Net Zero Carbon Emissions Trajectory for Melton Borough Council

Report

Report produced in July 2022

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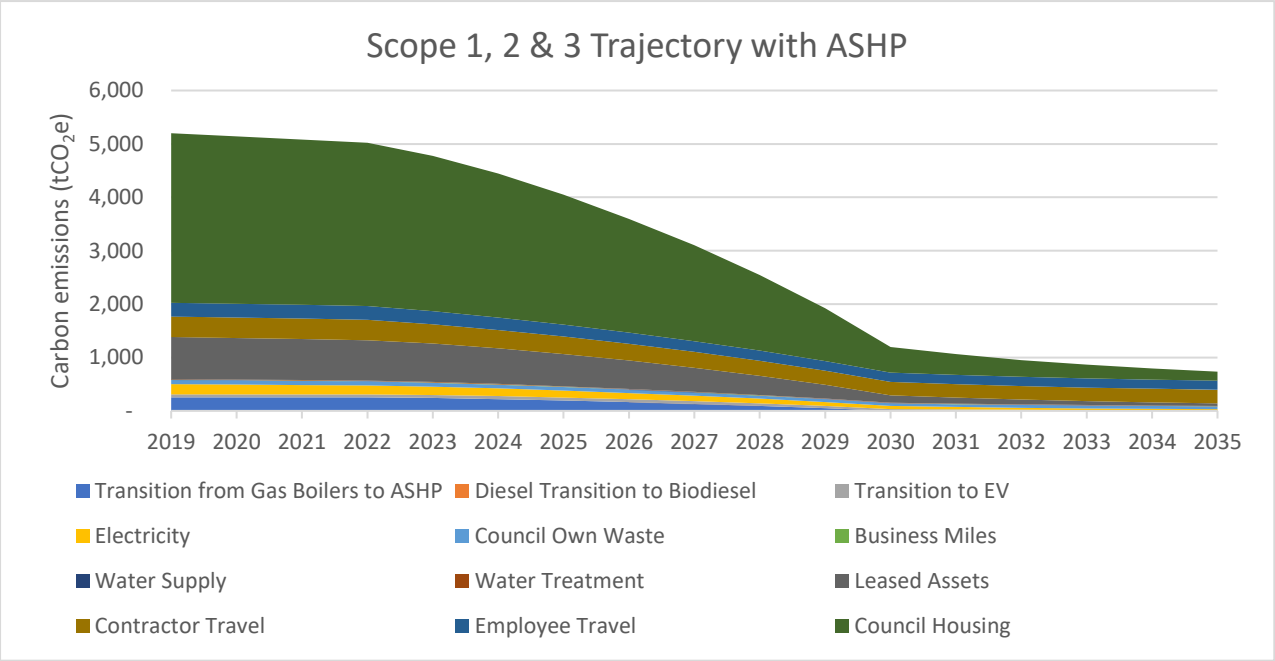
Executive Summary

This report shows calculations for the carbon emissions baseline of Melton Borough Council and an estimated projection of emissions after interventions are made with a net zero carbon target of 2030.

The trajectory below shows a projection of the Scope 1, 2 and known Scope 3 carbon emissions. The total emissions from all Scope 3 sources are not known to date.



This trajectory represents an overall saving of 4,001tCO_2e (77%) when comparing 2019 to 2030.

It is estimated that there will be 1,199tCO_2e from hard to reduce sources that will be unavoidable by 2030 that will need to be offset, and it is assumed that this can be offset through a land – based PV and a tree planting scheme.

It is estimated that a substantial financial budget will be required to reach net zero by being more energy efficient in buildings, installing air source heat pumps, generating power, transition to low emission vehicles and developing a tree planting scheme.

The Council should be able to achieve significant carbon and cost savings by reviewing its maintenance policies to specify highly efficient plant and services, and low emission vehicles, rather than replacing like-for-like. Changing policies to specify materials with low embodied carbon should also reduce Scope 3 emissions by considering the carbon life cycle cost in terms of the supply chain, operation and decommissioning.

Phoenix House and Parkside combined account for most of the emissions across the building estate, accounting for 90% of emissions from gas and 84% for electricity. Focussing on decarbonising these two buildings will have a significant impact on the total emissions produced by the Council.

The financial findings of this report do not take into account any future spending planned by the authority. For example, planned spending on the vehicle fleet over the next few years has not been included in our calculations. This should be borne in mind when considering the figures in the table titled ‘Estimated Forecast Capital Cost and Financial Savings from Initiatives including ASHP’ on page 29.

1. Melton Borough Council Net Zero Carbon Emissions

1.1 Introduction

Melton Borough Council declared a climate emergency in 2019 and explored the feasibility of being carbon neutral by 2030 and net zero carbon by 2050. Since that time the agenda has developed and there has been a requirement to clarify the terminology for the benefit of all involved. A detailed analysis of the Council's carbon emissions and a review of definitions means that the objectives have been realigned as follows:

"Melton Borough Council has a target to be net zero carbon through its own operations by 2030"

This includes Scope 1, 2 & 3 emissions although the Council acknowledges that there is a gap in the carbon footprint calculations due to missing data, which is primarily around the supply chain.

A "net zero" target refers to reaching net zero carbon emissions by the nominated year of 2030, as provisionally chosen by the Council, but differs from zero carbon, which requires no carbon to be emitted at all.

Net zero refers to balancing the amount of emitted greenhouse gases with the equivalent emissions that are either offset or sequestered through rewilding and tree planting or carbon capture and storage. It is much more beneficial to reduce carbon emissions initially and then offsetting techniques can be used for hard to reduce emissions.

The term "carbon neutral" is commonly taken to refer to switching to green energy tariffs only, without making other changes to operations such as those noted in this report. This approach does not fit with the spirit of the declaration made by the Council in 2019 and may leave the Council open to criticism.

This report provides the findings of the carbon footprint calculations for Melton Borough Council which can be used as a benchmark to record current emissions and to track performance against future emissions. The carbon footprint has been undertaken in accordance with best practise guidance by the Greenhouse Gas Protocol[1] and calculated using 2019 conversion factors for the carbon dioxide equivalent (CO_2e is explained further in Section 2.2) published by the Department for Business, Energy & Industrial Strategy (BEIS)[2].

[1] https://ghgprotocol.org/guidance-0

[2] https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

The carbon footprint is categorised into scopes, which cover:

Scope 1 (direct) emissions are from activities owned or controlled by the Council. Examples of Scope 1 emissions include emissions from combustion in council owned or controlled boilers, furnaces and vehicles.

Scope 2 (indirect) emissions are associated with purchased electricity, heat, steam and cooling. These indirect emissions are a consequence of the Council's energy use, but occur at sources that the Council do not own or control. Examples include grid supplied electricity and heat provided through a heat network.

Scope 3 (other indirect) emissions are a consequence of the Council's actions that occur at sources the Council do not own or control and are not classed as Scope 2 emissions. Examples of Scope 3 emissions include business travel by means not owned or controlled by the Council (grey fleet), disposing of the Council's own waste and purchased goods in the supply chain, etc.

2 Carbon Footprint

2.1 Carbon Reporting Boundaries

The organisational boundaries determine what emission are the responsibility of the Council or others. This can be based on who owns, operates, or exerts control over certain assets and can be based on financial or operational control. The buildings categorised under Scope 1 & 2 within this reporting are those where energy is purchased and consumed by the Council. The vehicles categorised under Scope 1 are vehicles that the Council own, lease and operate purely for the Council's own operations.

Scope 3 emissions are classified under 15 different categories as detailed under Appendix C. As Scope 3 emissions are under the influence of the Council, but not under its direct control, it can be difficult to obtain the necessary data to calculate the associated carbon emissions from some Scope 3 sources. One of the larger contributors to carbon emissions is purchased goods and services.

Emissions from assets the Council owns and leases to another entity, but does not operate, is included in Scope 3. An example of this is a leisure centre where the Council owns the building, but a separate leisure operator occupies and runs the building and pays the energy bills.

The financial control model is used in this reporting. To put it simply, if the Council pays for the energy bills then it is classified under Scope 1 and 2, but if the Council owns an asset and a third party pays the energy bills then this is classified under Scope 3.

A full list of the reported emissions is under Section 2.3. This represents a good data set for a Council, as it is not uncommon for councils to only have data available for electricity and gas.

There are sources that are missing from the reporting and the largest contributor is likely to be from purchased goods and services, which is generally very difficult to gather data and calculate emissions. This category includes all upstream (i.e. cradle-to-gate) emissions from the production of products purchased or acquired by the Council in the reporting year. Products include both goods (tangible products) and services (intangible products).

Cradle-to-gate emissions include all emissions that occur in the life cycle of purchased products, up to the point of receipt by the Council. Relevant purchases to the Council may include capital goods, such as office supplies, office furniture, computers, telephones, travel services, IT support, outsourced administrative functions, consulting services, janitorial, landscaping services, maintenance, repairs and operations.

The Council should set up procedures to record all emission sources related to its operations for future reporting.

2.2 Carbon Emissions

Appendix A is an Excel spreadsheet that shows a breakdown of the emissions by source. Appendix A shows a summary for emissions and separate tabs showing a breakdown for each source in 2019/20.

Emissions are calculated as carbon dioxide equivalent (CO_2e), which is a term used to combine the seven most threatening gases that have the highest Global Warming Potential. This includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and nitrogen trifluoride.

The carbon footprint has been calculated using the best data that was available to the Council during the reporting year and it is the Council's responsibility to confirm the accuracy.

