Gosport Borough Council greenhouse gas emissions 2020-21

Introduction

Gosport Borough Council has set a target to be carbon neutral for its own operations by 2050 or sooner. To track our progress towards this and help inform actions to achieve the target, annual greenhouse gas emissions have been calculated for each financial year since 2019/20. This report summarises the emissions for the 2020/21 financial year.

Emissions included

Scopes

Emissions are classified into three scopes for reporting purposes, as follows.

- Scope 1 emissions are those released directly by an organisation.
- Scope 2 emissions are those released to generate electricity used by an organisation.[1]
- Scope 3 emissions cover all other emissions generated outside an organisation, to provide services or materials used by the organisation.

The target set in the Council's Climate Change Strategy is "to be carbon neutral for its own operations (for emissions scope 1 & 2) by 2050 or sooner." This report therefore covers only scope 1 and 2 emissions. However, it should be noted that approximately 70% to 80% of an organisation's emissions generally fall under scope 3[2].

Scope 1 emissions come from two sources.

- Emissions from combustion of fuel by Council-owned vehicles and in Council-owned buildings.
- Leaks of refrigerant gases, mostly from air conditioning units owned by the Council.

Leaks of refrigerant gases are not included in this report due to the difficulty of collecting this information and their minimal levels.

Renewable electricity

The Council switched to a 100% renewable electricity tariff in October 2020. Where a renewable tariff is used, there are two options available for reporting scope 2 emissions.

- **Location based** reporting does not differentiate between renewable and non-renewable electricity. This reflects the fact that the emissions per kilowatt-hour conversion figure provided by BEIS is based on the carbon intensity of the overall UK electricity supply, including any renewable generation. The sum of the location based emissions figures from all users in the UK would therefore match the country's total emissions from electricity generation.

[1] Scope 2 also covers emissions associated with other energy services used by an organisation, such as district heat, steam or cooling networks. Electricity is the only externally generated energy used by the Council, and so for simplicity this document treats scope 2 as covering electricity consumption only.

[2] Source: https://www.carbontrust.com/news-and-events/news/local-authority-climate-emergency-whats-next [accessed 26/7/21]

- **Market based** reporting treats renewable electricity as having zero emissions.[3] This acknowledges the role that renewable electricity tariffs have in increasing demand for renewables and so driving down the carbon intensity of the overall UK electricity supply over time.

BEIS guidance states that location based reporting should be treated as mandatory, while organisations may choose to include market based reporting as well. Both location based and market based calculations are provided in this report.

Methodology

The methodology used follows best practice guidance from BEIS, which is based on the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard. It can be summarised as follows.

1. Collection of usage data for all relevant energy use.
2. Conversion from usage to greenhouse gas emissions using "carbon intensity" conversion factors provided by BEIS.
3. Calculation of gross and net emissions totals.

Collection of data

Petrol and diesel used for Council vehicles (scope 1)

BEIS provides conversion figures for either vehicle mileage (taking into account vehicle type and fuel used), or alternatively for petrol and diesel usage. Both options have advantages and disadvantages; calculating emissions directly from fuel usage is more accurate but harder to align to the financial year. The calculations in this report are based on the actual fuel usage.

Usage is obtained from fuel purchase invoices. All invoices within the 2020/21 financial year have been taken into account. Some fuel purchased before the start of the financial year would have actually been burned and generated emissions within the year, while some fuel purchased near the end of the year would not have generated emissions until the 2021/22 financial year. It is assumed that these two inaccuracies approximately balance each other out, and that provided the same method is used each year, comparisons between years will be valid.

Fuel used by the community safety van has been excluded from the calculations since this is a Community Safety Partnership vehicle. While this does not strictly adhere to the Greenhouse Gas Protocol Reporting Standard, which states that emissions should be accounted for between partners based on their contracted share of the partnership, this is consistent with the approach used for the 2019/20 emissions calculations and so allows comparison between the results. The van is almost entirely used for Partnership events and in any case the total emissions are minimal (approximately 1.5% of the total emissions from Council vehicles).

Gas used for space and water heating in Council buildings (scope 1)

Usage has been based on energy bills which specify the energy content of the gas used each month. This aligns with the conversion figure provided by BEIS which specifies the CO_2 equivalent

[3] Emissions due to electricity transmission and distribution losses are included in market based reporting; however these come under scope 3 since they are treated as emissions from the electricity distributor, rather than emissions directly due to generating the electricity used by the Council.

emissions for each kWh of energy content of the fuel. The majority of energy contracts for Council buildings are managed by Portsmouth City Council, which has provided the usage figures for these buildings.

Diesel used for electricity generation in Council buildings (scope 1)

As part of its covid-19 response, the Council provided temporary portacabin homeless accommodation for most of the 2020/21 financial year. These were entirely powered using a diesel generator, and usage data for this is based on fuel purchase invoices and delivery records.

