

Douglas Borough Council

Carbon Footprint Report – FY 2018/19

Final v5

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Executive Summary

Executive Summary



Background

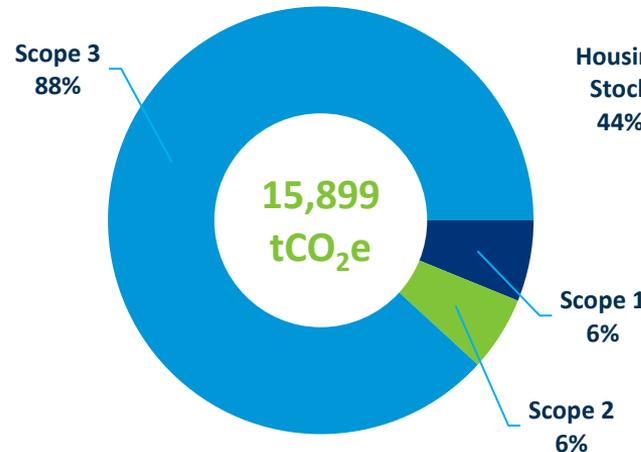
- The Carbon Trust have been contracted by Douglas Borough Council (DBC) to support the first stage of their decarbonisation journey, to complete a comprehensive carbon footprint of their direct and indirect carbon emissions (scope 1, 2 and 3) for the financial year 2018/19.
- Creating a carbon footprint 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 purchased energy (but generated elsewhere)
 - Scope 3: Emissions made by third parties in connection with operational activities

Executive Summary

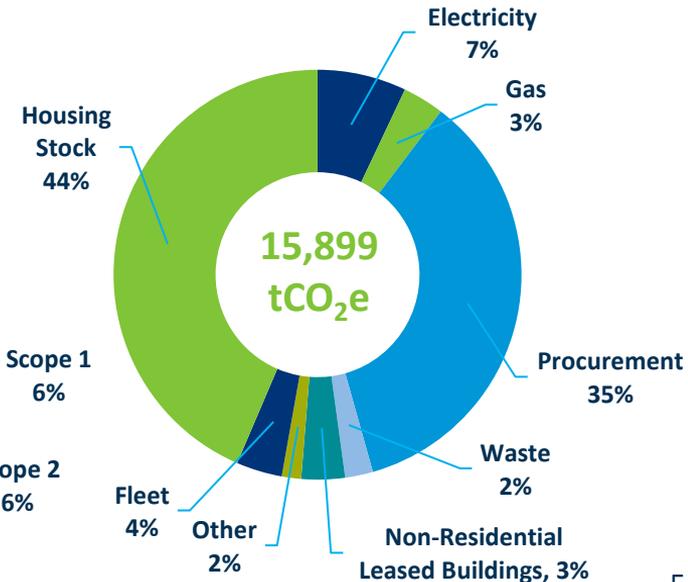
Key Findings

- The total green house gas emissions from Douglas Borough Council in the FY 2018/19 were **15,899 tCO₂e**.
- The vast majority of emissions fall under scope 3, of which most emissions arise from the procurement of goods and services and the housing stock.
- Indirect emissions associated with the procurement of goods and services along with energy consumption in the housing stock, is the source of around 79% of total Council emissions.

Total Emissions by Scope in FY 18/19



Total Emissions by Source in FY18/19



Executive Summary



Recommendations

The measured carbon footprint has highlighted key areas that the Council can focus on to reduce its emissions, including:

- Indirectly, the Council can reduce scope 3 emissions by requiring minimum sustainability/environmental standards when procuring contracts for goods and services; it is recommended that sustainability is a core metric to consider when renewing all contracts.
- Reducing natural gas consumption and associated emissions in the housing stock and other leased buildings through upgrades to building fabrics; servicing or replacing aging boilers; switching to electric or low carbon heating; testing and monitoring building efficiency (e.g. air tightness tests).
- Reducing electricity consumption and associated emissions through upgrading lighting to LED, installing onsite renewables and building energy efficiency measures.
- DBC should consider undertaking a feasibility study in to the decarbonisation of the Douglas Borough Crematorium as well as an assessment of the production and treatment of waste from Ballaughton Nurseries.