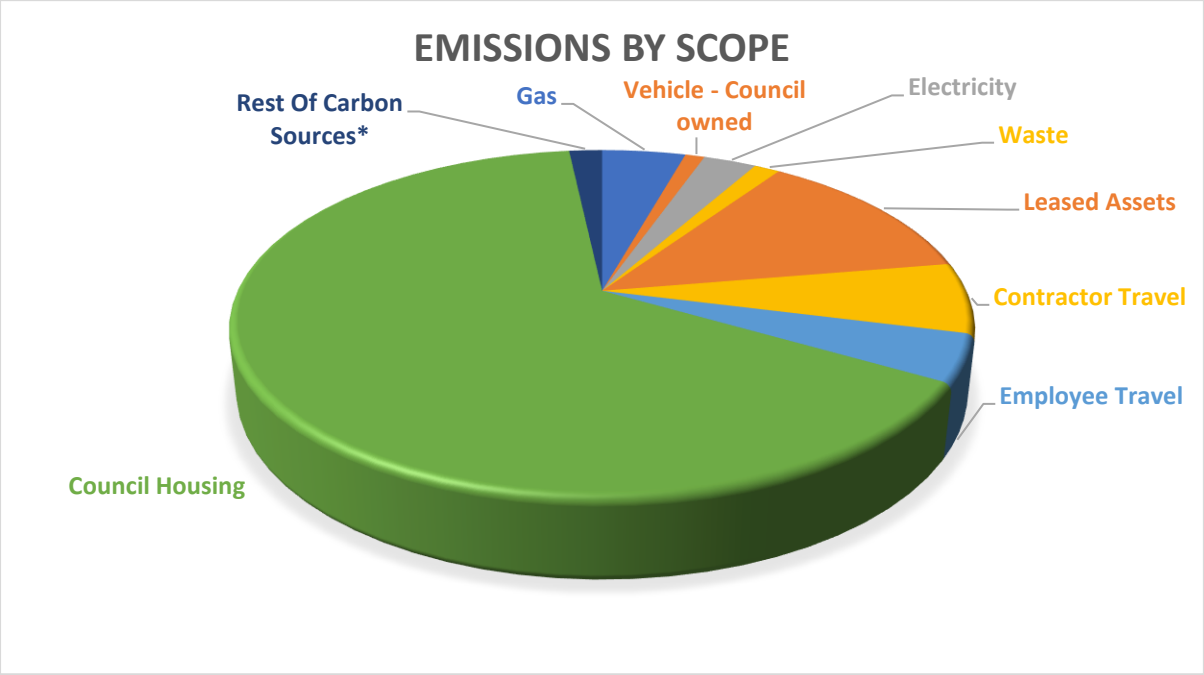
2.3 Emissions for 2019/20

Table 1: Scope 1, 2 & 3 carbon emissions by source for 2019/20

2019/20			
Emissions Source	**Scope**	**% Split**	**tCO2e**
Gas	1	4.4%	254
Fuel Oil	1	0.005%	0.3
Vehicle - Council owned	1	1.0%	59
Electricity	2	2.8%	161
Gas - WTT	3	0.6%	33
Fuel Oil - WTT	3	0.001%	0.1
Vehicle - Council owned - WTT	3	0.2%	14
Electricity - T&D	3	0.2%	14
Electricity - WTT	3	0.4%	24
Waste	3	1.3%	78
Business Travel by car	3	0.04%	2.6
Water Supply	3	0.07%	4.0
Water Treatment	3	0.14%	8.0
Leased Assets - Gas	3	8.7%	504
Leased Assets - Elec	3	4.2%	243
Contractor Travel	3	6.6%	383
Employee Travel	3	4.4%	257
Council Housing	3	64.9%	3,773
Total		**100%**	**5,812**

*See Section 3 or Glossary for a definition of T&D and WTT

Figure 2: Carbon emissions by source for 2019/20

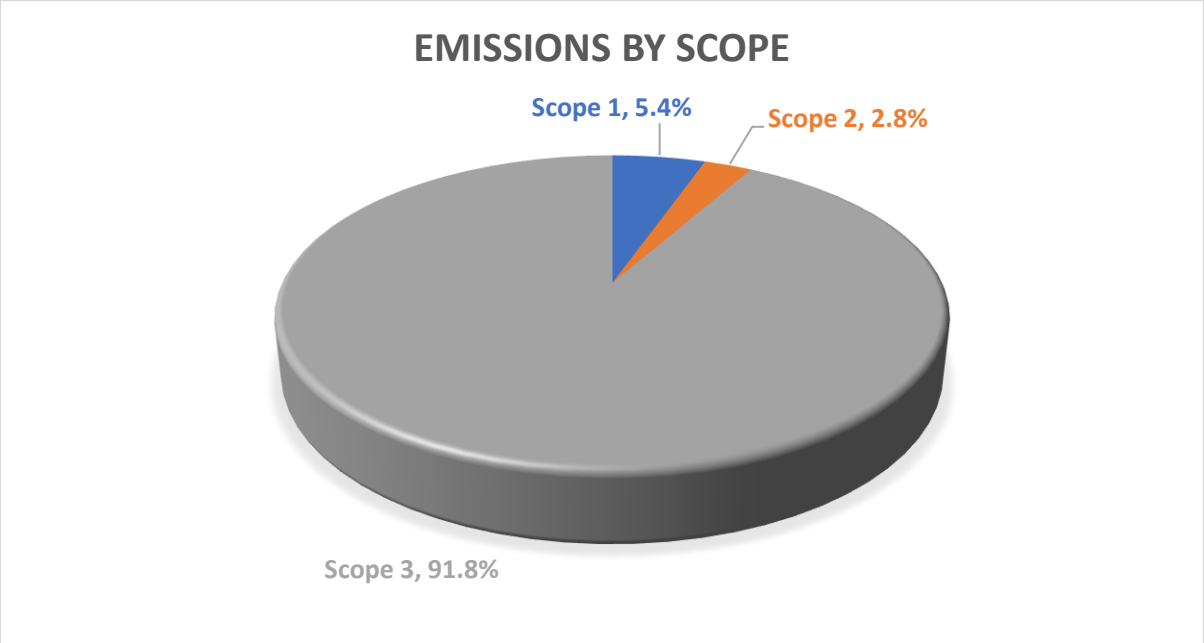


*Rest of Carbon Emissions represents sources that are less than 1% of total emissions. A breakdown is shown in Table 1

Table 2: Carbon emissions by scope for 2019/20

2019/20		
Emissions Source	**% Split**	**tCO2e**
Scope 1	5.4%	313
Scope 2	2.8%	161
Scope 3	91.8%	5,337
Total	**100%**	**5,812**

Figure 3: Carbon emissions by scope for 2019/20



3 Notes and Observations

3.1 Scope 1

Mains Gas

Gas usage data has been provided by the Council. Consumption data was not available for the Café and visitors Centre and 70 Snow Hill, and the consumption data was calculated by using CIBSE benchmark figures and the floor area provided for each property. This means that the consumption data is not actual but is representative for a building of this size and type.

Council Owned Vehicles

The Council owned vehicle data was split into two sections. One that contained data for individual vehicles and another that had overall data to include small vans and ride on mowers.

3.2 Scope 2

Electricity

Electricity usage data has been provided by the Council. Consumption data was not available for the Café and visitors Centre, 70 Snow Hill, 74 Snow Hill, Fairmead and Cemetery Workshop, and the consumption data was calculated by using CIBSE benchmark figures and the floor area provided for each property. This means that the consumption data is not actual but is representative for a building of this size and type.

3.3 Scope 3

Water

Consumption data provided included water supply volumes for most sites but not water treatment volumes. Water treatment volumes were calculated assuming that 95% of water supply is returned to the sewer. Most water suppliers charge the volume of water treatment as being 95% of the water supply volume. This assumes that 5% of the water supplied to a premises is consumed and 95% is returned to the sewer. It is recommended that the Council checks with the water providers to confirm the volume of water supplied and the volume for water treatment.

The data for many properties does not cover a whole year and the values have been calculated on a pro rata basis.

Data was provided for waste water treatment only for Mill Street and Chapel Street car parks and this is assumed to be for surface water runoff.

Emissions from water consumption is not included within the GHG Protocol, but emissions from wastewater are. Following the principle that as much data should be collected as possible, APSE Energy recommends that emissions from water should be included within the reporting for the Council as water consumption has associated carbon emissions and an environmental impact. Including water consumption helps to keep it on the environmental agenda and prioritise it with other categories by converting usage into a standardised unit of CO_2e.

Business Travel by Staff Owned Car

The data supplied for this section was of good quality showing the mileage and engine size for the petrol and diesel vehicles used for business travel. Some of the vehicles had an engine size of “2” and it was assumed that this was 2000. For the carbon calculations based on the size of the engine and fuel type the car will fit into either small, medium or large categories for the carbon coefficients. In future, methods should be developed to record all the business travel mileage and litres of fuel used, but also the make and model should also be recorded if possible.

Employee Travel

The data supplied only showed the total mileage of employee travel. The carbon coefficient used (petrol or diesel) was based on the proportion of cars used from the Business Travel section, this was then used with the total annual milage. In future, methods should be developed to record all the employee travel mileage, fuel type, make and model of individual vehicles.

Contractor Travel

The data supplied in this section was of good quality, showing the milage, volume of fuel used, fuel type and model and class of vehicle.

Waste

Waste data has been supplied by the Council for two main offices. In the future the Council should develop methods to record all waste streams from all sources.

Leased Assets

There are nine properties that data is available for which fall under the Leased Assets. These are assets that the Council will own, but a third party will occupy and manage the property including paying gas and electricity bills.

There are further leased assets that the Council own but data was not available. King Street Shop and Hartopp Road shop did not have consumption data available, the energy usage figures were calculated from the floor area and CIBSE energy benchmarks. The Council should set up process and procedures to request the energy data from lessees and update leased contracts to state that is a requirement of the leased contract to provide annual energy consumption data by the end of July annually so the Council can include it within its carbon reporting.

