Weymouth Town Council

Carbon Footprint Report - 2019

Carbon Trust

June 2020

Table of Contents

1

Summary of Organisations

About Carbon Trust

Our mission is to accelerate the move to a sustainable, low carbon economy.

The Carbon Trust is an independent, expert partner of leading organisations around the world, helping them contribute to and benefit from a more sustainable future through carbon reduction, resource efficiency strategies and commercialising low carbon technologies.

About Weymouth Town Council

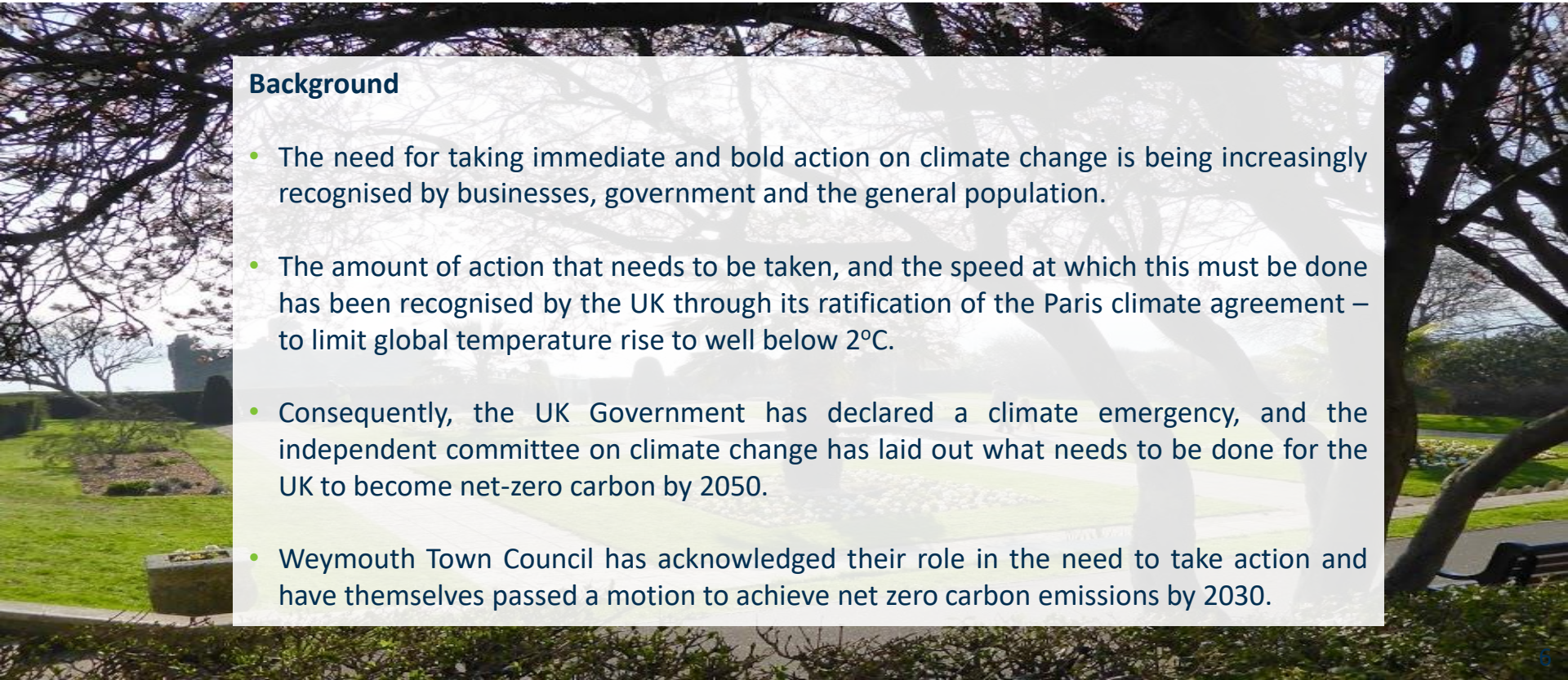
Weymouth Town Council, recently formed from Weymouth and Portland Borough Council, is now one of the country's largest town councils.

Its services cover everything from events and celebrations to cemeteries, public toilets, allotments, parks, gardens, beach and the promenade.

2

Executive Summary

Executive Summary



Background

- The need for taking immediate and bold action on climate change is being increasingly recognised by businesses, government and the general population.
- The amount of action that needs to be taken, and the speed at which this must be done has been recognised by the UK through its ratification of the Paris climate agreement – to limit global temperature rise to well below 2^{o}C.
- Consequently, the UK Government has declared a climate emergency, and the independent committee on climate change has laid out what needs to be done for the UK to become net-zero carbon by 2050.
- Weymouth Town Council has acknowledged their role in the need to take action and have themselves passed a motion to achieve net zero carbon emissions by 2030.

Executive Summary

Drivers

Net Zero 2050	The target will require the UK to bring all greenhouse gas emissions to net zero by 2050, compared with the previous target of at least 80% reduction from 1990 levels. This target became legally binding following recommendations put forward by the Committee on Climate Change.
Leadership	Taking strategic action towards reducing carbon emissions will ensure that Weymouth can lead the way in developing effective mechanisms to tackle climate change. This will help stimulate low carbon transitions across the regions in which they operate.
Cost savings	With increasing pressure on all councils to cut costs, reducing the amount spent on energy bills is a key driver for lowering energy consumption.
Reputation	With stretching national targets, there is increasing pressure on councils to be seen as "doing their bit" and playing a leadership role on climate change action. Failure to act could lead to reputational risks and adversely affect Weymouth's public image.
Building regulations	Building regulations contain requirements that relate to the conservation of both fuel and power. There are set minimum energy performance standards for new buildings and major refurbishments of existing buildings.
Local area drivers	In addition to the above Weymouth has declared a climate emergency and has set a target to have Net Zero Carbon Emissions by 2030.

Executive Summary

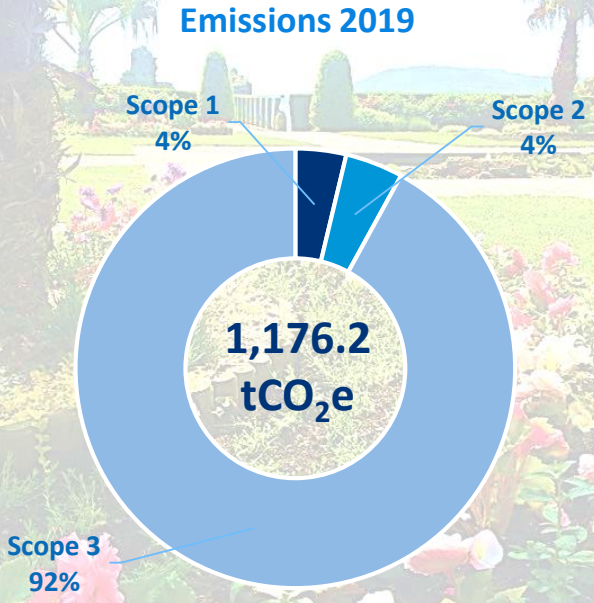
Scope of Assessment

- The Carbon Trust have been contracted by Weymouth Town Council to support the first stage of their journey: to complete a comprehensive carbon footprint of their direct and indirect carbon emissions (scope 1, 2 and 3) for calendar year 2019.
- Creating a carbon footprint is an essential first step in developing a carbon reduction strategy, and is key to understanding the scale of the challenge focussing efforts on the most impactful activities.
- This Carbon Footprint has been calculated in line with the Greenhouse Gas (GHG) Protocol emission scopes; these are set out as follows:
  - Scope 1: Direct emissions from combustion of gas and other fuels
  - Scope 2: Emissions resulting from the generation of electricity and other energy purchased (but generated elsewhere)
  - Scope 3: Emissions made by third parties in connection with operational activities

Executive Summary

Key Findings

- The total measured carbon footprint for Weymouth Town Council for 2019 is **1,176.2 tCO_2e**.
- The majority of this footprint is attributed to the council's operational activities, namely leased buildings and contracts.
- Emissions from the council's direct operations building use and vehicle fleet accounts for 8% of total measured emissions.
- Contracts are clearly the highest contributors to the total footprint, 77% of emissions recorded.