Executive Summary



Next Steps

- Monitoring and reporting – DBC should monitor carbon emissions on an annual basis and source data to create an expanded and comprehensive scope 3 footprint.
- Data collation – DBC should take measures to improve data accuracy (e.g. building consumption monitoring systems).
- Target setting – Setting an ambitious science based target will provide the Council with the necessary drive to take action to reduce its carbon footprint.
- Decarbonisation strategy – Develop a detailed DBC decarbonisation strategy and action plan to meet set targets.

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Summary of Organisations

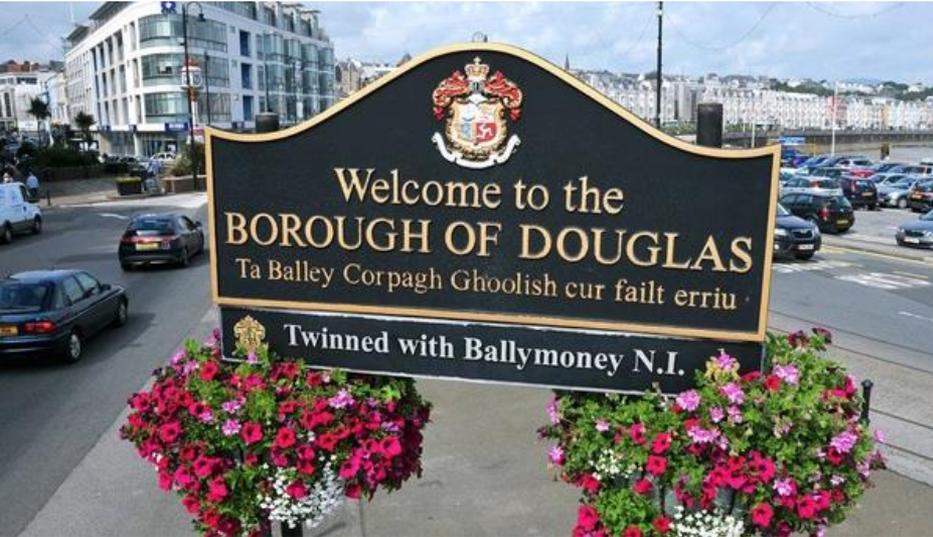
About Carbon Trust

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 Douglas Borough Council



Douglas Borough Council (DBC) operates local government services for the capital and principal Borough on the Isle of Man.

The Council operates services including: sheltered housing, social housing, public amenities (libraries, toilets etc.), parking, waste management and recreational facilities.

The Council employs around 250 staff, and spends approximately £15 million on contracts for goods and services annually.

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Background & Drivers

Background & Drivers



Background to the Report

- The need for taking immediate and bold action on climate change is being increasingly recognised by businesses, government and the general population.
- DBC has acknowledged their role in the need to take action and be an example to the whole of the Isle of Man through identifying and beginning to reduce emissions from its own operations.
- The Isle of Man Government has commissioned Professor James Curran to derive an action plan for the Island, some of which will have a direct bearing on the Council. The Council therefore needs to understand the current energy cost and carbon footprint of undertaking its day to day activities for it to determine where activities can be altered to reduce its energy consumption and carbon footprint. Such data would enable the Council to set targets to either reduce its energy use and/or eliminate its carbon burden. The Council's Executive Committee therefore agreed that this study should be commissioned as the Council did not have any data on its carbon footprint and did not have the in-house expertise to perform the necessary calculations.