Council Housing

There are 1066 domestic properties that the council own that have been evaluated based on their Energy Performance Certificate (EPC) rating. In order to calculate the total emissions of these buildings, the following methodology was used. Firstly, emissions from all domestic properties in Melton was used for 2017 (this was the

most recent data available) from data published by BEIS[3]. This shows that 4.9% of all domestic properties are council owned dwellings. The national average rating for an EPC is 62 and the average EPC rating for Melton council housing is 66. The total council housing emissions were calculated based on apportioning the aforementioned data to give total carbon emissions of 3,773tCO_2e.

Well to Tank

Fuels have indirect Scope 3 emissions associated with the production, extraction, refining and transport of the fuel before their use known as Well-to-tank (WTT). WTT emissions have been recorded for:

- Electricity;
- Gas;
- Transmission and Distribution;
- Council Owned Vehicles.

Transmission and Distribution

Transmission and distribution (T&D) factors are used to report the Scope 3 emissions associated with grid losses (the energy loss that occurs in getting the electricity from the power plant to the organisations that purchase it).

Further Notes and Observations

Data from the Council shows that they are responsible for 15 electricity meters, which provides a reasonable representation of how many assets the Council operate. A review should be carried out of each asset to determine if the Council are responsible for paying the electricity and gas usage and taking ownership for the associated carbon emissions. It is not uncommon for assets to be sold, leased or decommissioned yet the Council continue to pay for the utilities. Likewise, the Council should check to confirm if they are responsible for more than 15 properties.

[3] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/812142/2005-17_UK_local_and_regional_CO2_emissions_tables.xlsx

4 Recommendations for gathering data going forward

4.1 Scope 1 and 2 Emissions

The Council should develop a procedure for gathering and storing its own data as it is made available. The benefit of this is that the carbon reporting process is streamlined and progress towards targets can be tracked.

4.2 Scope 3 Emissions

Scope 3 emissions can account for 70-80% of a council's total footprint (Carbon Trust), given the use of contractors for waste collection, construction, social services and other services.

Appendix C shows the 15 different categories of Scope 3 emissions and what data should be gathered to report on emissions in future years. Where applicable, the Council should develop policies/procedures to gather the data from third parties. This should be incorporated into the procurement process and contracts with suppliers.

It is discretionary for an organisation to report on Scope 3 emissions. It should be explained and documented in subsequent carbon reports if the Council is unable to obtain data for carbon sources as it is deemed financially impractical or not significant. The reporting principles should be based on:

- Relevance;
- Completeness;
- Consistency;
- Transparency;
- Accuracy.

Emissions data that should be improved in subsequent years includes waste. Policies should be put in place to start recording waste data. This could be through contractual changes i.e. waste contractor weighing and recording waste type, or the Council can measure its own waste. There are tracking sheets from WRAP[4] to monitor waste streams and these could be used in the short term until the waste contractor can record it.

Purchased goods and services could also be included under Scope 3 as this will represent a high level of emissions down the supply chain. However, obtaining this data from third parties may prove difficult and the Council should assess what relevant goods and services could be recorded in subsequent years.

[4] https://wrap.org.uk/

5 Net Zero Carbon Pathway Methodology – Scope 1 and 2

A “net zero” target refers to reaching net zero carbon emissions by the nominated year of 2030, as provisionally chosen by the Council, but differs from zero carbon, which requires no carbon to be emitted at all.

Net-zero refers to balancing the amount of emitted greenhouse gases with the equivalent emissions that are either offset or sequestered through rewilding and tree planting or carbon capture and storage. It is much more beneficial to reduce carbon emissions and then offsetting techniques can be used for hard to reduce emissions.

The section below shows some assumptions made in forecasting the net zero trajectory for Scope 1 and 2:

5.1 Energy Efficiency

Appendix B shows generic measures that could be taken to reduce energy usage from the 2019/20 baseline emissions. **This is a desktop assessment based on the consumption data and typical saving initiatives and is not based on site survey information. Estimated energy savings and forecast capital costs shown are for representative purposes to give an illustrative outcome and should not be used for budgeting purposes.**

The trajectory and savings detailed in Appendix B can be used as a KPI to track performance of reducing emissions against the 2019/20 baseline year.

The Council should be able to achieve significant carbon and cost savings by reviewing its maintenance policies to specify highly efficient plant and services, and low emission vehicles, rather than replacing like-for-like. Changing policies to specify materials with low embodied carbon should also reduce Scope 3 emissions by considering the carbon life cycle cost in terms of the supply chain, operation and decommissioning.

It is recommended that a detailed audit and feasibility study is carried out on all assets to determine the site-specific initiatives. This will provide an indication of the realistic interventions that could be provided and the likely cost savings, capital cost and carbon savings. The trajectory should be treated as a live document and updated once more accurate information is available following site surveys.

The following assumptions have been made which can be updated once more information is available:

- future CO_2 emissions and tariff rates have been taken from the Treasury Green Book supplementary appraisal guidance on valuing energy use and greenhouse gas (GHG) emissions published by BEIS[5]. These emission factors include transmission and distribution losses, including significant

[5] https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

losses due to power station inefficiency meaning that the emissions factors differ slightly to those calculated in Section 2;
- BEIS have not published future CO_2 emission factors for natural gas. Although it is likely that the carbon emissions factor of gas will decrease as non-fossil fuel gases are injected into the grid, such as hydrogen, the applied emissions factor of gas in this pathway was constant for each year;
- the energy costs are calculated using the retail fuel price which includes the Climate Change Levy but excludes standing charges that are not directly impacted by consumption fluctuations;
- the intervention capital cost is calculated by multiplying the typical payback of the intervention by the annual energy cost savings, with the exception of heat pumps which is explained later;
- not all interventions are applicable to each site e.g. replacement lighting is the only intervention that is assumed in car parks; and no savings are projected on certain assets such as door entry or CCTV;
- the pathway is based on current technology available today and assumes that all interventions could be delivered by 2030.

5.2 Interventions for Reducing Gas usage (Heat)

Generic interventions for heating (gas usage) include:

Intervention	Saving on Heat Demand	Payback in Years	Detail
More efficient plant	20%	8	Could include more efficient boilers
Controls	15%	5	Could include a new or optimised Building Management System (BMS) for larger sites and controllers and Thermostatic Radiator Valves (TRVs) for smaller sites
Insulation	15%	10	Could include building fabric insulation, draught proofing, pool cover and pipework insulation
Other	15%	5	Could include more efficient heat emitters, heat recovery and distribution improvements

It should be noted that savings from these interventions have been calculated concurrently rather than independently i.e. each intervention reduces the heat demand following on from the previous intervention. For example:

- 100kWh less 20% saving from more efficient plant = 80kWh >
- 80kWh less 15% saving from controls = 68kWh >
- 68kWh less 15% saving from insulation = 58kWh >

- 58kWh less 15% saving from ‘other’ = 49kWh
- Total reduction = 51%

5.3 Heat Pumps

Using heat pumps is a good initiative for heating systems because the carbon factor of electricity will reduce as the grid is decarbonised; and due to their efficiency and Coefficient of Performance (COP). For a heat pump, a COP value of 3 means that 1kW of electric energy is needed to generate 3kW of heat.

Replacing gas boilers with heat pumps can be very expensive. This is because the existing boilers distribute heat at around 80^{o}C and heat pumps distribute heat at around 50^{o}C. It is most likely that an Air Source Heat Pump (ASHP) installation would require design, high levels of insulation, low levels of air infiltration, controls, an external location for plant and possible upgrade of emitters and pipework. In most cases, it is assumed that the cost to retrofit an existing site with a heat pump and the associated infrastructure would be disproportionate compared to the benefits unless financial incentives are used such as the Renewable Heat Incentive or grant funding as with the Public Sector Decarbonisation Scheme.

Heat pumps will also increase the building’s electricity demand. This could be offset by reducing the electricity usage through other methods, such as LED lighting, but in most cases the overall electricity consumption is likely to increase. An investigation is required to review the buildings Maximum Demand, Maximum Import Capacity, and new electrical load to determine if a larger electrical incoming supply is required. The Distribution Network Operator should also be contacted to discuss any restrictions on the grid in the local area.

A detailed feasibility study is required for each asset to review low carbon heating viability.

It is very difficult to estimate the capital cost for heat pumps. A Ground Source Heat Pump (GSHP) is more efficient than an Air Source Heat Pump (ASHP) but is generally much more expensive as it involves significant ground works to bury the slinkies. The costs are also heavily affected by the heat emitters as it is likely that the radiators and pipework will need to be replaced at a high cost, plus the cost to increase the electrical supply can be very high, but these elements are not normally known without a detailed investigation.

For the purpose of providing a suggestive capital cost for heat pumps, we have compared costs of ASHP from previous projects based on kWh usage and building type and apportioned appropriately

It is likely that changes in technology will mean that options for more low carbon heating systems will be available by 2030.

5.3.1 Air Source Heat Pumps

The trajectory has been produced assuming that all gas boilers are replaced with an ASHP. This is because the removal of gas boilers will have the greatest impact to reduce future carbon emissions, however this replacement programme will be one of the greatest challenges. There are other low carbon technologies available that can provide space heating but an ASHP has been modelled in this trajectory as it is likely to be the most suitable technology in most buildings. However, it is not a case of 'one size fits all'. To determine the best solution for each building a site-specific feasibility study is required.

Reasons ASHPs are focussed on more than other technologies include:

- Ground Source Heat Pump (GSHP) / Water Source Heat Pump (WSHP) – These are generally much more efficient than ASHP and have a greater Seasonal Coefficient of Performance meaning that they will be cheaper to run, particularly in periods of very cold weather. However, they are typically much more expensive to install and only suitable if the building is near a suitable body of water (WSHP) or a large area of land (GSHP).
- Biomass boilers – Biomass boilers are notorious for being high maintenance and failures. They are also not recommended in built up areas due to the particulates that are released.
- Hydrogen – This is not currently commercially available but could be an option in the future.
- Gas boilers – The Government has announced that it plans to end the purchase of new gas boilers (date to be confirmed) meaning that an alternative heat source will have to be installed at some point. The highest carbon savings that could be achieved is to remove the use of gas boilers.
- Electric boilers – This could be viable for high temperature systems, but heat pumps are 3 to 5 times more efficient
- Hybrid gas boilers and heat pumps – This option could be considered for resilience, back up and to reach higher flow temperatures. However, BEIS have announced that funding will not be released under the Public Sector Decarbonisation Scheme if a hybrid system is considered. This is because the gas boiler is still used which means that a site is not 'decarbonised'.