Executive Summary

Next Steps

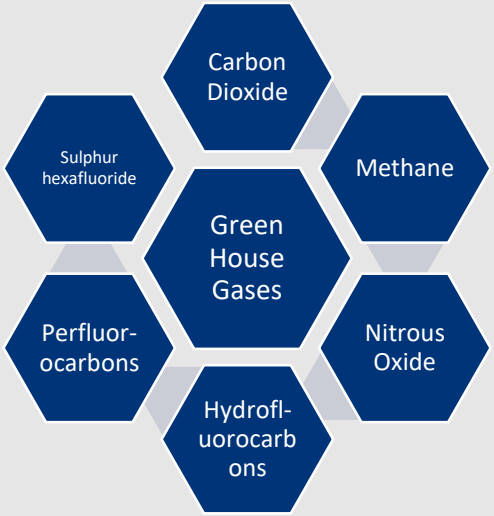
- Monitoring and reporting – Weymouth Town Council should monitor carbon emissions on an annual basis and set up an agreed approach to recording key data to ensure continual assessment of its carbon footprint.
- Data collation – take measures to improve data accuracy and completeness.
- Define clearly what the 2030 ‘Net Zero’ ambition actually means.
- Decarbonisation strategy – Develop a detailed decarbonisation strategy and action plan to meet set targets.

3

Carbon Footprint Boundary

Green House Gases

- Carbon dioxide is not the only green house gas. There are five other key green house gas types that contribute to global warming: methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.
- Each gas has its own global warming potential (GWP). By comparing each gas's GWP to that of carbon dioxide (CO2) we are able to derive a carbon dioxide equivalent value (CO2e).



GHG Protocol and Emissions Scopes

The globally accepted carbon accounting standard known as the World Resources Institute (WRI) Greenhouse Gas (GHG) Protocol defines direct and indirect organisational emissions as follows:

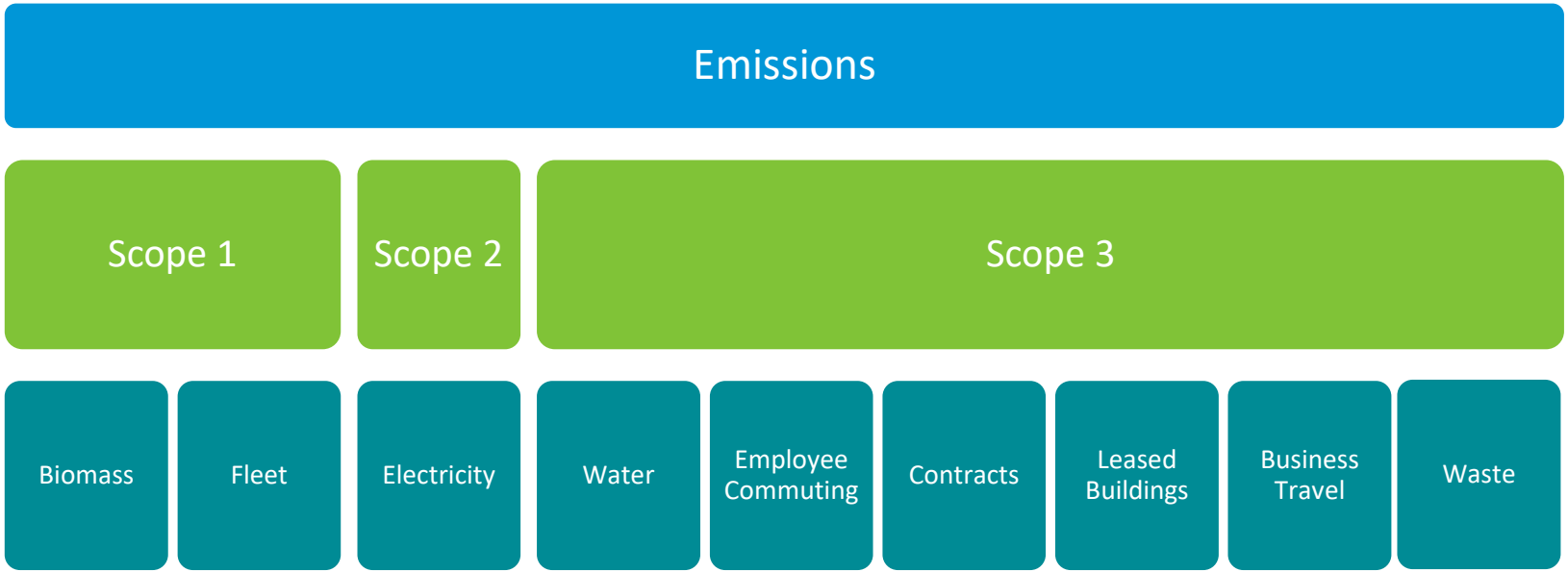
- Direct GHG emissions are emissions from sources that are owned or controlled by the reporting entity.
- Indirect GHG emissions are emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity.

The GHG Protocol further categorises these direct and indirect organisational emissions into three broad scopes:

- **Scope 1:** All direct GHG emissions.
- **Scope 2:** Indirect GHG emissions from consumption of purchased electricity, heat or steam.
- **Scope 3:** Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

Footprint Boundary

The graphic below outlines all areas that have been included as part of the Carbon Footprint for 2019 for Weymouth and what categories fall into each scope of the assessment.



Data Table of Included Emission Sources

The table below shows the data types provided by Weymouth Council to enable the calculation of the overall footprint.

Scope	Element	Example Data	WTC Data Sources & Notes
Scope 1	Organisation facilities	Billing data Natural Gas KWh and £	Utility consumption data and costs
	Organisation vehicles	Purchased fuel records	Fleet vehicles; type of fuel and consumption and cost
Scope 2	Purchased electricity	Billing data Annual KWh and £	Utility consumption data and costs
Scope 3 Upstream	Purchased goods and services (Contracts)	Scope 1 & 2 footprint of procured goods and services	Procurement information associated with largest contracts by value
	Fuel and energy-related activities	Upstream emissions from scope 1 & 2 emissions	Covered in scope 1 & 2 data collection, electricity grid transmission & distribution (T&D) losses
	Waste & water generated/supplied and disposed of operations	Waste type and volume Water supply m^3 and water treatment m^3	Own operations waste generated (kg or tons) and water supply and treatment (m^3)
	Business travel	Distance and mode of travel	Mileage estimates on staff and leased vehicles
	Upstream leased assets	Leased building and leased vehicles	List of sites, description and floor area

Data Table of included Emissions Sources

Scope	Element	Example Data	WTC Data Sources & Notes
Scope 3 Upstream	Capital goods	Calculated capital assets emissions	Covered in purchased goods and services
	Upstream transportation and distribution	Procured goods transport fuel	Covered in purchased goods and services
	Employee commuting	Employee numbers and mileage	Survey data from staff
Scope 3 Downstream	Franchises	Commercial arrangements	Out of scope
	Downstream Leased Assets	Leased buildings and vehicles	List of sites, description and floor area
	Investments	Joint ventures property	Out of scope

4

Methodology

How to Calculate Emissions

- In order to calculate a carbon footprint there are two primary inputs: the ‘activity’ or volumetric data and the associated emission factor. Activity data is the quantification of the action of the emission source, whether that be kWh of electricity consumed or kilometres driven by a vehicle. The emission factor is the metric of kg of CO_2e produced by one unit of the associated activity (page 21). Emission factors are provided for a range of activities by the department for business, energy and industrial strategy (BEIS); these factors are updated annually where required.