All invoices within the 2020/21 financial year have been taken into account. Since the portacabins were installed after the start of the financial year, this means the emissions reported will be slightly in excess of those actually generated by combustion of the fuel during the financial year. However, the error is small since the last delivery of the year was less than 1000 l, while the amount used over the year based on invoices is nearly 46,000 l.

Electricity purchased from the grid for Council buildings and other sites (scope 2)

Electricity usage is based on energy bills which specify the amount of energy purchased each month. The majority of energy contracts for Council buildings are managed by Portsmouth City Council, which has provided the usage figures for these buildings.

Conversion from usage to greenhouse gas emissions

The calculation of greenhouse gas emissions uses conversion figures provided by BEIS. The figures are updated each year and the 2020 figures have been used for this report. This follows the BEIS guidance which states that where reporting is aligned to the financial year, the conversion figures applying for the majority of the financial year should be used. The conversion figures specify the "carbon intensity" of each activity that generates emissions, allowing the amount of "CO_2 equivalent" emissions to be determined. CO_2 equivalent emissions specify the amount of CO_2 that would have the same climate impact over 100 years as the emissions of all the greenhouse gases actually generated by each activity.

Calculation of gross and net emissions totals

Once the conversion factors have been used to generate a consistent measure of emissions from all activities, these emissions can simply be summed to generate the Council's gross emissions total.

BEIS guidance allows a net total to be reported in addition to the gross total. The net total is calculated by subtracting from the gross total emissions from elsewhere that the Council's activities have prevented or offset. Two such activities are potentially relevant; however, neither of these can be counted towards prevented or offset emissions and therefore no net total is included in this report.

- **Selling renewable electricity back to the grid**
  Four buildings have solar photovoltaic (PV) installations, and some of the electricity generated from these is sold back to the grid. However, the installations are owned and the electricity generated is sold by Portsmouth City Council, so this offsetting applies to the Portsmouth City Council emissions rather than the Gosport ones. The remaining electricity generated by the solar PV installations is reported below for information, since this is electricity that would otherwise have been purchased from the grid and therefore increased the gross emissions, but it does not offset any of the gross emissions actually generated.

- **Planting trees**
  The Council has been aiming to increase its tree planting rate. In particular a target was set on 11th September 2019 to plant 1000 trees in 1000 days (i.e. by 6th May 2022), and 2079 trees had been planted by the Council by the end of the 2020/21 planting season. Depending on survival rates, this roughly equates to between 3 tCO_2 and 30 tCO_2 being sequestered each year.[4] However, this has not been treated as offsetting emissions since it does not meet the BEIS "good quality" criteria for offset schemes (risks of carbon loss have not been assessed and managed, and there is no independent verification).

Results

Total emissions

The total location based emissions calculated for the 2020/21 financial year are **790 tCO_2eq**. Market based emissions were **599 tCO_2eq**. Location based emissions would have been 22 tCO_2eq higher without the solar PV installations, while market based emissions would have been 17 tCO_2eq higher.

This compares with emissions of 717 tCO_2eq in the 2019/20 financial year.[5] Since the Council did not use a renewable energy tariff during that year, the location based and market based reporting generated the same result. Emissions have therefore **increased by 10%** using location based reporting, while they have **fallen by 16%** using market based reporting.

Impact of covid-19

The covid-19 pandemic has resulted in several changes that have an influence on the Council's emissions. The most significant and clear-cut of these is the use of diesel generators to power the temporary homeless accommodation in Walpole Park car park, which was in place from April 2020 to June 2021. Emissions from the generators were 117 tCO_2eq in the 2020/21 financial year, so without this source, emissions would have decreased by 6% using location based reporting and by 33% using market based reporting.

There are two less significant differences from the 2019/20 emissions that may be related to covid-19. Firstly, electricity usage in the Town Hall decreased by 12.5%, resulting in a saving of 31 tCO_2eq under location based reporting (under market based reporting the use of renewable

[4] This is an approximate estimate of the average CO_2 sequestered per year over 100 years; the actual CO_2 absorbed in 2020/21 by trees planted in the last two years is likely to be considerably lower than this since CO_2 storage increases with age. Source for CO_2 sequestration rates based on age and species: https://www.treeplantation.com/tree-carbon-calculator.html [accessed 4/8/21].

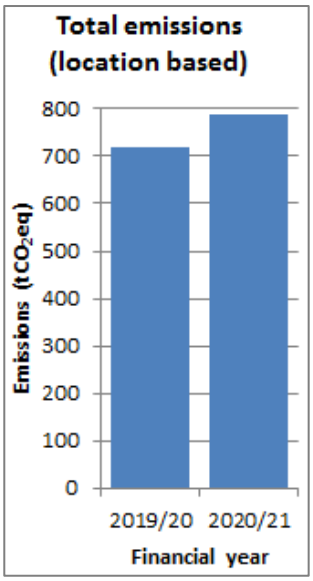
[5] Note that this total, and the breakdowns of the 2019/20 emissions by energy type and category, differ from the information reported in the Climate Change Strategy. This is due to a correction being applied to the 2019/20 data following clarification of the energy usage data provided by Portsmouth City Council.