5.4 Interventions for Reducing Electricity Usage

Generic interventions for electricity include:

Intervention	Saving on Electricity Usage	Payback in Years	Proportion of building services	Apportioned saving across whole building	Detail
LED Lighting and Control	60%	6	33%	20%	Replace existing luminaires with LED & automatic control
Controls for Heating, Ventilation and Air Conditioning (HVAC)	15%	5	41%	6%	Controlling building services with a BMS
Office Equipment	15%	5	15%	2%	Replacing aging equipment with more efficient equipment
Other	15%	5	11%	2%	Could include variable speed drives, motors, hand dryers

*Building information sourced from the Chartered Institute of Building Services Engineers (CIBSE)

Savings from these interventions have been calculated independently from the total electricity usage and their estimated proportion to building services e.g. lighting is assumed to account for 33% of all electricity usage in a building and a potential saving of 60% could be achieved from installing LED lighting and control which leads to an apportioned whole building saving of 20%.

A change in policies to upgrade existing building services to the most efficient option through planned maintenance, and upgrade fossil fuel vehicles to low emission vehicles when they are due to be replaced, will impact the action plan significantly.

5.5 Solar Panels on Buildings

The net zero trajectory model assumes that 200kWp of PV could be installed by 2030 on council buildings. As the Council has around 15 buildings it would be assumed that PV would be suitable for more buildings and it is recommended to carry out a detailed feasibility study across the estate to review the suitability of buildings.

5.6 Project Phasing

Projects have been programmed to start in 2023 and end by 2030, with the delivery of projects ramping up each year. This is shown in the table below:

	2023	2024	2025	2026	2027	2028	2029	2030
Percentage of Projects Delivered Per Year	5%	8%	10%	12%	12%	13%	17%	20%

There is a draft plan to ban the sale of all new petrol and diesel vehicles by 2030, so it is possible that the transition away from fossil fuel vehicles may happen sooner.

6 Net Zero Carbon Pathway Methodology – Scope 3

The section below shows some assumptions made in forecasting the net zero trajectory for Scope 3:

6.1 Solar Panels on Land (Carbon Offset)

The trajectory assumes that 500kWp land-based PV has been installed which would count towards carbon offsetting, this could be done in an open space such as grassland or a car park canopy. This is considered a carbon offset as it is assumed that the system will connect directly to the electricity grid rather than connect directly to council owned buildings through a private wire.

The amount of available land for PV is unknown at this stage. It is recommended to carry out a detailed feasibility study to determine the amount of generation that could be possible via land-based PV.

6.2 Council's own Waste

The Council's waste accounts for 1.5% of the total emissions and 78tCO_2e.

It is recommended that a detailed analysis of the council's waste management is undertaken and that less waste goes to landfill as this is where a large proportion of the emissions comes from.

The model assumes that emissions from the Council's waste will reduce by 5% per year annually up to 2030.

6.3 Business Travel Car

The business travel via car accounts for 0.1% of the total emissions and 2.6tCO_2e.

The individual business milage of each car is very small with over 200 having travelled under 20 miles. It is recommended that a sense check be carried out to make sure that this is the full business milage of individual vehicles.

This model assumes that the emissions from business travel will reduce by 5% per year annually up to 2030.

6.4 Contractor Travel

Contractor travel accounts for 7.3% of the total emissions and 383tCO_2e.

The recording of this data is good as it shows the make, model mileage and fuel volume. This makes it easier to track performance going forward.

This model assumes that the emissions from contractor travel will reduce by 5% per year annually up to 2030

6.5 Employee Travel

Employee travel accounts for 5.0% of total emissions and 257tCO_2e.

It has been assumed that the total mileage is for car travel and that the split of cars is the same as those in the 'business travel car' section. As all the mileage is in one row it is impossible to determine what the actual split of vehicles is. It is therefore

recommended to improve the method of data recording so that the makes and models of individual vehicles are shown and modes of transport.

This model assumes that the emissions from employee travel will reduce by 5% per year annually up to 2030.

6.6 Water Supply and Wastewater

Water supply and wastewater combined account for 0.2% of the total emissions and 12tCO_2e. However, simple measures can be taken to reduce water usage and cost such as installing low flow appliances and fixing leaks.

It is recommended to enter a consolidated water contract so that all supplies are on a group contract for both supply and wastewater. Conditions of the contract could be that Automatic Meter Readers (AMR) are installed which will improve the accuracy of billing and can also be configured to identify leaks quickly.

It has been assumed that emissions from water supply and wastewater will reduce by 5% annually up to 2030.

6.7 Leased Assets

Leased Assets account for 13% of the total emissions and 791tCO_2e. The methodology to reduce emissions from leased assets was calculated using the same methodology in Section 5.2 – Interventions for reducing gas usage (Heat) and 5.3 – Interventions for Reducing Electricity Usage.

6.8 Council Housing

District emissions data was taken from the UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2017[6], and allowed us to get a value of Melton's district emissions from all domestic properties (the emissions are from 2017 data as this was the most recent data available). The number of council owned properties was apportioned against the total number of domestic properties in the district to get an estimate of the emissions from council owned properties. These values were then scaled up or down based on the average EPC rating of Melton against the UK average to get a corrected value of the emissions (this method was also used to correct the values for an improved EPC rating and therefore produce a trajectory report).

The total kWh values were gathered by using the district emissions calculated above and dividing by the relevant CO_2e carbon coefficient for 2017. The savings from gas and electricity were determined and weighted based on dwelling type, the size of dwelling (bedroom number) and the current EPC rating of the property. Larger dwellings like houses with lower EPC ratings had a weighted average that would allow for greater kWh savings. The cost for improvements also followed a similar methodology based on dwelling type and EPC rating apportioned based on their

[6] https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics

weighted average. The cost for ASHPs has been left as £10,000 as it's stated that the average cost to install an ASHP in a domestic property is £7,000 - £13,000[7]

The method to improve the efficiency of properties assumed that all properties with an EPC rating below 80 would require improvements to push its rating up to 80. The savings was based on the building's current kWh usage, (e.g. if a building had an EPC rating of 50 and the desired was 80, with improvements the kWh savings would be 30% for both gas and electricity).

[7] https://energysavingtrust.org.uk/advice/air-source-heat-pumps/

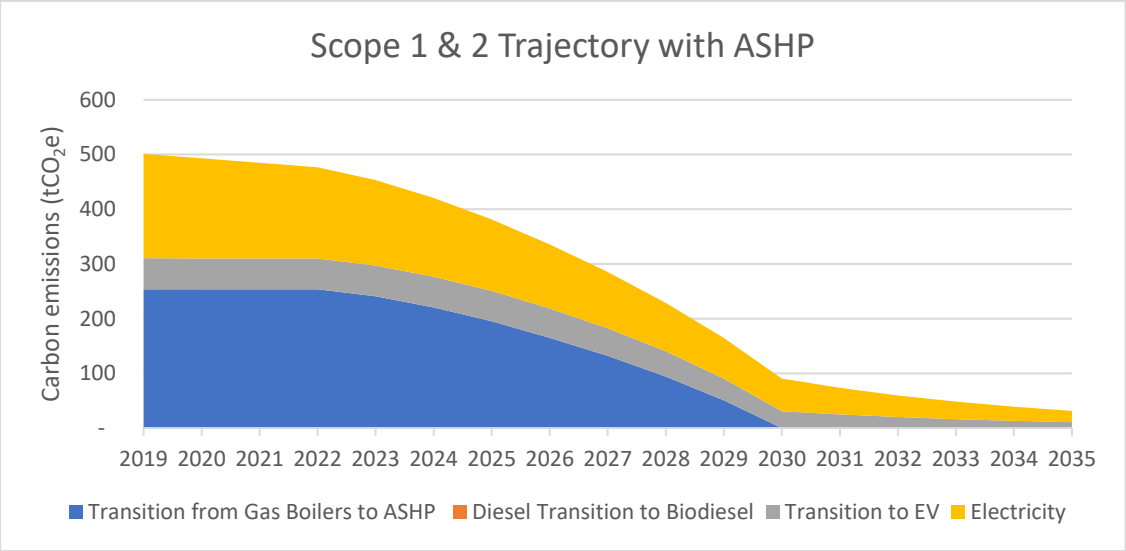
7 Net Zero Trajectory to 2030

Future emissions data was taken from the Treasury Green Book supplementary appraisal guidance on valuing energy use and greenhouse gas (GHG) emissions[8].

A breakdown of the year-on-year carbon savings can be found in Appendix B.

The graph below shows the Scope 1 and 2 carbon emission trajectory if the Council improved energy efficiency, replaced the boilers within the corporate estate with ASHP and transition to electric vehicles.