- Numerous other activities are more abstract and require a proxy to either transform the activity data into a value that can be used with a BEIS emission factor, or a proxy emission factor to use with the data available . An example of the former would be to use the floor area of a building as activity data, then benchmark data of electricity consumed per m^2 as a proxy and finally combine this with the BEIS emission factors. Another example is to use contract values (£) as activity data and a proxy economic based emission factor (in this case EEIO) (page 21).

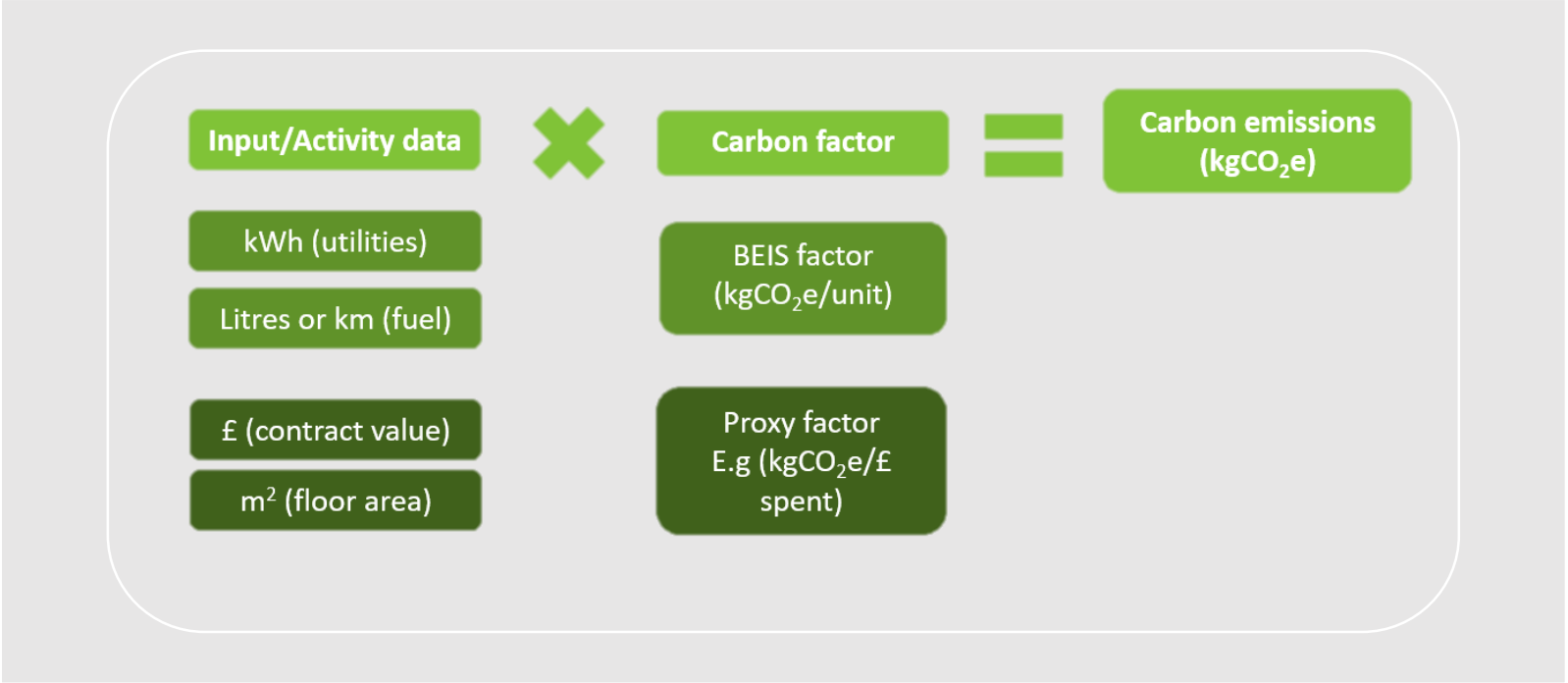
How to Calculate Emissions

Environmentally Extended Input Output

- Environmentally Extended Input-Output (EEIO) factors use expenditure mapped to broad economic sectors to provide a proxy for carbon emissions. The methodology developed by the World Resources Institute and Carbon Trust, allows for the calculation of emissions produced for over 19,000 specific goods and/or services, which are linked to 430 broad economic sectors for which emission factors per pound (£) of expenditure are available.

- It should be noted that EEIO values provide emissions for sector specific goods/services within broad economic sectors but not for the exact individual goods/services. This means that although being able to provide a broad, first iteration emission value; it is not exact – further analysis of the operations of an individual goods/services are needed to determine a more precise footprint. EEIO factors should only be used where first hand activity data is unavailable / difficult to obtain. These factors have therefore only been used for contracts for goods and services, including events.

How to Calculate Emissions



Assumptions

Assumptions must be made in order to calculate some aspects of the carbon footprint, these are laid out below:

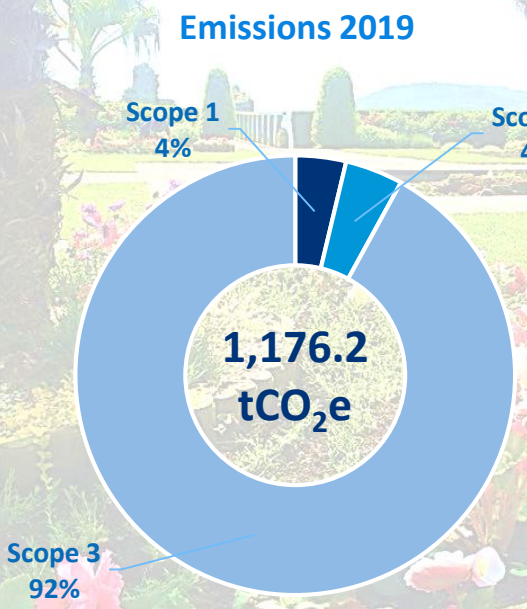
- For the procurement spend data, suppliers allocated to the required EEIO categories.
- Leased buildings had their descriptions matched to a CIBSE building category, there are assumptions here that all leased buildings align with the 'typical' UK building of that category.
- For leased sites, building use category was estimated based on site name.
- Business travel is based on expense claims.
- Commuting travel was based on a staff survey, it is noted that everyone may not have completed the survey.
- Electricity and water consumption without data was estimated based on part year data. Some records have been muddled due to separation of Councils last year.