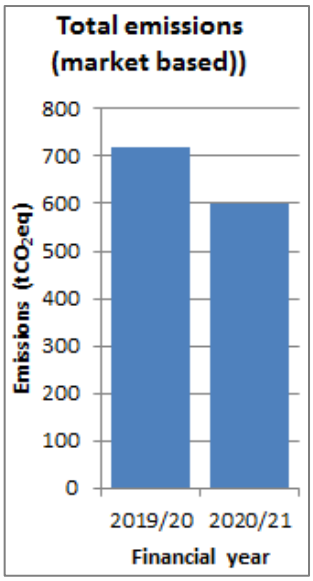
electricity saved a further 74 tCO_2eq). Secondly, electricity usage in social housing increased by 50%, resulting in an additional 39 tCO_2eq under location based reporting (under market based reporting emissions were 37 tCO_2eq lower due to the use of renewable electricity). While it is plausible that covid-19 was a factor in these changes, due to reduced use of the Town Hall and an increase in the time people were spending at home, it is not possible to state this definitively at present.

Progress towards achieving net zero target

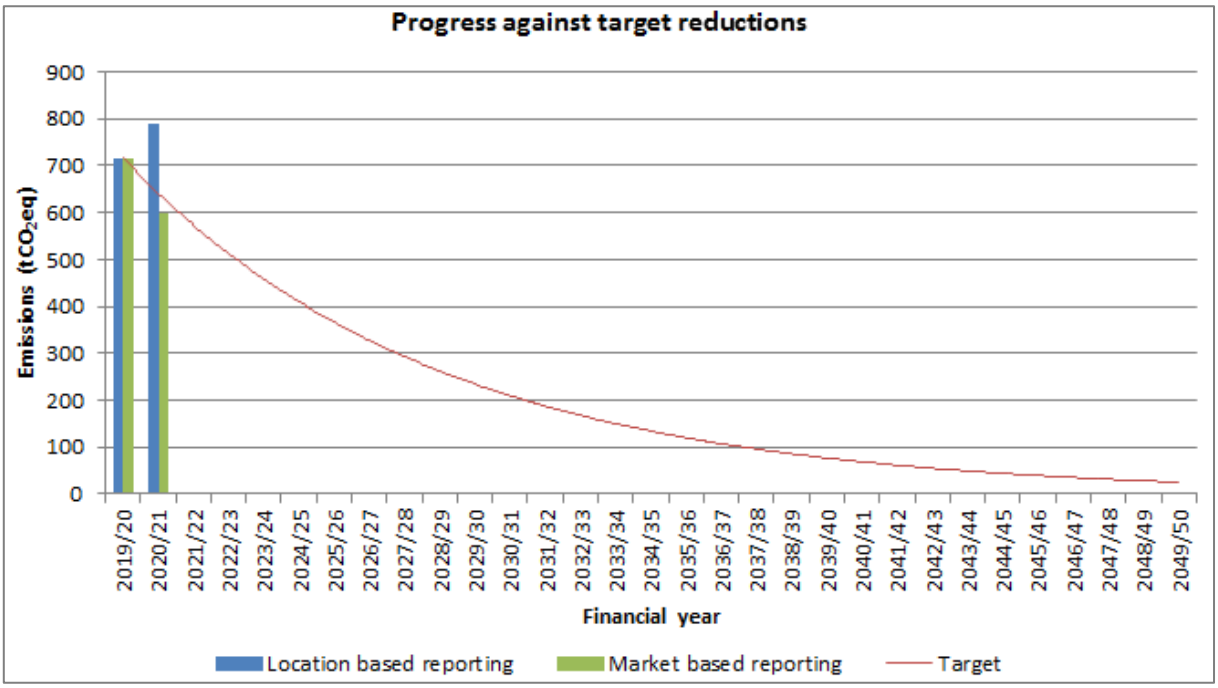
Target emissions for each year can be calculated by taking the 2019/20 financial year as a baseline and assuming that emissions must decrease by a fixed percentage each year until the 2049/50 financial year[6]. An acceptable level of residual emissions in 2050 must also be assumed, and 25 tCO_2eq has been chosen. This is based on 100 tCO_2eq being considered as a level of emissions that could be realistically offset (equivalent to approximately 5000 mature trees that would not otherwise have been present), and an estimated 25% of emissions being accounted for by the scope 1 and scope 2 emissions reported here. To reach 25 tCO_2eq in the 2049/50 financial year, scope 1 and scope 2 emissions need to reduce by 10% each year from 2019/20.

The graphs below show how the emissions for the 2020/21 financial year compare with the previous year and with this target.