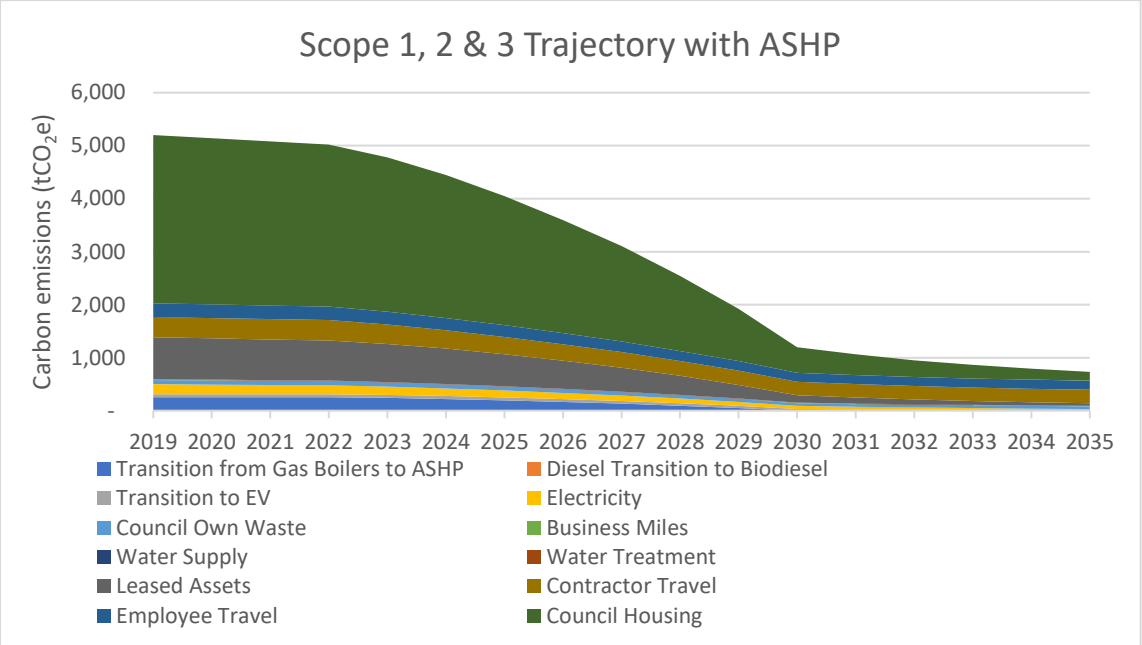
Carbon Emissions Trajectory 2020 to 2035 with ASHP



The graph above shows the carbon savings when installing heat pumps and removing gas boilers entirely by 2030. This is a carbon saving of 77% compared to 2019/20 if replacing gas boilers with ASHP.

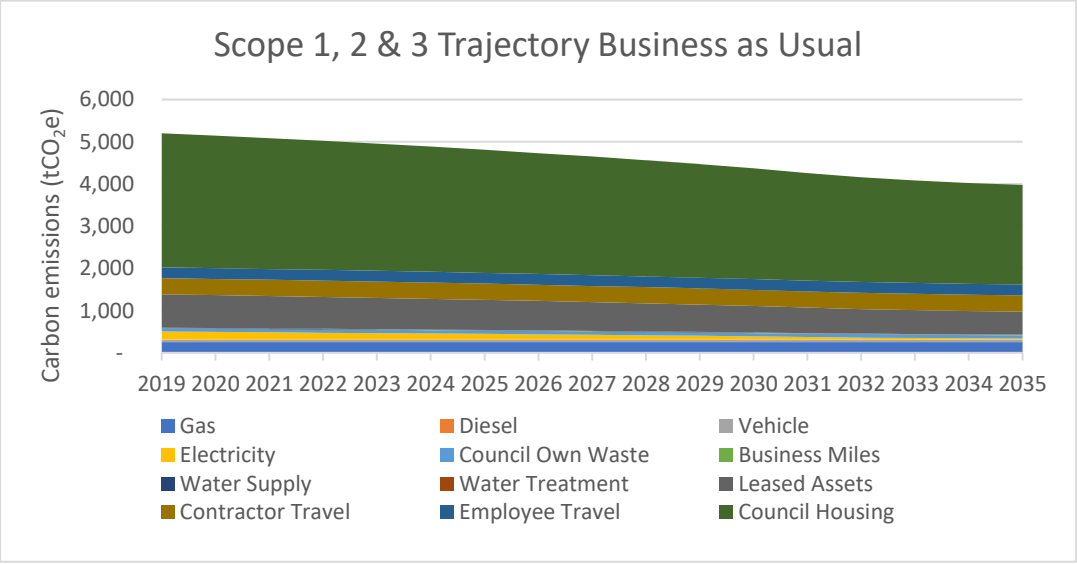
[8] https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

Carbon Emissions Trajectory 2020 to 2035 with ASHP for Scope 1, 2 & 3



The trajectory in the graph above shows that there are 1,199tCO2e that are unavoidable up to 2030 if boilers are replaced with ASHP. This is the amount of carbon that will need to be offset to balance the emissions that cannot directly be removed based on current technology and within a reasonable budget.

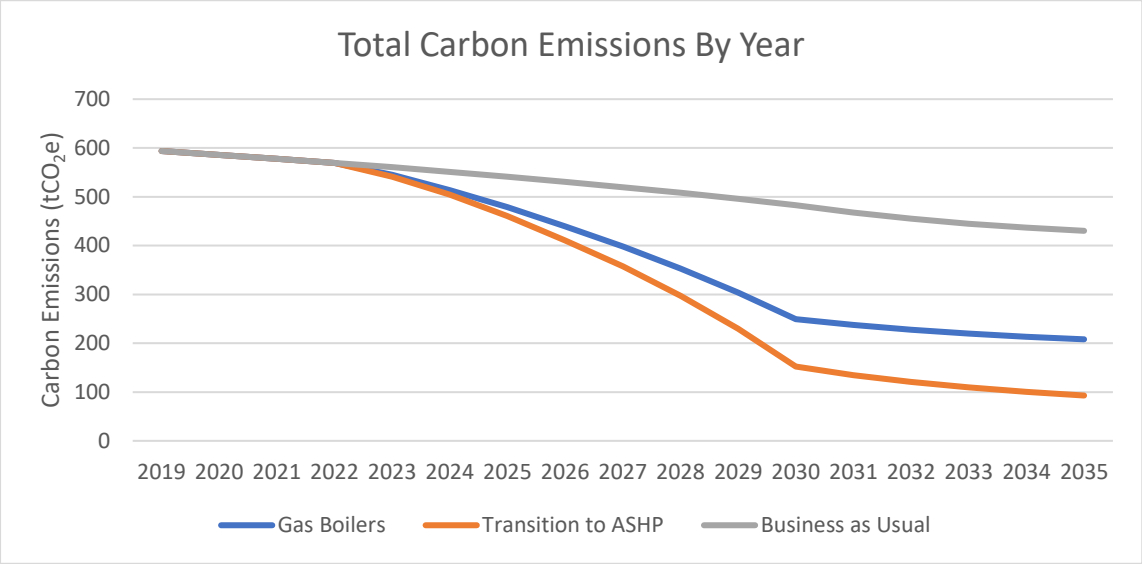
Business as Usual Carbon Emissions Trajectory 2020 to 2035 with No Interventions



The graph above shows the trajectory if no interventions were delivered, and the amount of energy used by the Council is the same across the term. There is a decrease in electricity carbon emissions as the grid decarbonises which is shown in electricity, leased assets and council housing emissions, but emissions from other sources barely change. By doing nothing, the carbon emissions in 2030 will be 4,371tCO2e.

7.1 Boiler vs. Heat Pumps

Carbon Emissions Trajectory 2019 to 2035 comparing Heating by Gas Boilers and ASHP Emissions



The ”Transition to ASHP” line in the graph above includes those interventions to improve efficiencies by improving controls and insulation and replacing existing gas boilers with ASHPs. The graph shows that there is a significant reduction in emissions if all boilers are replaced with heat pumps.

It is therefore the recommendation that all boilers are replaced with heat pumps.

7.2 Offsetting when Installing ASHP

A carbon offset is a reduction in emissions of CO_2e made to compensate for emissions made elsewhere. There are several ways of offsetting carbon emissions such as carbon capture and storage however, this is not deemed financially or technically feasible to the Council. More typical options available to the Council to directly offset emissions include renewable energy generation projects and rewilding/tree planting. However, the effectiveness of tree planting to quickly offset emissions can be questioned as it can take many decades for trees to reach maturity.

It is assumed that solar PV could be placed on land with a generation capacity of approximately 500kWp generating 475MWh of electricity that feeds directly into the electricity grid. This could include open space, car parks, etc.

A 500kWp system would have a capital cost of approximately £450,000 and would offset 60tCO_2e per year by 2030 and 21tCO_2e per year by 2035. This demonstrates that the carbon offset benefits of a ‘solar farm’ decrease as the grid decarbonises.

The installation of 500kWp PV would leave 1,139tCO_2e of unavoidable emissions by 2030 that will need to be offset. The Woodland Trust states that it costs £25 to offset

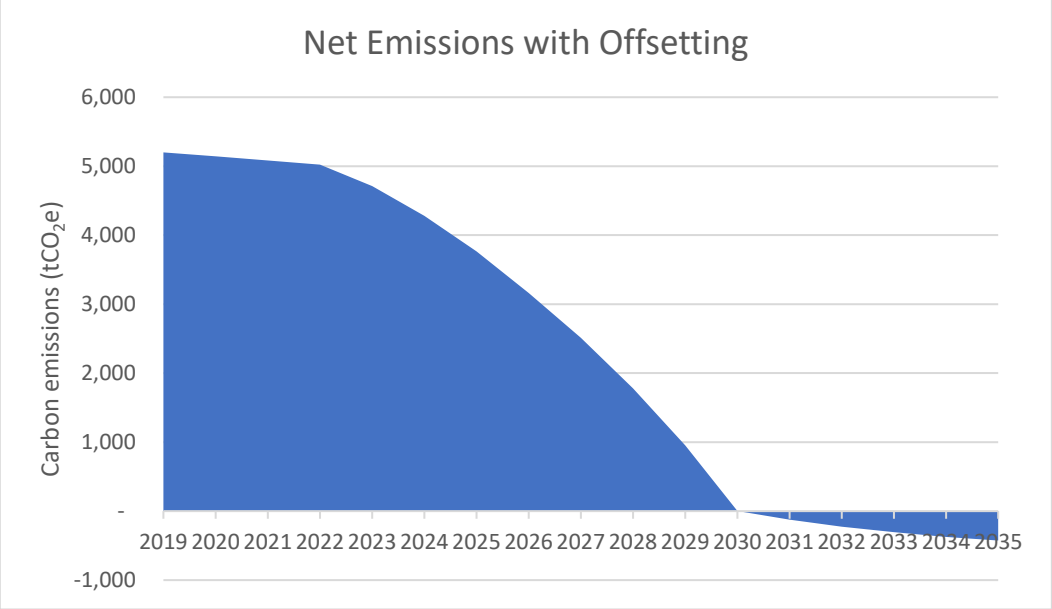
1 tonne of CO_2 in British woodlands which would result in a cost of £28,475 to offset the remaining emissions per year.