Background & Drivers

Drivers for DBC

Climate Change Policy	The Isle of Man Government has, in January 2020, issued the “Isle of Man Government Action Plan for Achieving Net Zero Emissions by 2050 – Phase 1”. In addition, climate change adaptation is high on the agenda, with mitigation for rising sea levels and extreme weather considered to have a high impact.
Leadership	Recognising and taking strategic action towards reducing carbon emissions will ensure that the Borough of Douglas can lead the way in developing effective mechanisms to tackle climate change. This will set an example and help stimulate low carbon transitions across the whole of the Isle of Man.
Cost savings	With increasing pressure on Councils to cut costs, reducing the amount spent on energy bills is a key driver for lowering DBC’s energy consumption.
Reputation	As the largest Council on the Island, DBC is in the spotlight of the community. With the Climate Emergency agenda growing, and activism such as Extinction Rebellion gaining traction in local and mainstream media, it is important that DBC demonstrates a positive response to climate change mitigation.
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, which DBC subsequently has to meet.

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Carbon Footprint Boundary

Green House Gases



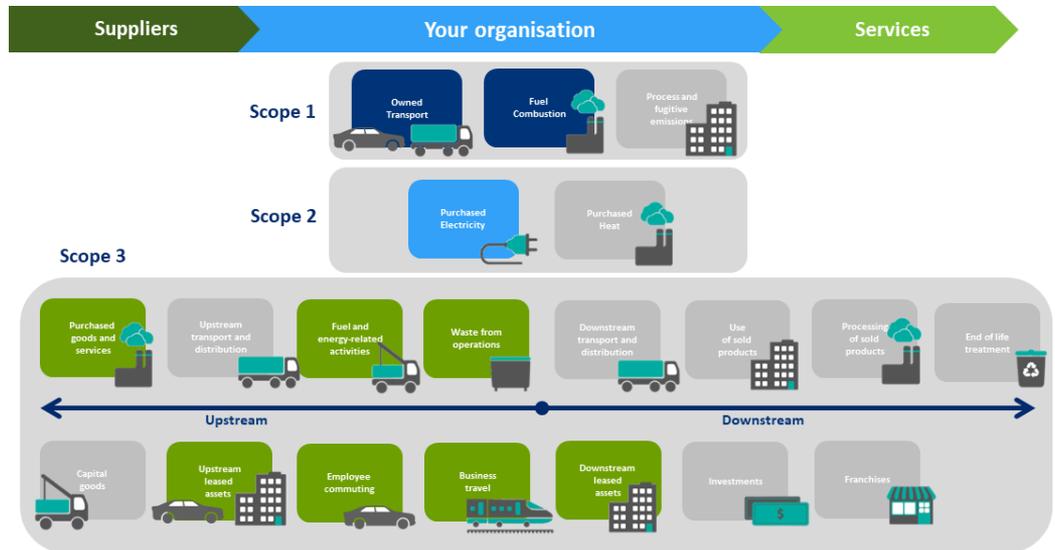
- Carbon dioxide is not the only green house gas. There are six other key green house gas types that contribute to global warming: **methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, nitrogen tetrafluoride and sulphur hexafluoride.**
- Not all of these gases arise from combustion of fossil fuels, with some originating from refrigeration/cooling, agriculture, chemical production and electrical applications, as well as feed-back loops releasing naturally stored greenhouse gases (e.g. permafrost).
- 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).
- Example: CO₂ has a GWP of 1, Methane has a GWP of 24; therefore we can say that 1 tonne of methane emissions is equal to 24tCO₂e.
- Although CO₂ has the lowest GWP, with some other GHGs having a GWP tens of thousands of times higher, it is also by far the most abundant GHG emission. Hence the focus on CO₂ when discussing emissions reduction and climate change.

