissions of the organisation. The City of Burnside established an offset scheme (B-COS) to reduce the carbon footprint of the Council.
22. Table 3 depicts the carbon footprint of the Council over the last four years. In the first three years there were no offsets, so the footprint was the same as the total emissions. In 2021/22, with the introduction of the offset scheme (B-COS), the footprint of the Council is substantially reduced by the offsets.

**Table 3. City of Burnside carbon footprint calculations, 2018/19 to 2021/22 (tonnes CO<sub>2</sub>-e)**

Year	Total emissions	Total offsets	Carbon footprint	Change (% change from previous year)
2018/2019	2,499	0	2,499	Not relevant
2019/2020	1,855	0	1,855	-26%
2020/2021	1,581	0	1,581	-15%
<b>2021/2022</b>	<b>1,407</b>	<b>518</b>	<b>889</b>	<b>-44%</b>

23. The 44% reduction of the carbon footprint from 2020/21 to 2021/22 well exceeds the CEO KPI to reduce Council's carbon footprint by 25%.
24. Council established a baseline carbon footprint, based on the data from 2018/19, but adjusted to account for known improvements in streetlights and the building of The Shed on Conyngham Street. The Baseline was 2,008 tonnes CO<sub>2</sub>-e. **The footprint for 2021/22 represents a 56 per cent reduction in the carbon footprint from the established baseline in just a few years.**
25. Council has continued its trajectory to be Carbon Neutral by 2030. Figure 3 demonstrates that Council is ahead of the forecast position for the 2021-22 financial year. The forecast data are from the Council Report "Measures for Reducing Council's Carbon Footprint" (Council Motion C12708). The large drop in the carbon footprint from 2020/21 to 2021/22 is mostly attributable to the introduction of B-COS, as was forecast. The carbon footprint is lower than forecast in both years largely because of state-wide improvements in electricity emissions factors (i.e., cleaner energy production in South Australia).



**Figure 3. Forecast and actual carbon footprints for City of Burnside 2021-2030**

**Looking forward: greenhouse gas emissions**

- 26. Planning for the installation of solar panel systems during 2022/23 is underway, including:
  - 26.1. **Glynburn Road Depot:** 70 kW system, expected to save over \$30,000 and 46 tonnes of greenhouse gas emissions per annum;
  - 26.2. **George Bolton Swimming Centre:** 60 kW system, expected to save over \$14,000 and 40 tonnes of greenhouse gas emissions per annum;
  - 26.3. **Regal Theatre:** 40 kW system, expected to save over \$12,000 and 28 tonnes of greenhouse gas emissions per annum; and
  - 26.4. **Dulwich Community Centre:** 5 kW system, expected to save over \$2,000 and 3 tonnes of greenhouse gas emissions per annum.

For these solar projects, the expected savings of costs and emissions have been calculated based on site characteristics. For example, the George Bolton Swimming Centre has greater shading from trees and therefore the savings are not as great as those made at the Glynburn Road Depot (when savings are compared per kW size of the installations).

- 27. Council will continue to transition fleet vehicles to more efficient options such as hybrids. The Council is also investigating the purchase of its first all-electric car.
- 28. Exploration of initiatives to support the community to reduce emissions has commenced in accordance with Council’s Environmental Sustainability Roadmap. Focus on this work will increase in 2023. To explore ideas in this space, Council has hosted three student

interns from University of Adelaide and University of South Australia during 2022. Their work has explored ideas, including:

- 28.1. Solar initiatives for rental properties;
  - 28.2. Battery initiatives for residential properties; and
  - 28.3. Support for cycling in the City of Burnside.
29. Ongoing upgrades to building lighting will continue to reduce energy consumption.
  30. Council staff are working with LGA Procurement and staff from other Councils on the procurement of electricity beyond 2023, when the current contracts expire. The tender and evaluation process are expected to be completed late in 2022.

### **Conclusion**

31. Council continues to invest significant resources into environmental sustainability, including actions to reduce Council's carbon footprint to reach carbon neutral by 2030.
32. Regular updates will continue to be provided to Council in relation to environmental sustainability, with additional reports provided to Council on specific initiatives as required.