There are other schemes that provide carbon offsetting through international planting schemes such as One Carbon World which contributes funding towards large scale forestry schemes for as much as £1.20/tCO_2e.

A detailed feasibility study is required to determine the impact that planting will have as a carbon sink. It will provide an understanding of what will be needed to ensure that mature trees are in place to absorb the appropriate amount of CO_2 by 2030.

The graph on the next page shows the pathway for net zero carbon which includes reducing carbon initiatives and installing ASHP combined with offsetting measures. The graph shows that the Council will be net zero in 2030 and net carbon positive in subsequent years if the same level of offsetting is applied year-on-year.

Carbon Emissions Trajectory to 2035 with Carbon Offsetting and ASHP



7.3 Forecast Capital Cost with ASHP

Investing in energy efficiency projects and power generation will, in most cases, have a positive financial benefit with a good return on investment. The Council should set its own guidelines on a cap for Return on Investment (ROI) to measure the viability of projects.

Grid supplied electricity and gas rates are taken from BEIS modelling published in October 2021[9]. Market conditions have changed drastically since this time for

[9] https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

several reasons, but largely due to the war in Ukraine. It is therefore likely that the forecast energy rates provided are outdated, but this was still the best source to use at the time of writing.

The future grid export rates are based on the current price and increased by 2.5% annually.

Estimated Forecast Capital Cost and Financial Savings from Initiatives including ASHP

Intervention	Cost of all interventions	Accumulative cost saving up to 2030	Total annual saving of all interventions in the year 2030	Accumulative CO2e Savings by 2030	Accumulative £/CO2e Savings by 2030
Transition from Gas Boilers to ASHP	£2,458,600	£186,900	£52,412	931	£2,642
Diesel Transition to Biodiesel	£0	-£300	-£43	1	N/A
Transition to EV Accumulative Savings	£574,000	£79,100	£23,214	67	£8,531
Electricity Saving from energy efficiency	£153,000	£98,800	£26,802	713	£215
Electricity Increase for transition to ASHP	£0	-£115,400	-£31,314	-130	N/A
Building PV (200kWp by 2030)	£180,000	£102,200	£27,727	115	£1,565
Land Based PV (500kWp by 2030)	£450,000	£111,500	£31,861	698	£645
Energy Efficiency (Leased Assets)	£4,354,994	£294,600	£83,297	2,668	£1,632
Energy Efficiency (Council Housing)	£10,998,129	£1,295,500	£366,358	10,778	£1,020
Tree Planting	£28,465	N/A	N/A	4,179	£7
Total	**£19,197,188**	**£2,052,900**	**£580,310**	**20,019**	**£16,257**

Estimated energy savings and forecast capital costs shown are for representative purposes to give an illustrative outcome and should not be used for budgeting purposes.

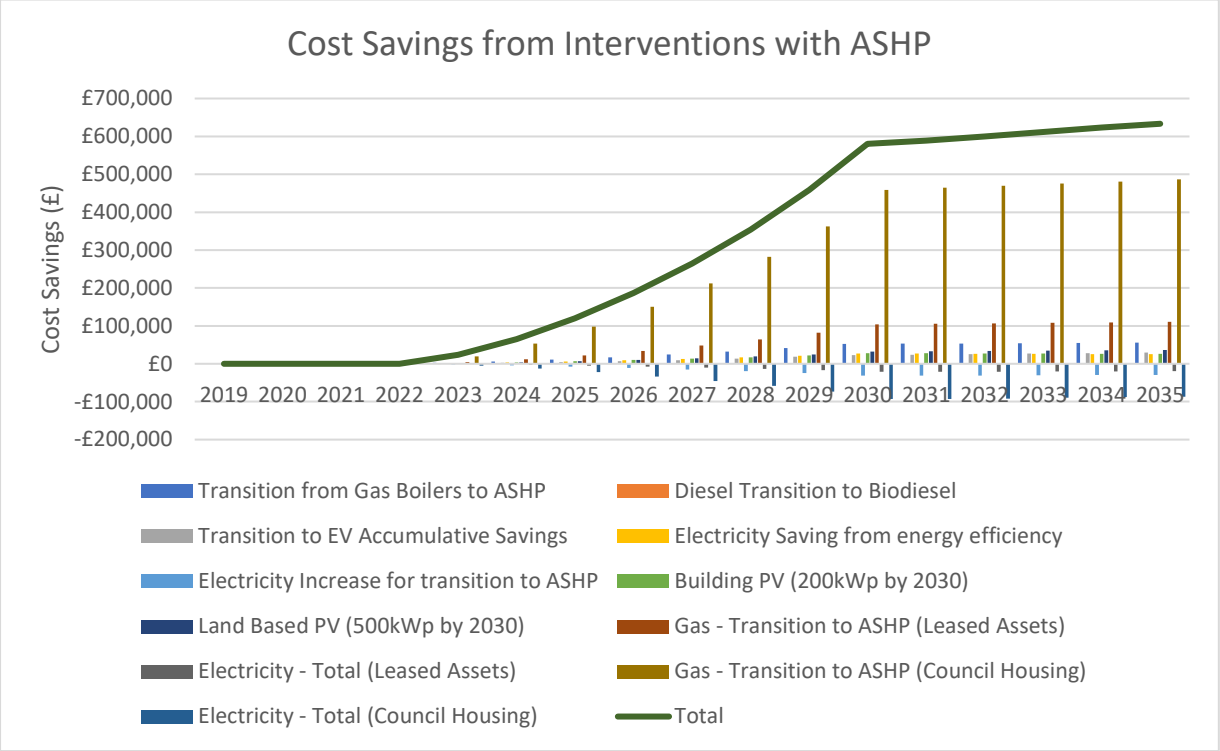
This shows that the forecast capital cost to achieve net zero is £19million and the total annual savings achieved by 2030 would be the equivalent of £580,000 per year.

This shows that the forecast capital cost to achieve net zero is estimated to be £19million and the total annual savings achieved by 2030 from this investment would be in the region of £580,000 per year.

7.4 Cost Savings with ASHP

The graph below shows the estimated total savings if all initiatives are installed.

Estimated cost savings from interventions between 2019 to 2035

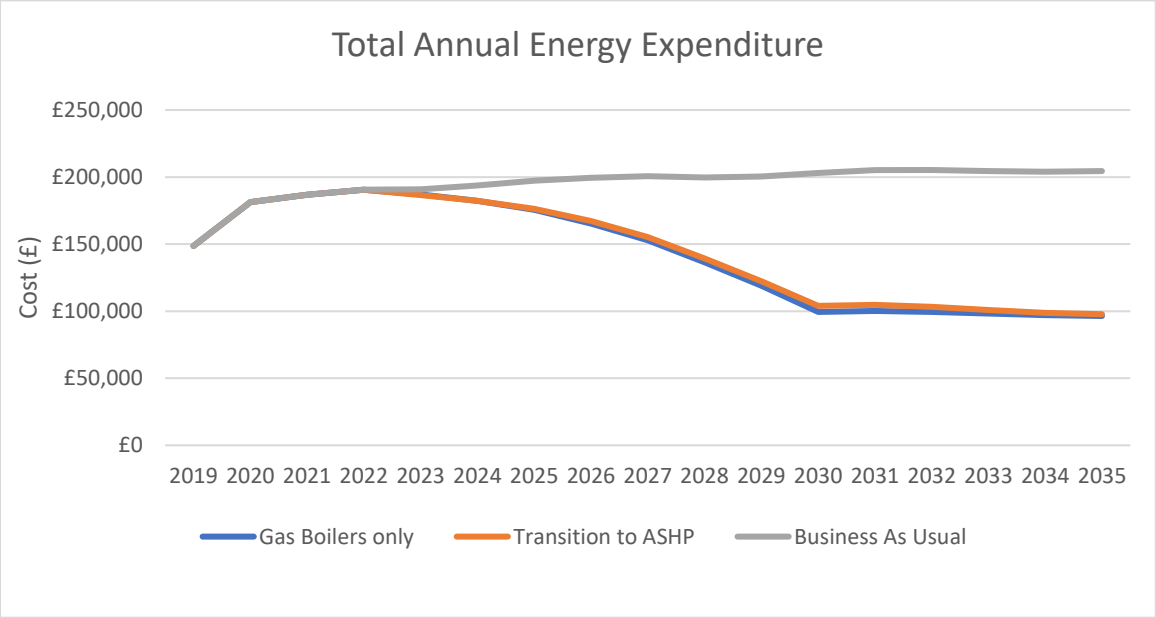


The graph considers savings made through efficiency savings (insulation, controls, etc.) and installing heat pumps. It should be noted that it could be more expensive to run a heat pump compared to a gas boiler if no other interventions are included as the cost of electricity is typically 4 times more expensive than gas up to 2035. However, it is anticipated that the 'spark gap' will close and gas becomes more expensive to incentivise a move from gas to electric.