GHG Protocol and Emissions Scopes



The **Green House Gas (GHG) Protocol** is the most widely used and accepted methodology for greenhouse gas emissions accounting. It provides a framework for businesses, governments and entities to measure and report greenhouse gas emissions that support ongoing reduction efforts in a consistent manner. The standard has been developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

Under the GHG Protocol, emission sources are divided into three scopes. Scope 1 emissions are a result of an organisations direct fuel combustion, scope 2 result from the direct use of energy without fuel combustion (e.g. electricity, purchased heat), while scope 3 emissions result from indirect activities associated with the organisation (e.g. upstream supply chain, downstream product use). The graphic to the right highlights the elements included in this footprint.



Data Table of Included Emission Sources



DBC have opted to include scope 1, 2 and 3 emissions in their footprint. The table below and on the following page details these included scope elements and the sources of data for the emission calculations.

Scope	Element	Category Description	Data Sources & Notes
Scope 1	Operational fuel consumption	Direct fuel burn in assets owned or operated by DBC	Asset natural gas consumption data (kWh) and costs
	Owned Fleet	Direct fuel burn in vehicles owned or operated by DBC	Purchased fuel records (fuel type, consumption and cost)
Scope 2	Purchased electricity	Indirect emissions from the production of purchased grid electricity	Asset electricity consumption data (kWh) and costs
Scope 3 Upstream	Purchased goods and services	Extraction, production and transportation of goods and services purchased or acquired by DBC	Procurement information associated with contracts by value
	Fuel and energy-related activities	Upstream emissions from scope 1 & 2 emissions	Covered in scope 1 & 2 data collection, "Well To Tank" (WTT) and electricity grid transmission & distribution (T&D) losses
	Waste generated in operations	Disposal and treatment of waste and wastewater generated in DBC's operations	Own operations waste generated (kg or tonnes) and water consumed (m ³)
	Waste collected and processed by DBC	Treatment of waste collected and processed by DBC	Processed waste (kg or tons)

Data Table of Included Emission Sources



Continued...

Scope	Element	Category Description	DBC Data Sources & Notes
Scope 3 Upstream (continued)	Business travel	Transportation of employees for business-related activities (in vehicles not owned or controlled by DBC)	Business mileage expenses
	Upstream leased assets	Operation of assets leased by DBC	Asset natural gas and electricity consumption data (kWh) and costs
	Employee/Member commuting	Transportation of employees/Members between their homes and their workplace	Staff travel survey (commuting mileage, transport type etc.)
	Upstream transportation and distribution of water	Emissions from the supply of water to DBC operated assets	Own operations water consumption (m ³)
Scope 3 Downstream	Downstream leased assets	Operation of non-residential assets owned by DBC and leased to third parties	Estimated based on benchmarks, site description and floor area
		Operation of residential assets in DBC's housing stock	Estimated based on benchmarks (see page 23) and asset data for 2376 DBC housing stock properties.

DBC have worked closely alongside the Carbon Trust to ensure that their carbon footprint is as comprehensive and accurate as feasibly possible. Only emission sources with full and accurate data available have been taken in to consideration.

Data Table of Excluded Emissions Sources



The data categories detailed in the table below have been deemed out of scope and excluded from the footprint.