5

Carbon Footprint Breakdown

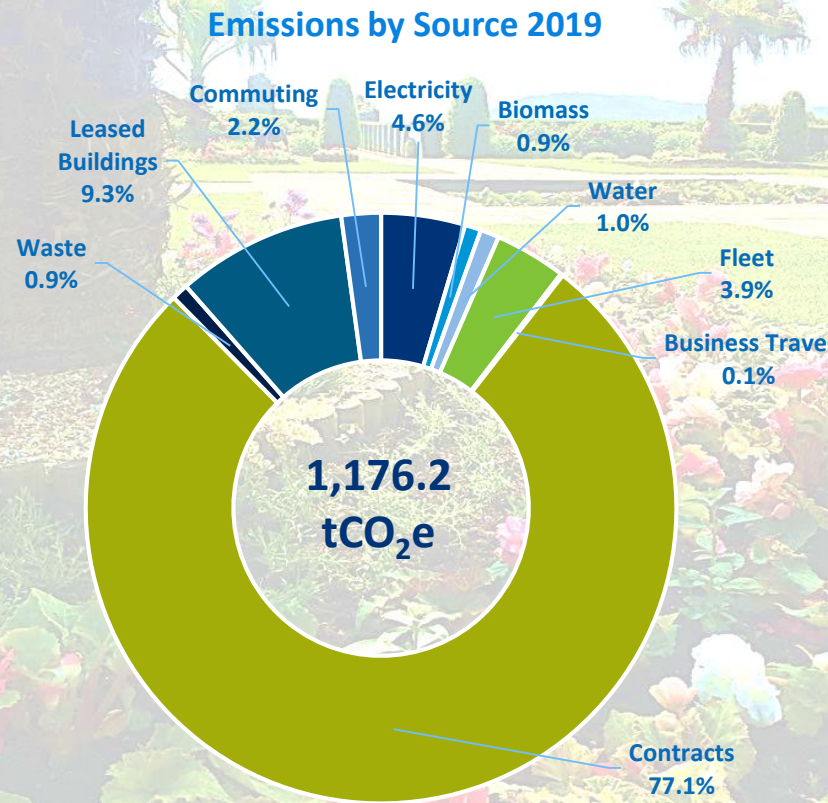
2019 Emissions

- The total green house gas emissions from Weymouth Town Council in 2019 were **1,176.2 tCO_2e**.
- The vast majority (see right) of emissions fall under ‘scope 3’, these are indirect emissions that are predominantly a result of the contracts and leased buildings held by the council.
- The remaining 8% of emissions are
  - scope 1 – direct burning of fuels, and
  - scope 2 – purchased electricity.



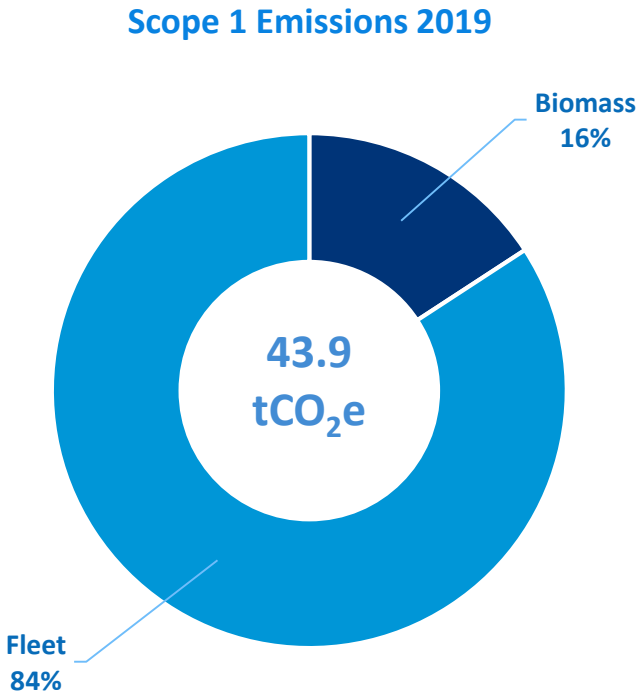
2019 Emissions

- The pie chart on the right further highlights the council's sources of emissions.
- It is clear how significant contracts held by the council are to the total footprint (77% of all emissions).
- Leased buildings also contribute to 9% of total emissions as part of scope 3.
- Other significant sources are electricity (5%), as well as the transport fleet that the council operates (4%).



Scope 1

- Scope 1 emissions are a result of the direct burning of fossil fuels by the council.
- This arises from the councils owned transport fleet which burns petrol and diesel within vehicles and gardening machinery. The burning of woodchip in the biomass boiler at Lynch Lane Nursery also contributes to this.
- Total scope 1 emissions contribute 43.9 tCO_2e.
- Electrification or switching to low/zero carbon fuels for the councils owned transport fleet will be the main option to move towards net zero in this area.

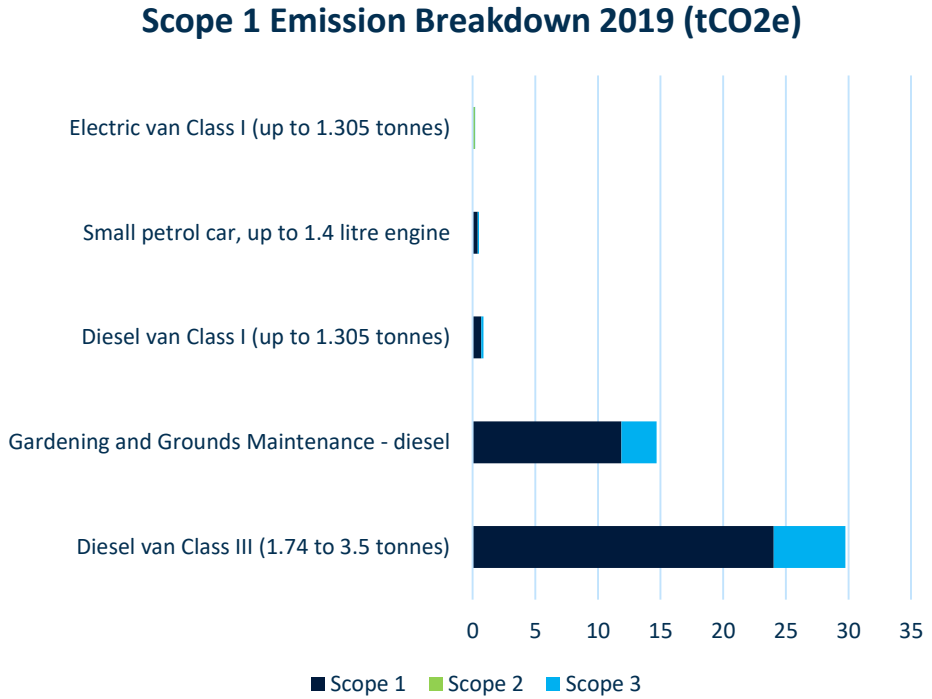


Scope 1 Breakdown

Fuel Consumption in Fleet

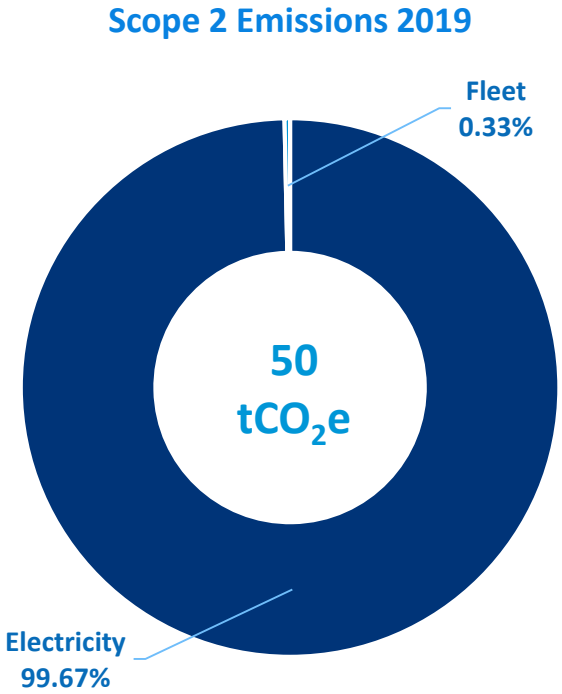
Fleet accounts for 4% of total emissions

- Scope 1 emissions arising from the combustion of fuel in the council's fleet is shown on the right.
- Associated scope 2 & 3 electrical and well-to-tank emissions have also been included to outline the full impact of fleet vehicles.
- The council should consider moving from fossil fuel based transport to electric vehicles to radically reduce emissions; an electric vehicle currently emits 70% fewer emissions per mile compared to a diesel vehicle, this will increase further as the grid decarbonises.