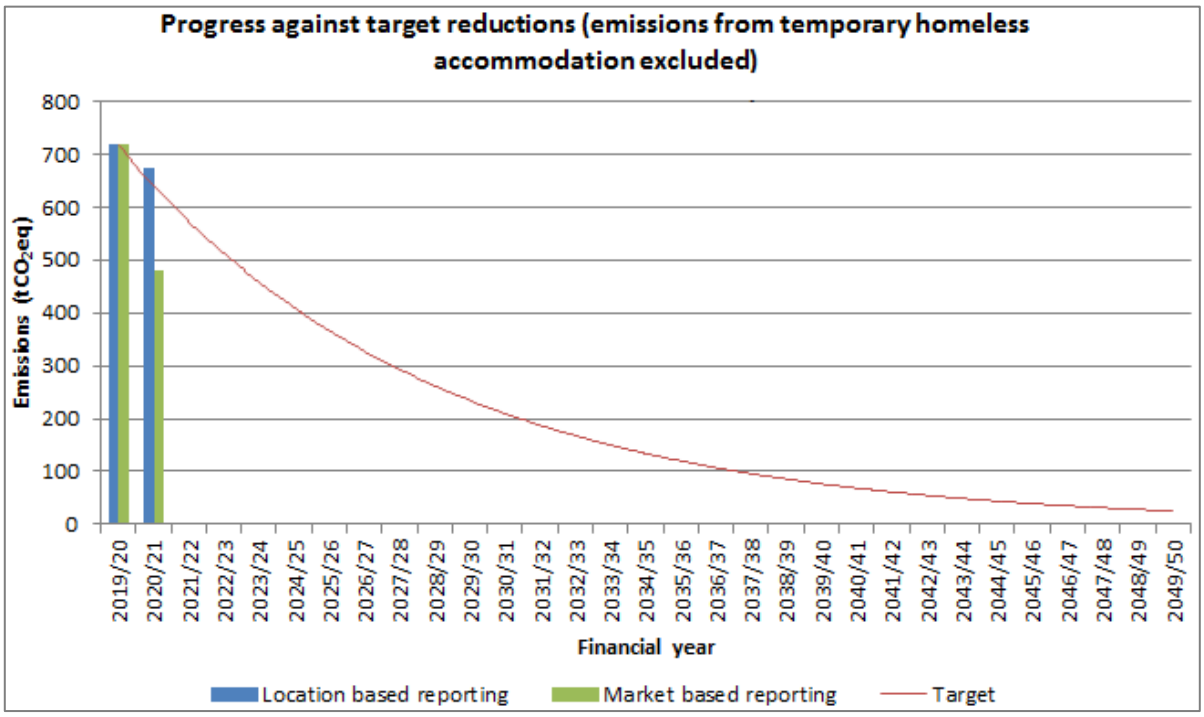




[6] This is considered preferable to setting targets based on a linear reduction, which would become harder to meet as time goes on. This is because the most significant measures are likely to be taken earlier, while at the same time reducing emissions by the same amount would require addressing ever greater proportions of the Council's activities.



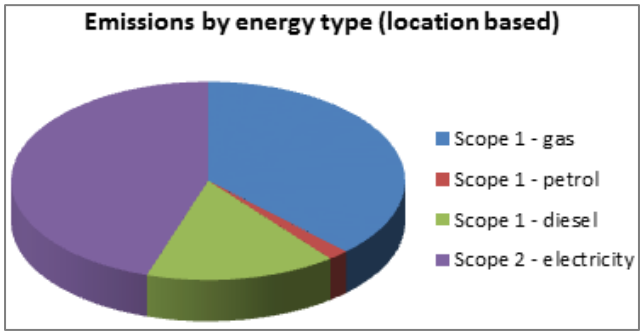
The emissions from the temporary homeless accommodation are not expected to repeated in future years (although will still have some impact on the 2021/22 emissions since some of this accommodation remained in place until the end of June 2021). Excluding these emissions from the 2021/22 data could therefore be considered to give a better indication of progress against the target, and this is shown below.