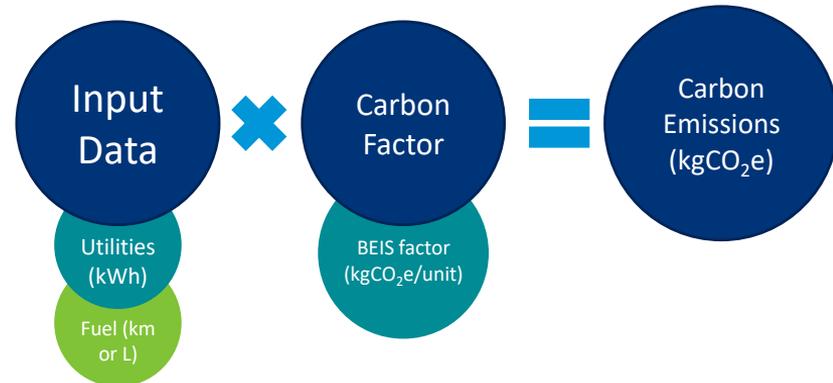
Scope	Category	Category Description	Notes
Scope 1	Process and fugitive emissions	Emissions directly released in to atmosphere from process operations	Out of scope: DBC don't have process operations
Scope 3 Upstream	Capital goods	Extraction, production and transportation of capital goods purchased or acquired by DBC.	Out of scope: Any capital goods (e.g. construction activities) assumed to be included within Purchased Goods & Services
	Upstream transportation and distribution of procured goods and services	Transportation and distribution of purchased products and services between the supplier and DBC.	Out of scope: Data is considered unavailable for the upstream transportation and distribution of procured goods and services.
Scope 3 Downstream	Franchises	Operation of franchises in the reporting year	Out of scope: No franchises available
	Use of sold products	End use of goods and services sold by DBC	Out of scope: DBC don't have sold products
	Processing of sold products	Processing of intermediate products sold by downstream companies	Out of scope: DBC don't have sold products
	End-of-life treatment of sold products	Waste disposal and treatment of products sold by DBC	Out of scope: DBC don't have sold products
	Downstream transportation and distribution	Transportation and distribution of products sold by DBC	Out of scope: DBC don't have sold products
	Investments	Operation of investments in the reporting year	Out of scope: DBC don't have any direct self-funded investments (DBC administer investments on behalf of the IOM Government however granularity of this data is insufficient for footprint reporting).

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Methodology

Calculation Methodology

- The Carbon Footprint for scopes 1 and 2, upstream scope 3 and leased assets has been built up from numerous data sources, with a specific calculation methodology applied to each, utilising emission factors published by BEIS (2018)¹.
- Scope 3 emissions arising from leased buildings (outside of the housing stock) have been calculated from CIBSE (Guide F 2013²) benchmarks of energy consumption per floor area for buildings of different uses.
- Carbon Trust have structured this Carbon Footprint in alignment with the GHG Protocol, grouping calculated emissions under each scope.
- To aid understanding and analysis of the footprint, the emissions have been further categorised by source.

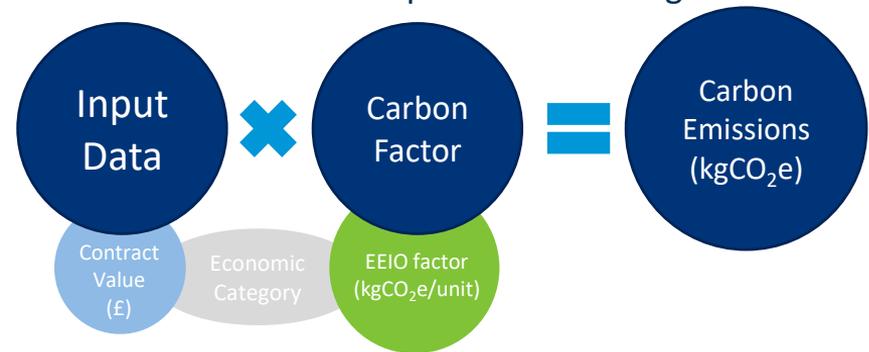


¹ <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

² <https://quidos.co.uk/wp-content/uploads/2015/08/CIBSE-TM46-Energy-Benchmarks.compressed.pdf>

Scope 3 Procured Goods & Services Methodology

- Scope 3 emissions arising from procured goods and services have been calculated using published environmentally extended input output (EEIO)³ conversion factors as referenced in the Greenhouse Gas Protocol. Carbon Trust has developed the methodology further based on this dataset and others.
- These EEIO conversion factors provide benchmarks for GHG emissions per unit of financial spend for a defined sector of the economy.
- This methodology allows for estimated scope 3 emissions and is useful for indicating the scale of emissions and decarbonisation focus areas within the procurement of goods and services.
- EEIO values however are sectoral wide so they will not reflect any actual changes that DBC makes to reduce these emissions. This issue can be addressed, and accuracy improved, by taking a market-based scope 3 approach in future footprinting (see page 47).