Scope 2

- The overwhelming majority of scope 2 emissions arise from the use of electricity in buildings, with a very small amount from one electric vehicle within the council's fleet.
- Scope 2 emissions will naturally decrease over time as a result of the decarbonisation of the UK grid. However, further efforts to reduce scope 2 emissions from on site renewables and energy efficiency measures are important – as this helps to further decrease emissions and mitigate any increases in electricity prices.

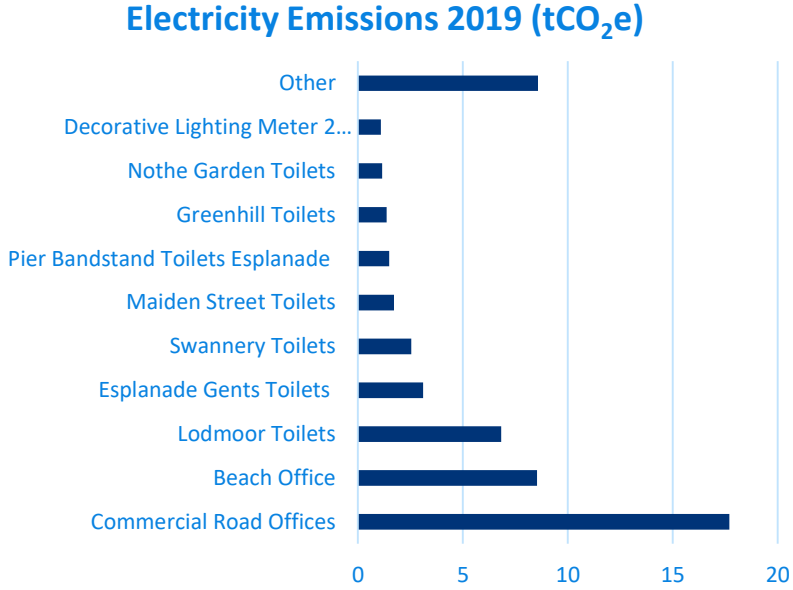


Scope 2 Breakdown

Electricity Consumption in Buildings

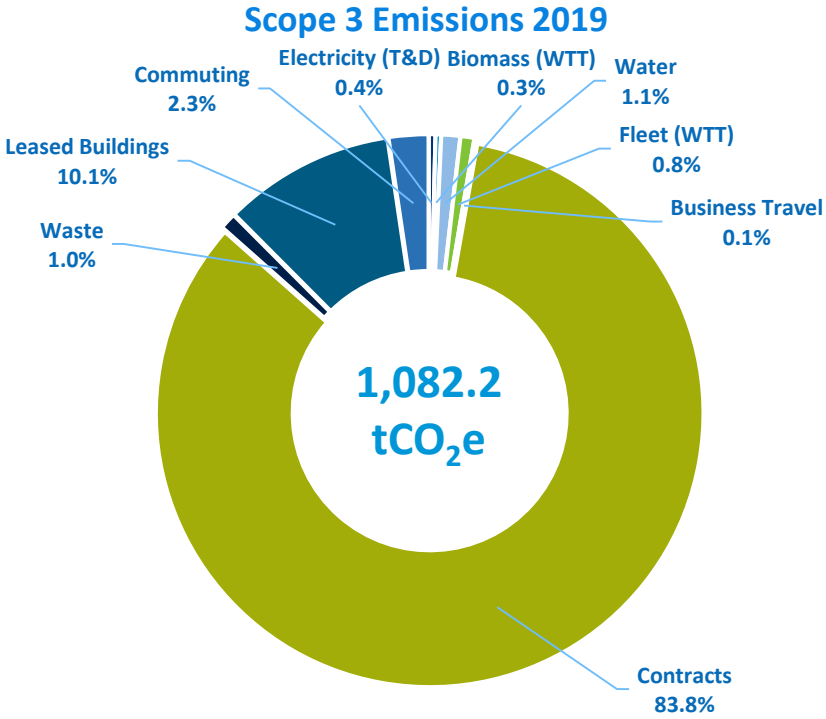
Electricity accounts for 5% of total emissions

- Scope 2 emissions arising from electricity consumption have been recorded from 31 separate sites/meters, and include a mix of office, street lighting, public buildings/toilets and recreational spaces.
- The **top three highest emitting sites account for 63.4%** of all electricity emissions. These include: The Commercial Road offices, beach office and Lodmoor toilets.
- The most effective methods for reducing electricity consumption and associated emissions are to switch to LED lighting , service or upgrade HVAC systems, upgrade appliances to energy efficient types and installing renewable energy generation to provide zero carbon electricity.



Scope 3

- Scope 3 emissions arise from indirect council operations, sources include: waste collection, business travel, contracts, leased buildings, water usage, and upstream biomass and electricity operations.
- Contracts (procured goods and services) account for 906.5 tCO_2e and leased buildings 109.5 tCO_2e.
- The largest source of emissions from contractual activities relates to waste and remediation services.

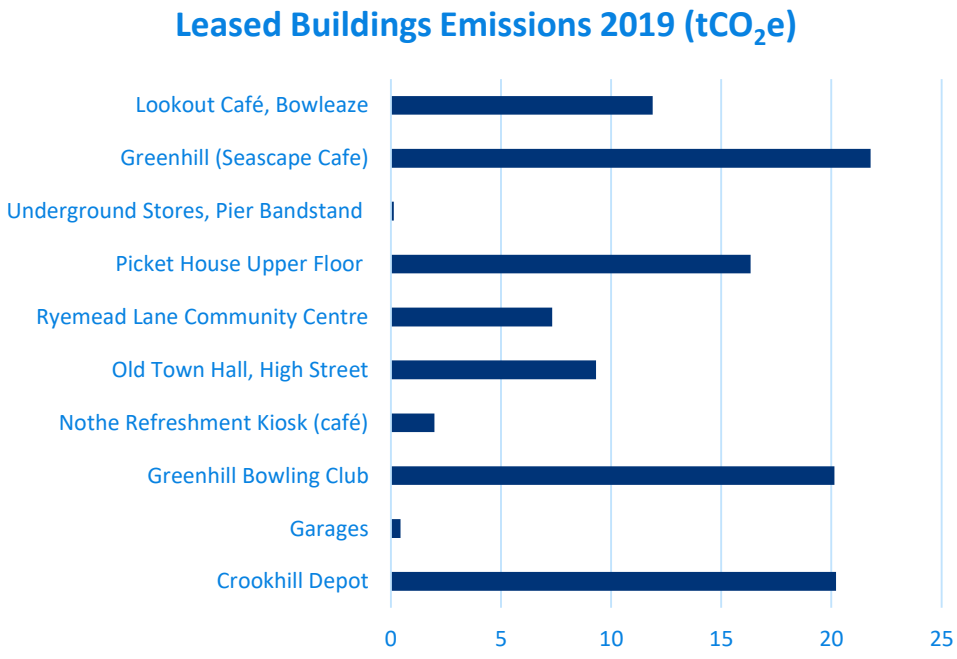


Scope 3

Leased Buildings

Leased Buildings account for 9% of total emissions

- Leased buildings are sites that are owned by the council but leased out to users; this means the council has no direct control over how energy is used on that site. Buildings that the council rents from other organisations are also included.
- Weymouth currently leases out a variety of spaces, including cafés, garages, a bowling club, social club and the town hall. The councils only rental is office space at Crookhill depot.