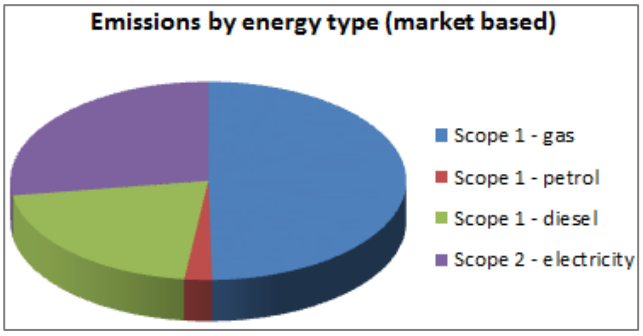


Analysis of emissions by energy type

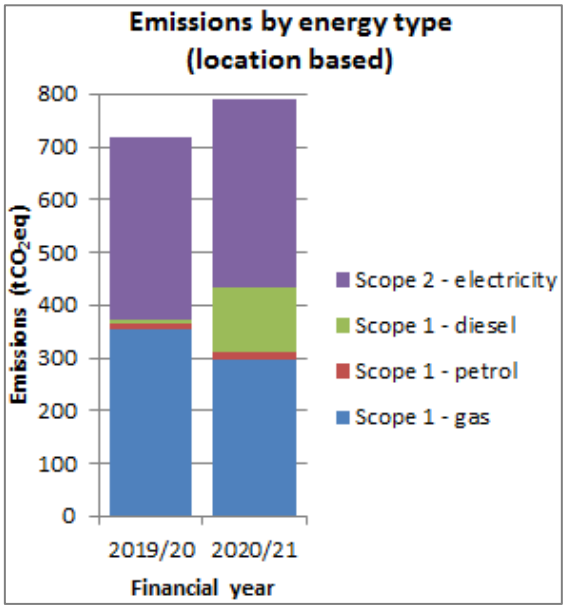
The contribution of each energy type used by the Council to the total 2020/21 emissions is shown below.

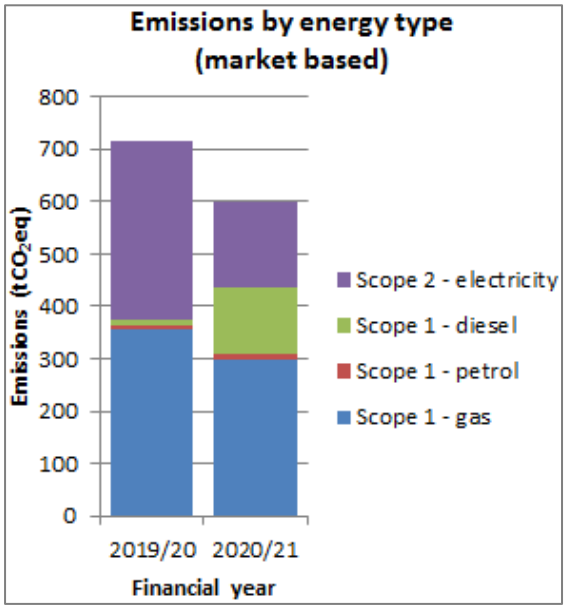
Energy type	Emissions (tCO_2eq)	
	Location based	Market based
Scope 1 - gas	297.456	297.456
Scope 1 - petrol	13.447	13.447
Scope 1 - diesel	123.713	123.713
Scope 2 - electricity	355.172	163.890
Total	**789.787**	**598.506**





The following graphs show how the contribution to the total emissions of each energy type has changed from the 2019/20 financial year.





The changes shown above are as follows.

- There has been a 16% decrease in the emissions from gas usage, from 356 tCO_2eq to 297 tCO_2eq.

- The emissions from petrol usage have increased from 9 tCO_2eq to 13 tCO_2eq. In percentage terms this is a significant increase (48%), but it does not have a substantial impact on the total emissions. Standard petrol sold in the UK is in the process of changing from 5% to 10% bioethanol, which will reduce emissions by approximately 2%.[7] It is expected that this change will be reflected in the carbon intensity conversion factor for petrol next year.

- Emissions from diesel usage have substantially increased. This is entirely due to the diesel generators used for the temporary homeless accommodation in Walpole Park car park, which are an emissions source that was not present in 2019/20. Emissions from diesel in 2019/20 were 8 tCO_2eq, which was entirely generated by Council vehicles. Emissions from diesel usage in Council vehicles in 2020/21 decreased by 15% to 7 tCO_2eq, but the diesel generators were responsible for an additional 117 tCO_2eq emissions.

- Scope 2 location based emissions from electricity usage have increased by 3%, from 344 tCO_2eq to 355 tCO_2eq. This reflects a 13% increase in electricity usage, whose impact is nearly cancelled out by the decrease in carbon intensity of the UK's electricity supply. Market based emissions from electricity usage have decreased by 52%, from 344 tCO_2eq to 164 tCO_2eq. This reflects the fact that a renewable tariff was in use for the last six months of the year, when electricity usage was highest due to winter heating requirements.