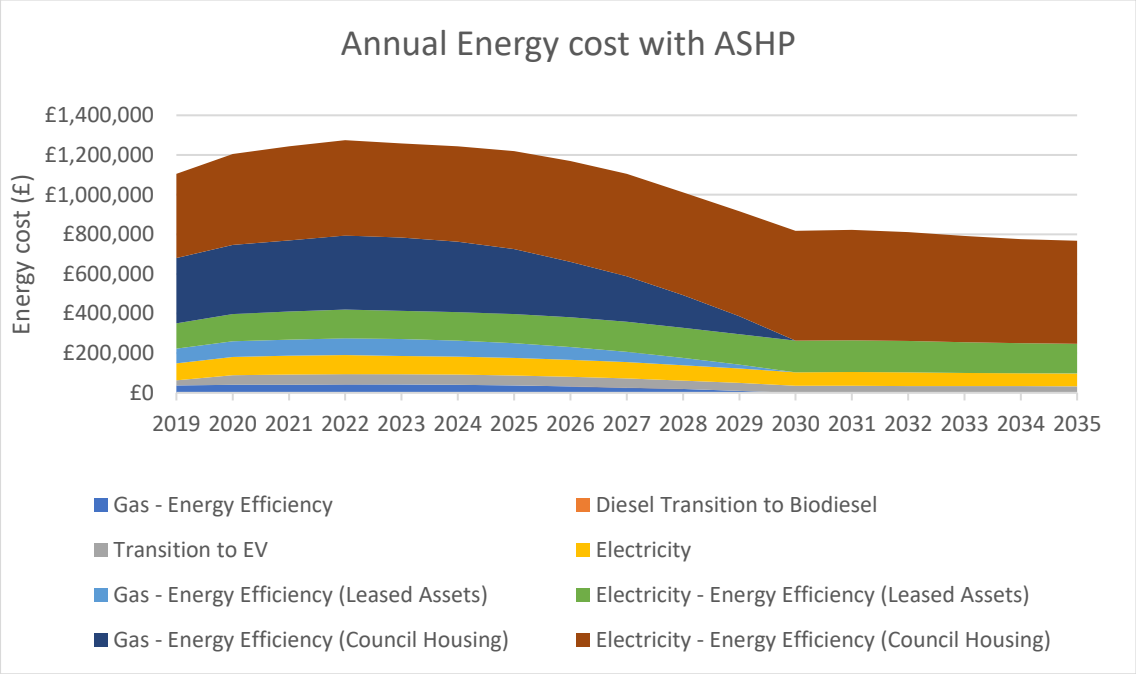
Although the 500kWp solar farm is larger than the 200kWp system on buildings, the financial savings are not proportional as the [current] export rate for a solar farm is much less than the savings achieved by having PV on buildings and reducing the amount of electricity purchased from the grid.

Estimated annual cost comparison between Gas Boilers and ASHPs between 2019 to 2035

The graph below shows the cost on energy bills by comparing the installation of gas boilers with heat pumps as well as making the other capital investments, and with business as usual for scope 1 and 2 emissions.

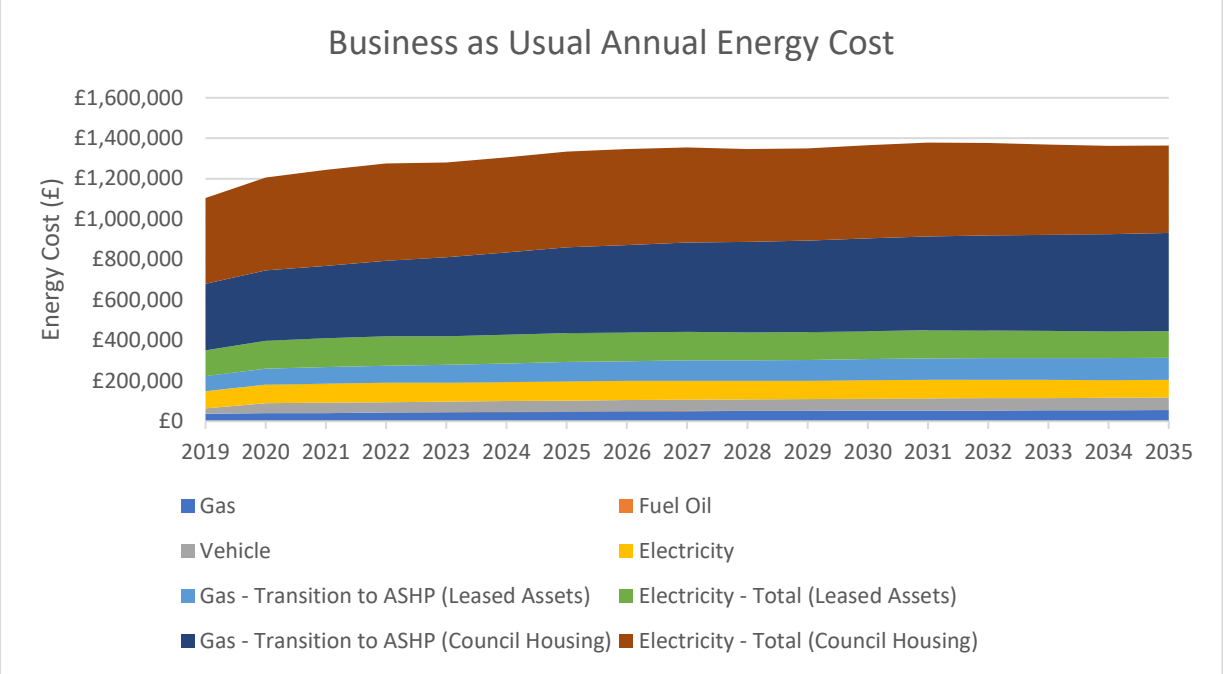


Estimated annual energy expenditure if interventions are delivered between 2019 to 2035



The graph above shows that energy costs will decrease from £1.1million in 2019 to £817k by 2030 if initiatives are delivered.

Estimated annual energy expenditure for Business as Usual with no interventions between 2019 to 2035



The graph shows that energy costs will increase from £1.1million in 2019 to £1.37million by 2030 if energy consumption remains the same.

The forecast unit rate is taken from the 'Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal'. This was published in October 2021 and markets have changed significantly since so it is likely that future operational costs, and savings, will be higher.

8 Conclusion

It is recommended to report annually on the progress of reducing carbon emissions.

Emissions from the Council's own operations should be calculated using the methodology in this report and policies and procedures should be put in place to record emissions data as it is made available rather than trying to retrieve the data in bulk retrospectively.

Further investigations are recommended to improve calculations for Scope 3 emissions such as purchased goods and services, waste, and employee commuting; and what initiatives could be applied to reduce emissions. Overall emissions will increase when adding in additional sources as data quality improves.

The trajectory and savings detailed in Appendix B and the wider programme can be used as a KPI to track performance of reducing emissions against the 2019/20 baseline year.

The Paris Climate Agreement aims to keep global temperature increases well below 2°C and pursuing 1.5°C. This calls for organisations to set a 'carbon budget' which is a term used to indicate the maximum amount of carbon an organisation can produce over a period of time to stay within the Paris Agreement. This often requires setting a science-based target and carbon budget.

The minimum reduction required for targets in line with well-below 2°C scenarios is 2.5% in annual linear terms over 15 years. Organisations are strongly encouraged to adopt targets with a 4.2% annual linear reduction to be aligned with limiting warming to 1.5°C, which is a reduction of 63% over 15 years. This carbon trajectory should reduce emissions by 77% between 2019 and 2030.

The carbon trajectory in this report is a desktop study performed without any prior knowledge of the building estate and is based on rule of thumb, and engineering and industry experience. A detailed energy audit should be provided for each building to provide a clear action plan of what interventions can be provided, their capital cost, funding opportunities and the cost/carbon savings.

Phoenix House and Parkside combined account for most of the emissions across the building estate, accounting for 90% of emissions from gas and 84% for electricity. Focussing on decarbonising these two buildings will have a significant impact on the total emissions produced by the Council.

The financial findings of this report do not take into account any future spending planned by the authority. There will be planned spending on asset replacement, upgrade and maintenance over the coming years and this should be factored in when considering the estimated costs and savings provided within this report.

8.1 Recommendations

Short Term Recommendation – Up to 6 Months
Collect and save emissions data as it is made available for all core Scope 1, 2 and 3 emissions to improve data quality: • It is recommended that the Council checks with the water providers to confirm the volume of water supplied and the volume for water treatment. • Methods should be developed to record all the business travel mileage and litres of fuel used, the vehicle make and model should also be recorded if possible. • Methods should be developed to record all employee travel mileage, fuel type, make and model of individual vehicles. • The Council should develop methods to record all waste streams from all sources. • The Council should set up process and procedures to request the energy data from lessees and update leased contracts to state that is a requirement of the leased contract to provide annual energy consumption data by the end of July annually so the Council can include it within its carbon reporting. • A review should be carried out of each asset to determine if the Council are responsible for paying the electricity and gas usage and taking ownership for the associated carbon emissions. • The Council should develop a procedure for gathering and storing its own data as it is made available. • Where applicable, the Council should develop policies/procedures to gather the data from third parties. • It is recommended to enter a consolidated water contract so that all supplies are on a group contract for both supply and wastewater.
Set up processes and procedures to request and record emissions data from suppliers and staff.
Carry out detailed energy audits of all buildings.
A detailed feasibility study is recommended to determine the impact that planting will have as a carbon sink.
Medium Term Recommendation – Up to 2 years
Develop detailed feasibility studies to identify viable energy efficiency projects, localised power generation projects and carbon offsetting schemes.
Carry out detailed engineering design.
Develop a procurement strategy to deliver projects.
Understand which funding options are available and develop a strategy on how to fund specific projects.

Liaise with the Distribution Network Operator (DNO) to understand the grid capacity and how this relates to future electricity demands.
The Council should review its maintenance policies to specify highly efficient plant and services, and low emission vehicles, rather than replacing like-for-like.
Calculate the carbon footprint of the whole Local Authority area and provide an action plan for the whole district to be zero carbon.
Long Term Recommendation – Up to 2030
Make a transition away from fossil fuel vehicles.
Increase electric vehicle charging network and sustainable travel infrastructure.
Develop large scale renewable heat and power generation projects including land and buildings based solar PV
Roll out energy efficiency and power generation projects to all buildings.
Develop on-going tree planting and biodiversity improvement schemes.