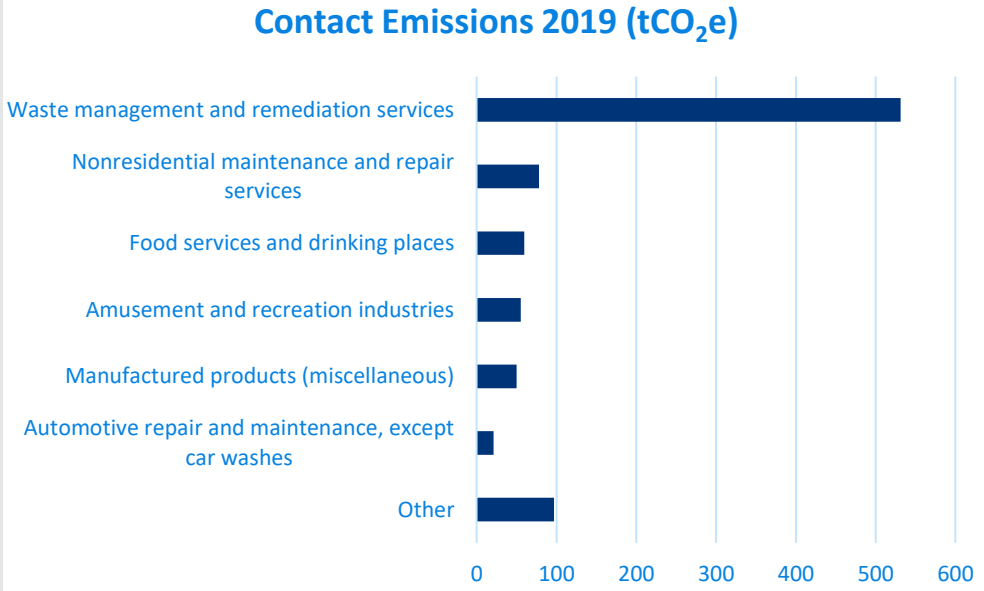


Scope 3

Contracts

Contracts account for 77% of total emissions

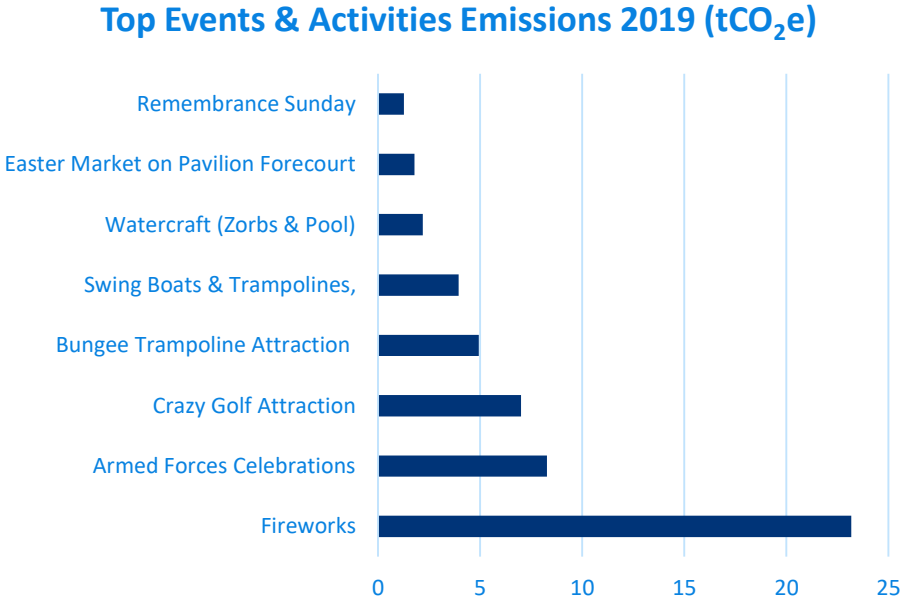
- Scope 3 emissions arising from contracts held by the council sum to 906 tCO_2e
- **Waste and remediation services account for 58.6% of all contractual emissions. This includes waste collection, beach cleansing and beach levelling activities**
- Amusement and recreation industries represent events held by Weymouth such as the fireworks displays and armed forces celebrations.



Scope 3

Contracts – Events Focus

- **Amusement and recreation accounts for 55.4 tCO_2e**
- This contracts category also includes other services such as amusement parks and fairgrounds as well as larger events.
- Large events are very complex to footprint. The EEIO proxy value gives an initial indication to the overall contribution to the total carbon footprint.
- If desired a more detailed approach can be undertaken, this is outlined in the project identification report.

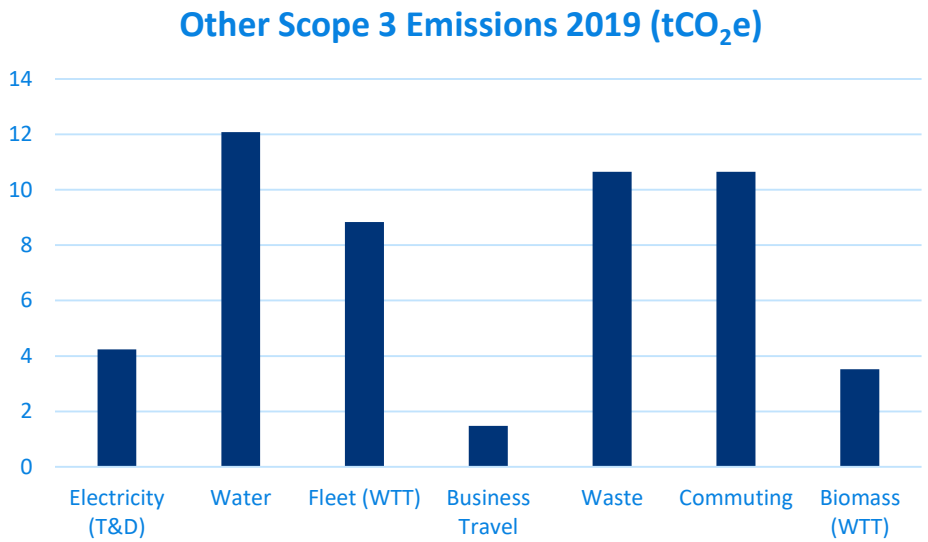


Scope 3

Other sources

All other sources account for 66.2 tCO_2e of total emissions

- The remaining scope 3 emissions sources combined count towards 6.1% of all scope 3 emissions. These sources include:
  - Electricity transmission and distribution
  - Water supply and treatment
  - Well to tank (WTT) fuel emissions; this includes the emissions created from the extraction, refining and transport of fossil fuels to the point of use.
  - Business travel and commuting
  - The disposal of waste directly created by the council's own operations.