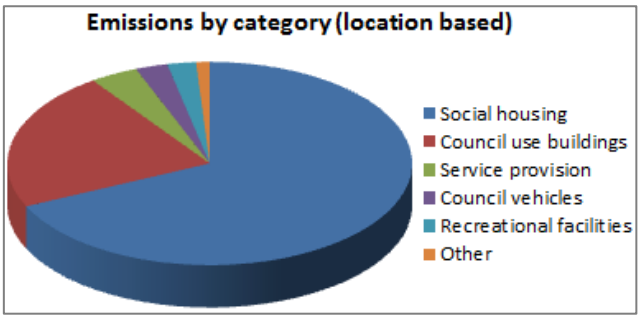
Analysis of emissions by category

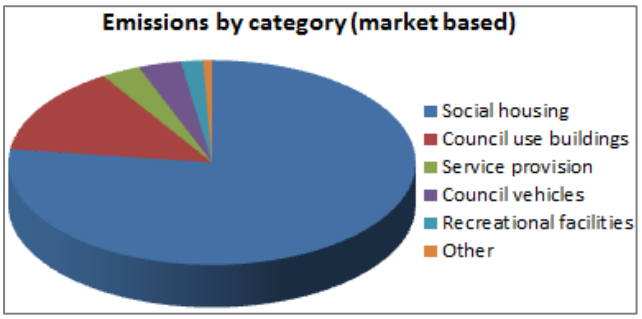
Summary

Each source of emissions has been assigned a category to help understand which Council activities are responsible for the most emissions and where there is therefore most scope to reduce emissions. The 2020/21 emissions in each category are shown below.

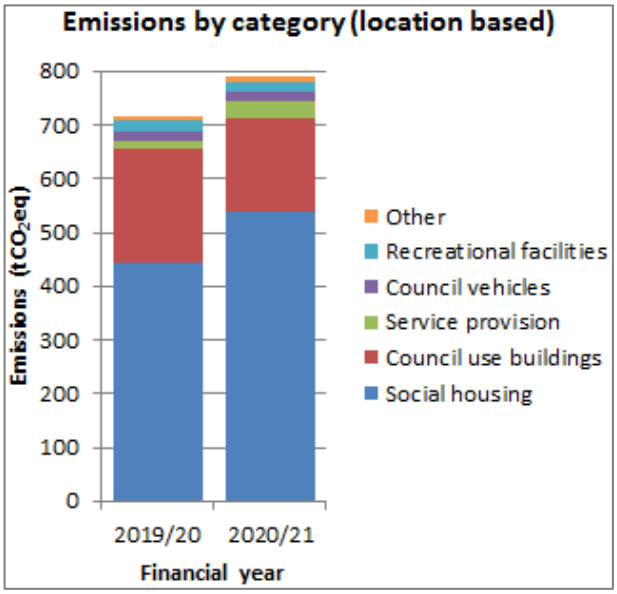
Category	Emissions (tCO_2eq)	
	Location based	Market based
Social housing	537.493	461.374
Council use buildings	174.940	83.373
Service provision	30.356	18.612
Council vehicles	20.330	20.330
Recreation	18.113	10.650
Other	8.555	4.168
Total	**789.787**	**598.506**

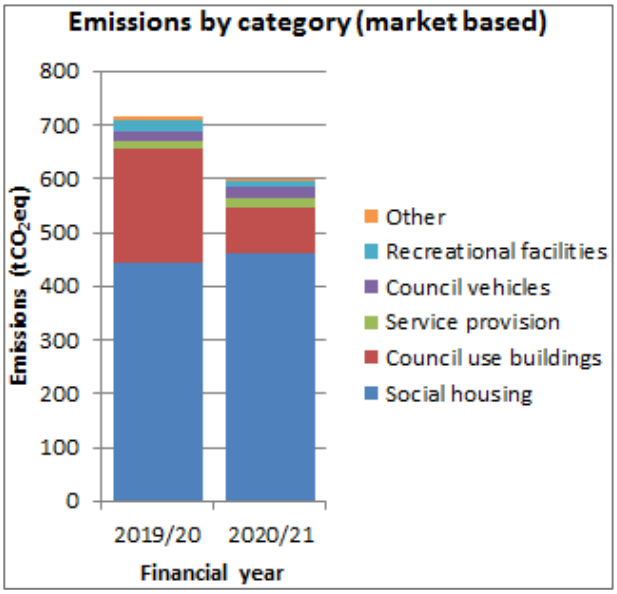
[7] Source: https://www.gov.uk/government/consultations/introducing-e10-petrol/outcome/introducing-e10-petrol-outcome-and-summary-of-responses [accessed 4/8/21]





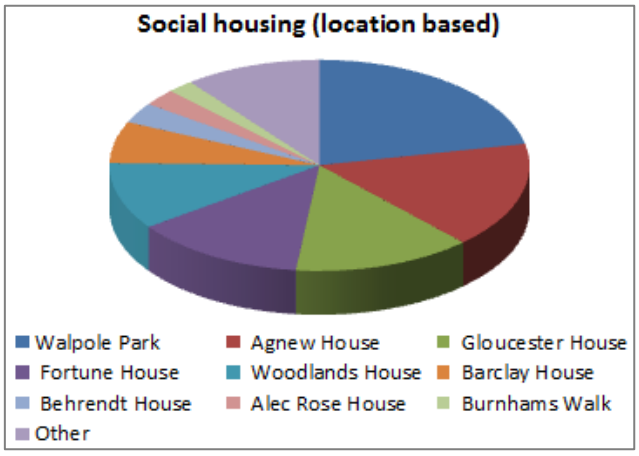
The following graphs show how the contribution to the total emissions of each category has changed from the 2019/20 financial year.