³ <http://www.ghgprotocol.org/Third-Party-Databases/OPEN-IO>

Housing Stock Data Estimation



- DBC's housing stock is made up of 2376 dwellings, all of which are billed independently to the tenants by their chosen energy supplier.
- Due to the complexity of accessing this billing data, electricity and gas consumption for the housing stock has been estimated based on published benchmarks for Council owned residential building domestic energy consumption based on EPC rating and dwelling type⁴. The benchmark figures were additionally adjusted based on dwelling floor area to account for varying energy demand against property size.
- DBC provided data on the relevant EPC band, dwelling type, primary heating source and floor area of each property. (Note that EPC bands were based on estimated SAP ratings provided by DBC).

⁴ <https://www.gov.uk/government/publications/energy-trends-december-2017-special-feature-article-domestic-energy-consumption-by-energy-efficiency-and-environmental-impact-2015>

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Data Collection & Assumptions

Data Sources



All input data has been sourced by Douglas Borough Council and been reviewed and cleansed by Carbon Trust where necessary. The below table details the specific sources of the input data received by Carbon Trust.

Scope	Data	Data Source
Scope 1	DBC operated sites gas consumption (kWh)	Manx Gas invoices
Scope 1	DBC operated sites oil consumption (kWh)	Ellan Vannin Fuels invoices
Scope 1	Fleet vehicle mileage (Council owned vehicles)	Fueltek online fuel management system
Scope 2	DBC operated sites electricity consumption (kWh)	Manx Utilities invoices
Scope 3	DBC operated sites water consumption (m ³)	Manx Utilities invoices
Scope 3	Business mileage (staff vehicles, Councillor vehicles, third-party transport)	DBC expense claims
Scope 3	Employee/Member commuting mileage and transport mode details	Staff travel survey Feb 2020
Scope 3	Council operated sites waste generation and terminal	Waste Services
Scope 3	Council operated Waste Transfer Station, Civic Amenity Site and Kerbside Collection waste processed and terminal	Waste Services
Scope 3	Procurement spend	Navision accounting system
Scope 3	DBC leased sites floor area and primary use	Property Sections - CAD Drawings
Scope 3	DBC housing stock SAP rating, dwelling type, floor area etc.	Housing stock asset list

Assumptions



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

- Non-residential leased buildings had descriptions matched to a CIBSE building category, there are assumptions here that all leased buildings align with the 'typical' UK building of that category.
- Fuel use at premises without meters was estimated by DBC.
- Business travel is based on expense claims. It was identified that there is likely to be some mileage that was not claimed, but this could not be accounted for.
- For the procurement spend data, DBC allocated suppliers to the required EEIO categories. It was considered that in some cases, although assigned to one category suppliers could fall into numerous.
- Estimations regarding some waste quantities and the disposal terminal of the Council's own waste were made.
- Waste (construction/demolition) collected from the maintenance of the housing stock (carried out by Douglas's Direct Labour Organisation) was excluded from the footprint due to lack of data as it is managed independently.
- All business travel flight mileage was assumed to be associated with domestic flights.
- Electricity consumption for car parks and public toilets without data was estimated based on consumption of similar facilities with similar floor area. Emissions associated with Bottleneck car park are estimated based on associated cost.
- In the housing stock data provided by DBC, dwellings were categorised as flats or houses. To further improve the energy consumption estimate, house archetypes (terrace, semi-detached etc.) were broken down based on analysis of aerial and street imagery of each site. Dwellings categorised as 'Maisonette' were treated as Terrace properties.
- Street lighting energy consumption data was estimated based on the annual spend and an assumed average tariff of 20p/kWh.