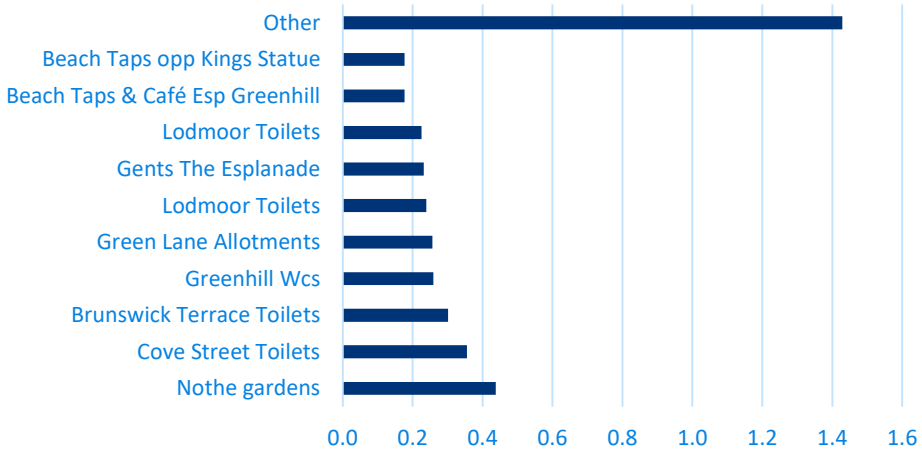


Scope 3

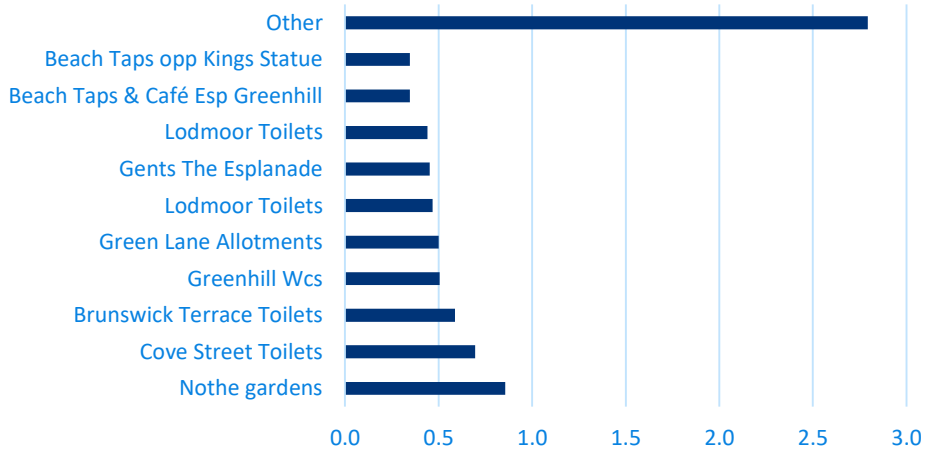
Other sources – Water breakdown

Below is a breakdown of the emissions calculated from water use and treatment. Supply of water accounts for 33.8% of total water emissions with the rest attributed to treatment.

Water Supply Emissions 2019 (tCO2e)



Water Treatment Emissions 2019 (tCO2e)

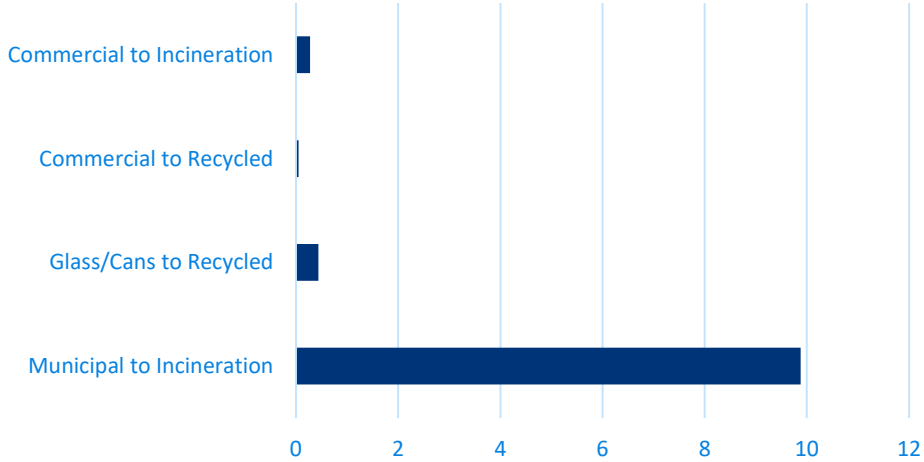


Scope 3

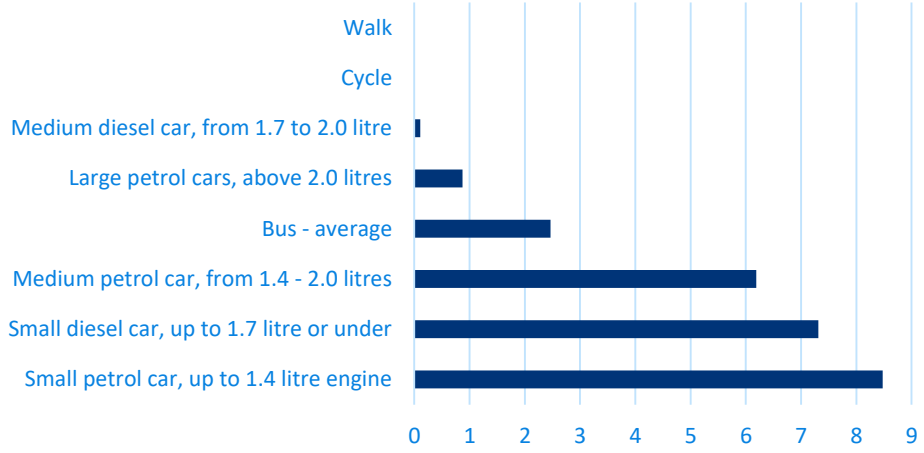
Other sources – Waste and Commuting

Below is a breakdown of the emissions calculated from waste and commuting, which account for 1% and 2% of the total footprint respectively.

Waste Emissions 2019 (tCO2e)



Commuting Emissions 2019 (tCO2e)



Footprint Summary Table

The table below provides a final breakdown of all emission contributions from each category and scope.

Source	Scope 1 (tCO_2e)	Scope 2 (tCO_2e)	Scope 3 (tCO_2e)	Total (tCO_2e)
Electricity	0.00	49.89	4.24	**54.13**
Biomass	6.94	0.00	3.52	**10.46**
Water	0.00	0.00	12.08	**12.08**
Fleet	36.98	0.16	8.84	**45.98**
Business Travel	0.00	0.00	1.47	**1.47**
Contracts	0.00	0.00	906.43	**906.43**
Waste	0.00	0.00	10.64	**10.64**
Leased Buildings	0.00	0.00	109.55	**109.55**
Commuting	0.00	0.00	25.42	**25.42**
Total	**43.92**	**50.05**	**1,082.19**	*1,176.16*