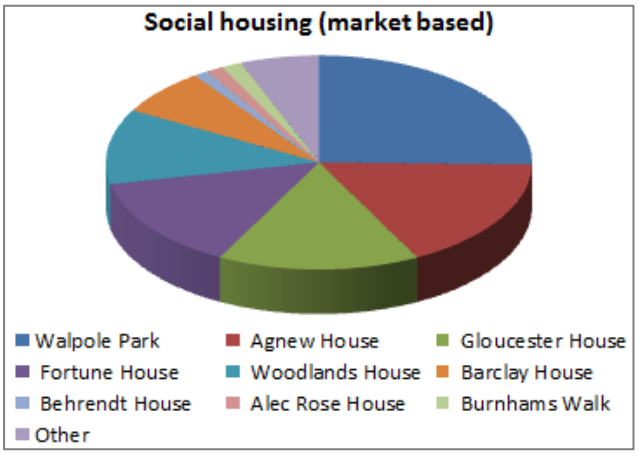




Social housing

Most of the Council's phase 1 and phase 2 emissions are from social housing, which contributes 68% of emissions using location based reporting, or 77% of emissions using market based reporting. The properties contributing most to this are shown below (Walpole Park refers to the temporary homeless accommodation in Walpole Park car park).





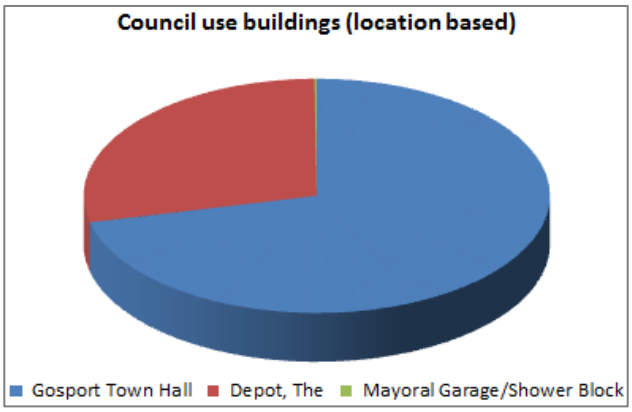
Three of these properties have solar PV installations which have provided zero-emission electricity that would otherwise have been taken from the grid. Under market based reporting, emissions would therefore have been greater from these properties if the solar PV installations had not been

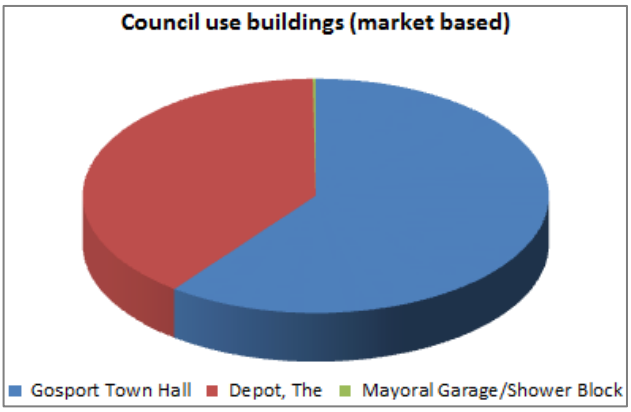
present, for the period before the Council switched to a renewable electricity tariff. Under location based reporting, emissions would have been greater for the whole year. These emissions savings due to the solar PV installations are detailed below.

Property	Actual emissions (tCO_2eq)		Additional emissions that would have been associated with electricity generated by solar PV installations, if this electricity had been taken from the grid instead (tCO_2eq)	
	Location based	Market based	Location based	Market based
Gloucester House	73.967	70.630	3.278	2.269
Fortune House	71.406	64.766	4.060	3.047
Woodlands House	55.082	52.374	10.566	9.142

Council use buildings

The next largest category is emissions from Council use buildings, accounting for 22% of emissions using location based reporting, or 14% of emissions using market based reporting. There are three such buildings: the Town Hall and the Depot, which include office space, and the mayoral garage and shower block. The proportion of emissions from each of these buildings is shown below.