9. Glossary

Term	Definition
BMS	Building Management System – Automated control for building services.
Carbon dioxide equivalent (CO_2e)	The carbon dioxide equivalent (CO_2e) allows the different greenhouse gases to be compared on a like-for-like basis relative to one unit of CO_2 and includes the six greenhouse gases with the greatest global warming potential (GWP).
Carbon footprint	A carbon footprint measures the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product. A carbon footprint is measured in tonnes of carbon dioxide equivalent (tCO_2e).
Council Vehicles	Vehicles that are owned or controlled by the Council. This does not include employee-owned vehicles that are used for business purposes.
Electricity	Electricity used at sites owned/controlled by the Council. This is reported as a Scope 2, indirect emission. The conversion factors used are for the electricity supplied by the grid that the Council purchase - they do not include the emissions associated with the transmission and distribution of electricity.
Employee Vehicles	Travel for business purposes in assets not owned or directly operated by the Council. This includes mileage for business purposes in cars owned by employees, public transport, hire cars etc.
[Natural] Gas	Primary fuel sources combusted at a site or in an asset owned or controlled by the Council.
Solar PV	Solar Photovoltaic panels to generate renewable electricity from the sun.
Transmission and Distribution	Transmission and distribution (T&D) factors are used to report the Scope 3 emissions associated with grid losses (the energy loss that occurs in getting the electricity from the power plant to the premises).
TRV	A Thermostatic Radiator Valve is a self-regulating valve which is fitted to radiators to control localised temperatures.
Wastewater	Water returned into the sewage system through mains drains.
Water Supply	Water delivered through the mains supply network.
Well to Tank	Fuels have indirect Scope 3 emissions associated with the production, extraction, refining and transport of the fuel before their use known as Well-to-tank (WTT). WTT emissions have been recorded for: • Electricity; • Gas; • Transmission and Distribution; • Council Owned Vehicles.

Appendix A – Carbon Footprint Calculations
(Separate Spreadsheet)

Appendix B – Carbon Trajectory Report
(Separate Spreadsheet)

Appendix C – Data that should be gathered to report on Scope 3 emissions
The reporting of Scope 3 emissions is discretionary. The table below provides further guidance on the information required to calculate emissions from Scope 3.

Item	Category	Details Required
1	Purchased goods and services	This category includes all upstream (i.e. cradle-to-gate) emissions from the production of products purchased or acquired by the Council in the reporting year. Products include both goods (tangible products) and services (intangible products). This category includes emissions from all purchased goods and services not otherwise included in the other categories of upstream scope 3 emissions (i.e. category 2 through category 8 below). Cradle-to-gate emissions include all emissions that occur in the life cycle of purchased products, up to the point of receipt by the Council. Cradle-to-gate emissions may include: • Extraction of raw materials • Agricultural activities • Manufacturing, production, and processing • Generation of electricity consumed by upstream activities • Disposal/treatment of waste generated by upstream activities • Land use and land-use change • Transportation of materials and products between suppliers • Any other activities prior to acquisition by the reporting company Relevant purchases to the Council may include capital goods, such as office supplies, office furniture, computers, telephones, travel services, IT support, outsourced administrative functions, consulting services, janitorial, landscaping services, maintenance, repairs and operations. For accurate carbon reporting emissions, the Council should request cradle-to-gate emission factors for materials used by suppliers to produce purchased goods

		such as Environmental Product Declarations (EPDs). It is likely that many suppliers will not be able to provide all the emission data. If an EPD cannot be provided, supplementary information required includes the volume of product (kg) and the carbon emission factor (kg CO_2e). A policy should be developed so that suppliers in the supply chain are required to provide this data as part of the contract, where the volume of goods is noteworthy.
2	Capital goods	Capital goods are final products that have an extended life and are used by the Council to manufacture a product, provide a service, or sell, store, and deliver merchandise. Capital goods are treated as fixed assets or as plant, property, and equipment (PP&E). Examples of capital goods include equipment, machinery, buildings, facilities, and vehicles. The required information is the same as Category 1 above. A policy should be developed so that suppliers in the supply chain are required to provide this data as part of the contract.
3	Fuel- and energy related activities (not included in Scope 1 or Scope 2)	Transmission and distribution (T&D) losses have been included and calculated from the data provided in Scope 2.
4	Upstream transportation and distribution	Category 4 includes emissions from: • Transportation and distribution of products purchased in the reporting year, between suppliers and its own operations in vehicles not owned or operated by the Council. • Third-party transportation and distribution services purchased by the Council in the reporting year (either directly or through an intermediary), including inbound logistics, outbound logistics (e.g. of sold products), and third-party transportation and distribution between the Council's own facilities.

		The Council requires data on: • Quantities of fuel (e.g., diesel, petrol, jet fuel, biofuels) consumed • Amount spent on fuels • Distance travelled • Vehicle type This may include managed assets - Vehicles that are used by the Council but are not owned by the organisation and generally do not appear on the organisation's balance sheet, for example, maintenance contractor vehicles, outsourced refuse and recycling trucks, road sweepers, grounds maintenance mowers etc. A policy should be developed so that suppliers using their own vehicles are required to provide this data as part of the contract.
5	Waste generated in operations	This includes emissions from third-party disposal and treatment of waste generated in the Councils owned or controlled operations in the reporting year. This category includes emissions from disposal of both solid waste and wastewater. The Council should request volume and emissions data from the waste treatment company applicable to **its own waste stream**. If this cannot be provided, the emissions can be calculated by requesting the volume of waste, type and disposal method: Example of data required: Total weight (kg) of waste type and disposal method e.g. • 5,000kg municipal waste to landfill • 500kg organic garden waste to composting • 1,000kg metal recycled • 1,000kg plastic recycled • 1,000kg paper recycled Data is required for the volume of supply and wastewater in cubic metres (m^3) from water bills. Local authorities have an important role in waste prevention and sustainable waste management through awareness-raising campaigns, providing separate collection for recycling and food waste, and implementing waste-to-energy schemes. It is therefore voluntary on whether the Council choose to include the emissions

		from waste associated with the whole borough, or just the Council's own operation.
6	Business travel	Travel for assets not owned or directly operated by the Council. This includes mileage for business purposes in cars owned by employees, public transport, hire cars etc. Require details for: <u>Vehicle</u> Fuel type, size of vehicle and distance for: • Car • Motorbike • Taxis • Bus • Rail <u>Flights</u> • Airport travelled to/from • Number of passengers • Class type • Distance <u>Ferry</u> • Foot or car passenger • Distance
7	Employee commuting	This category includes emissions from the transportation of employees between their homes and their worksites. Emissions from employee commuting may arise from: • Car • Bus • Rail • Other modes of transportation Staff would be required to provide method of transport and distance travelled. It may be difficult and time consuming to collect accurate data.
8	Upstream leased assets	This category is applicable from the operation of assets that are leased by the Council. If the Council procures the energy then this should be considered as Scope 1 and 2. If the landlord is responsible for the Scope 1 and 2 emissions, the Council should include the reporting under Scope 3. An example may include an office that the Council lease from a private landlord. All energy bills may be included as part of the lease and the energy contract is under the name of the landlord. The Council should

		therefore request the energy data from the landlord and include this under Scope 3. Data required include the Scope 1 and 2 data from the leased asset.
9	Downstream transportation and distribution	This category includes emissions that occur in the reporting year from transportation and distribution of sold products in vehicles and facilities not owned or controlled by the Council in the reporting year. It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
10	Processing of sold products	It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
11	Use of sold products	It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
12	End-of-life treatment of sold products	It is assumed that this category is not applicable to the Council as it does not manufacture and sell products.
13	Downstream leased assets	This category is applicable where the Council is the landlord to a lessee. If the Council procures the energy on behalf of a lessee then this should be considered as Scope 1 and 2. An example of this is where the Council may lease a premises to a lessee and include all energy costs as part of the lease. The energy contract is under the name of the Council and is therefore reported under Scope 1 and 2. If the lessee is responsible for the Scope 1 and 2 emissions, the council should include the reporting under Scope 3. An example of this is a shop that the Council own and the occupant pays for the energy bills and the contract is under their name. The Council should request the energy data from the shop occupier and report this under Scope 3. Data required include the Scope 1 and 2 data from the leased asset.
14	Franchises	It is assumed that this category is not applicable to the Council as it does not operate any franchises.

15	Investments	This category includes scope 3 emissions associated with the Council's investments in the reporting year, not already included in scope 1 or scope 2. This category is applicable to investors (i.e. organisations that make an investment with the objective of making a profit) and organisations that provide financial services. This category also applies to investors that are not profit driven (e.g. multilateral development banks). Investments are categorised as a downstream scope 3 category because providing capital or financing is a service provided by the organisation. Category 15 is designed primarily for private financial institutions (e.g., commercial banks), but is also relevant to public financial institutions (e.g., multilateral development banks, export credit agencies) and other entities with investments not included in scope 1 and scope 2. The Councils scope 3 emissions from investments are the scope 1 and scope 2 emissions of investees. For purposes of greenhouse gas accounting, this standard divides financial investments into four types: • Equity investments • Debt investments • Project finance • Managed investments and client services An example of the information required is the Scope 1 and 2 emissions from the bank where an investment is in place. This is based on the Council's proportional share of investment in the investee. If the Council has £1million invested in the bank and the banks total investments amount to £100million, the Council should report on 1% of the banks Scope 1 and 2 emissions. It is assumed that this information will be difficult to collate from third parties and that the total emissions will be proportionally small compared to other emission sources and these emissions could be excluded from the reporting.