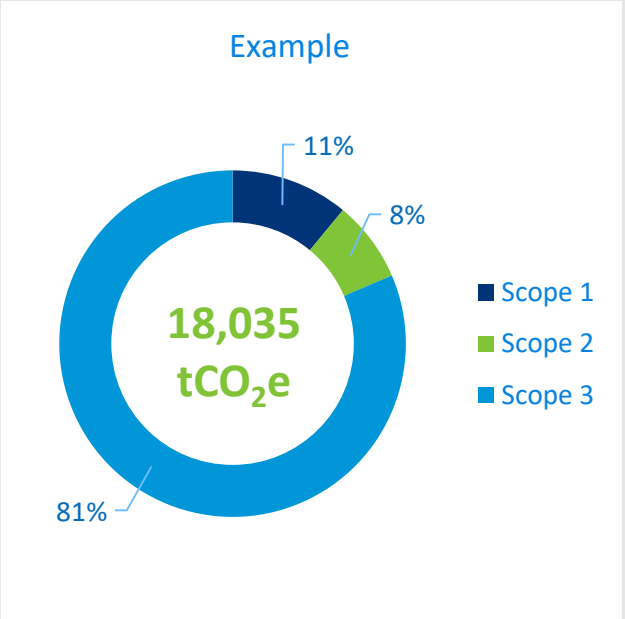
6

Benchmarking

Benchmarking

Local Council Example

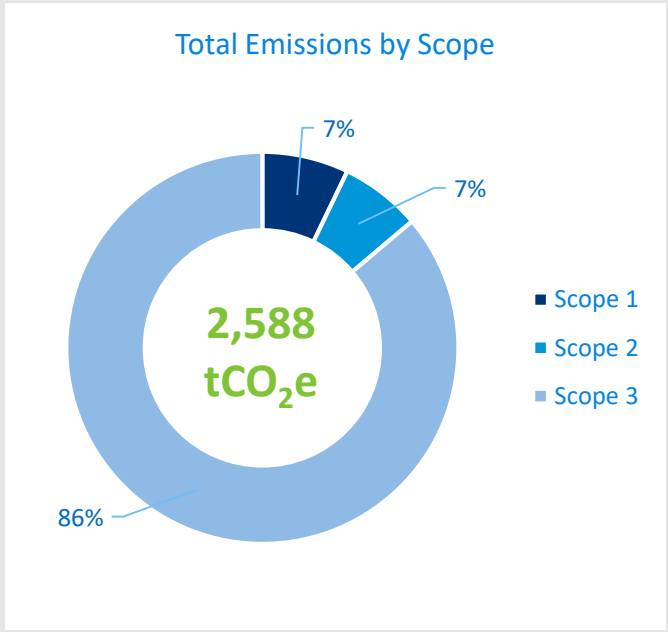
- The carbon footprint shown on the right is an example of recent work undertaken with a local council in England.
- Scope 3 emissions are comfortably the largest contributor, which is common across all local authorities.
- The difference here, compared to Weymouth, is that larger councils generally have a larger owned building stock and fleet of vehicles. Thus, scope 1 and 2 emissions are more prominent.



Benchmarking

Borough Council Example

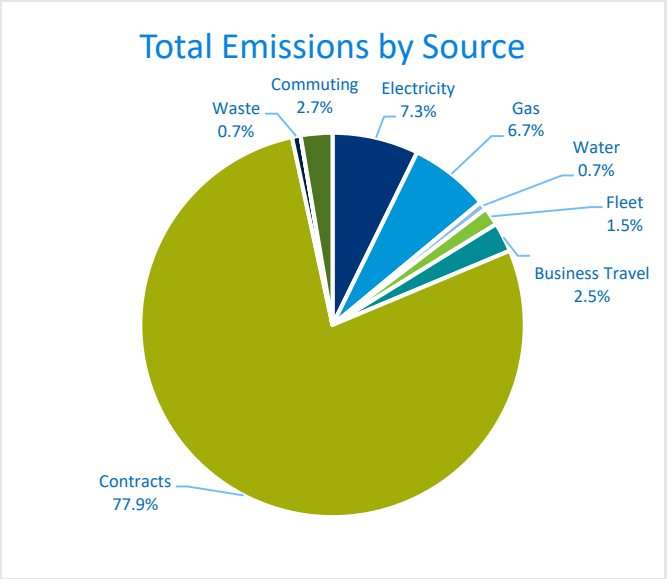
- The carbon footprint shown on the right is an example of recent work undertaken with a small borough council in England. This is a more comparable footprint for Weymouth.
- Scope 3 emissions are again comfortably the largest contributor.



Benchmarking

Borough Council Example

- The carbon footprint shown on the right is an example of recent work undertaken with a small borough council in England. This is a more comparable footprint for Weymouth.
- Contracts account for 77.9% of total emissions, this is similar to Weymouth at 77.1%.



7

Next Steps

Monitoring and Reporting

- One of the most fundamental follow-on activities for an organisation that has completed a carbon footprint is monitoring and reporting.
- It is integral that Weymouth aims to complete a carbon footprint at regular intervals in order to demonstrate progress in carbon reduction.
- As Weymouth becomes increasingly familiar with the process required to complete a carbon footprint, and is able to instil a strong data collection framework, they can begin to look to expand their footprint to cover all emission sources and revisit existing sources to make them more accurate and less reliant on proxies.
- This also acts as a method to verify and validate previous footprints.

Enhanced Scope 3 Footprinting

- As mentioned previously, Weymouth can aim to enhance their scope 3 footprint by moving away from proxy values (EEIO and benchmarks) to real, more precise data.
- Emission factors can be developed by doing a detailed scope 1 and 2 footprint of individual contractors, suppliers, and leased buildings. This creates an inventory of supply chain and leased buildings emissions, which can be updated at regular intervals.
- Furthermore, Weymouth could look to develop appropriate metrics for measuring the performance of key suppliers. By analysing the model and the results, it is likely that different metrics will be relevant for different economic sectors and/or key suppliers.
  - For example, the performance metric for the waste collection and treatment sector should be $kgCO_2e$/tonne of waste collected and treated, whereas the metric for passenger transport could be $kgCO_2e$/km of service delivered, or passengers served. For construction, it could be $kgCO_2e$/km of road laid or m^2 of building completed. For all suppliers however, there will always be the fall-back option of measuring $kgCO_2e$/£ spent.

Carbon Neutral & Net Zero Targets

- Now that a carbon footprint has been calculated, it can be used as a baseline on Weymouth's journey to net zero 2030; but what does 'net zero' actually mean?
- Carbon neutral is an internationally recognised term that has been commonly defined for 10 years. There is, however, currently no commonly agreed definition of what constitutes 'net zero'. In September 2019, the Science Based Target Initiative (SBTi), supported by the Carbon Trust, published a discussion paper containing a working definition of net zero. The SBTi intends to incorporate feedback from stakeholders in the next iteration of the definition, alongside publication of key principles and draft guidelines later this year.
- Below are the current definitions of net zero and carbon neutral:

Term	Definition	Defined by
Net Zero	A net-zero organisation will set and pursue an ambitious 1.5°C aligned Science Based Target for its full value chain emissions. Any remaining hard-to-decarbonise emissions can be compensated with certified greenhouse gas removal (GGR).	Science Based Targets Initiative
Carbon Neutral	A carbon neutral organisation will measure its carbon footprint, and develop and implement a Carbon Management Plan (including a reduction target). Residual emissions will be offset by high quality, certified carbon credits.	BSI PAS 2060

Science Based Target

- Once a carbon footprint has been calculated, it can be used as a baseline to derive a target for emissions reduction that is in line with what science says is needed to limit warming to 1.5ºc or well below 2ºc. A science based target will still aim to reach a net zero target, the science tells us when this needs to be achieved for the planet as a whole and for certain sectors.
- Setting such a target shows that an organisation is not only ambitious in its plans for reducing carbon, but acknowledges its role within a global framework.
- Two methods can be used to calculate a science based target:

1. **Sectoral decarbonisation approach (SDA)** is based on a "below 2ºC scenario"
   - Aims to provide organisations with a sector-specific and research-backed method to set their emissions goals.
   - *Drawback* - SDA currently doesn't allow a calculation of a 1.5ºC pathway
   - *Benefit* – Allows for organisations who have made strong progress so far to reduce emissions at a lower rate.

2. Absolute contraction (AC) methodology requires organisation's to reduce their own emissions by the same percentage of absolute emission reductions as required for a given scenario (2ºC or 1.5ºC).

- *Benefit* - AC does allow a calculation of a 1.5ºC pathway
- *Drawback* – All organisations must reduce emissions at the same rate, regardless of how much progress they have made so far.

Carbon Reduction Strategy

- Once a target has been set, a **detailed strategy** should be produced that demonstrates how to reach the target.
- A strategy must be **relevant** to the Council, and reflect **current and future ambitions** and projects.
- As part of a strategy, it is possible to determine the ease of reaching a science based target, or carbon neutral target; thereby also determining the likely level of **offsetting** the Council must carry out too.
- Carbon Trust would be pleased to discuss the development of a bespoke strategy with Weymouth based on the footprint work and project identification work.

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