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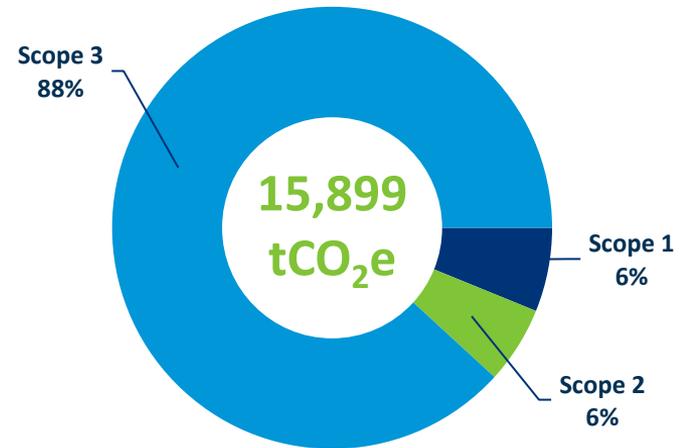
Carbon Footprint Breakdown by Scope

2018/19 Emissions Totals



- The total green house gas emissions from Douglas Borough Council in the FY 2018/19 were **15,899 tCO₂e**.
- The vast majority of emissions fall under scope 3, primarily due to the procurement of goods and services and DBC's housing stock.
- Scope 1 and 2 emissions contribute 12%, most of which is attributed to street lighting, as well as the burning of fuel in Council buildings and DBC fleet vehicles.

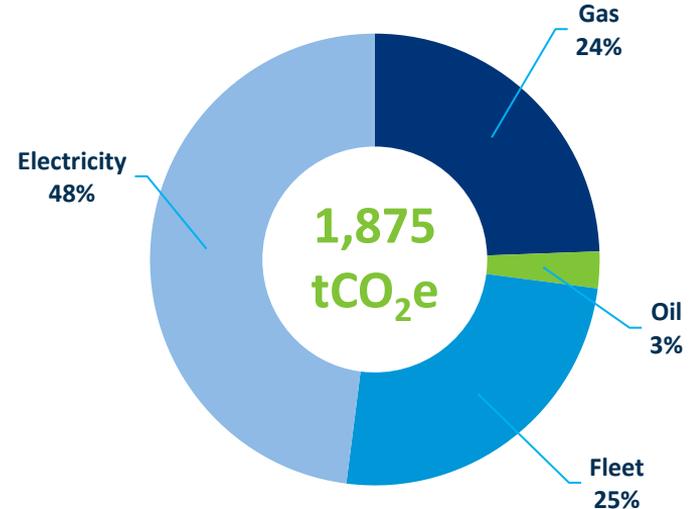
Emissions by Scope in FY 18/19



2018/19 Scope 1 & 2 Emissions Breakdown

- Scope 1 emissions are a result of the direct burning of fossil fuels by the Council.
- For DBC, this arises from three measured sources: natural gas and oil burnt in boilers to provide heating and hot water; incineration; and the Councils owned transport fleet which burns diesel, petrol and gas oil within internal combustion engines.
- Scope 2 emissions are those created from the generation of electricity consumed by the Council.
- In 2018/19 the Council created **976tCO₂e** from scope 1 emissions and **900tCO₂e** from scope 2 emissions.
- Electricity consumption is the biggest contributor to scope 1 & 2 emissions, largely due to street lighting. Natural gas consumption and fleet operations contribute in near equal measures.