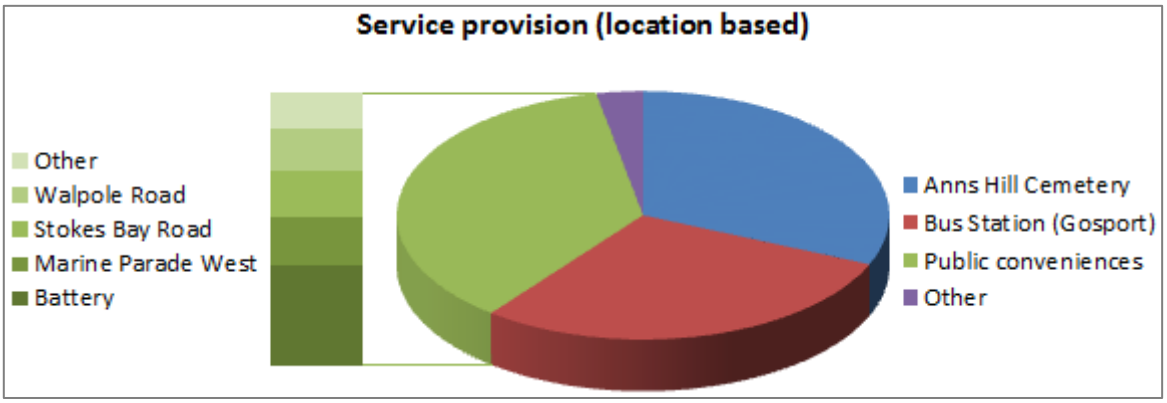


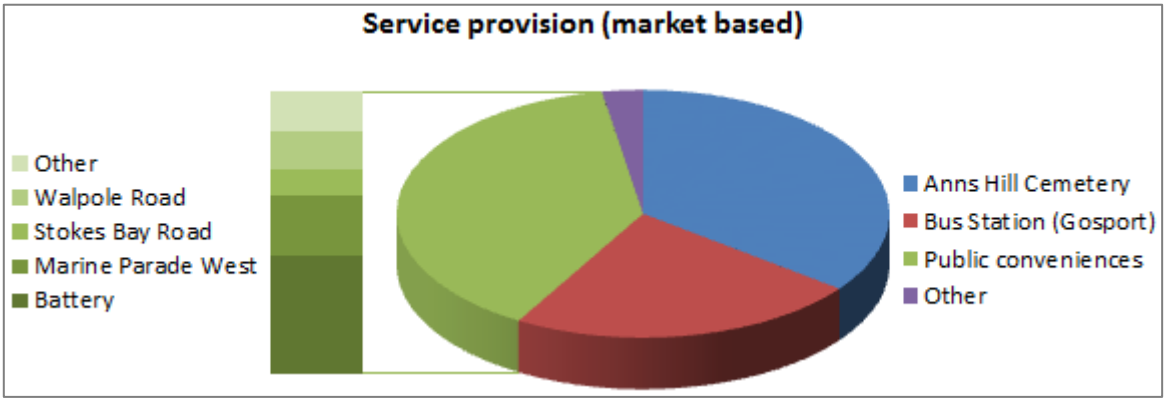
The Town Hall also has a solar PV installation, and the following table details the emissions savings resulting from this.

Reporting scheme	Actual emissions (tCO_2eq)	Additional emissions that would have been associated with electricity generated by solar PV installations, if this electricity had been taken from the grid instead (tCO_2eq)
Location based	124.818	4.331
Market based	50.328	3.490

Service provision

Service provision contributes 4% of emissions using location based reporting, or 3% of emissions using market based reporting. This category covers provision of essential services for which the Council is responsible, and the largest contributors to these emissions are shown below.

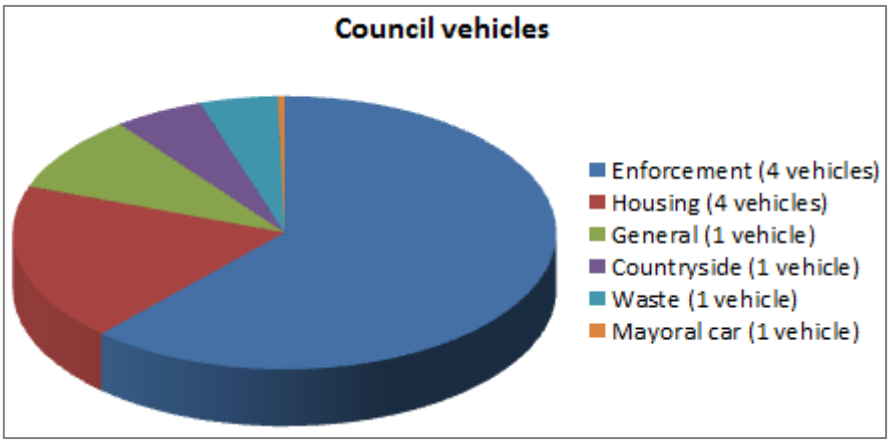




Council vehicles

Council vehicles account for approximately 3% of the Council's emissions in both the location based and market based reporting cases. Note that this only includes vehicles for which the Council purchases the fuel. Emissions from vehicles used by contractors to provide Council services come under scope 3 and are therefore not covered. Some of these, such as refuse collection vehicles, are typically high emitters of greenhouse gases.

Of the vehicles that contribute to scope 1 emissions, the proportion of emissions due to each category of vehicle usage is shown below. Since there are no emissions from electricity generation in this case, location based and market based figures are identical.



Recreational facilities

Provision of facilities for recreational purposes account for approximately 2% of the Council's emissions in both the location based and market based reporting cases, and the breakdown of these is shown below.