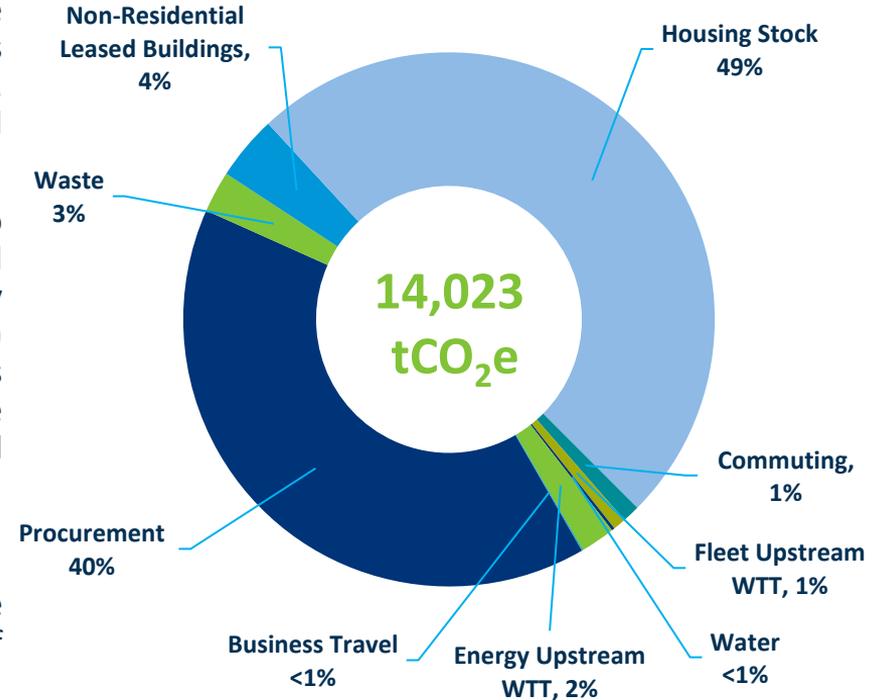
Scope 1 & 2 Emissions by Source in FY 18/19



2018/19 Scope 3 Emissions Breakdown

- Scope 3 emissions arise from indirect Council operations. Sources include: waste processing, business travel, procured goods and services, leased buildings, water usage, staff commuting and upstream gas, oil and electricity operations.
- Well-to-tank (WTT) emissions relate to upstream emissions of purchased fuels and fuels used to generate electricity (extraction, production, and transportation) consumed by DBC. T&D relates to emissions associated with the electricity lost in the transmission and distribution of consumed electricity.
- **14,023tCO₂e** arise from scope 3 activities.
- The largest sources of emissions from scope 3 arise from procurement contracts of goods and services and the housing stock.

Scope 3 Emissions by Source in FY 18/19



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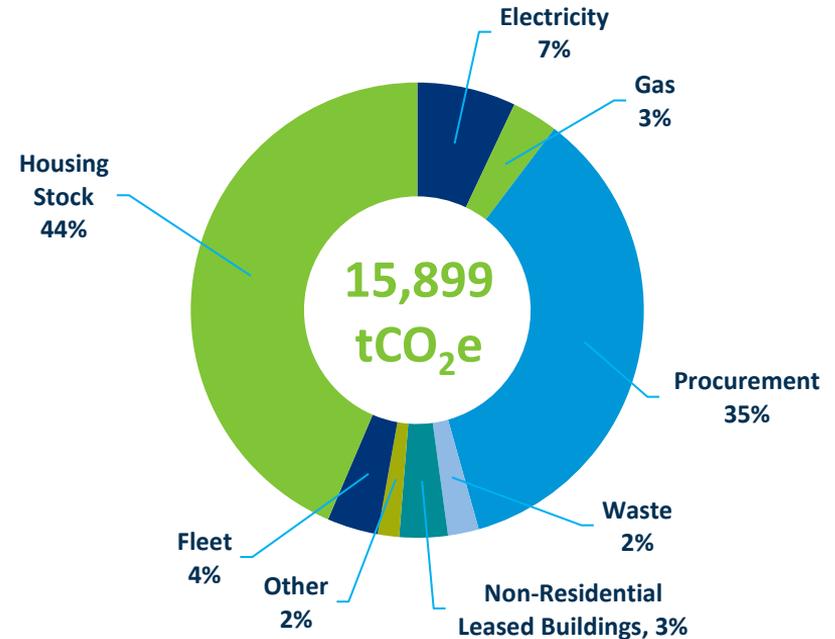
Carbon Footprint Breakdown by Source

2018/19 Emissions Totals



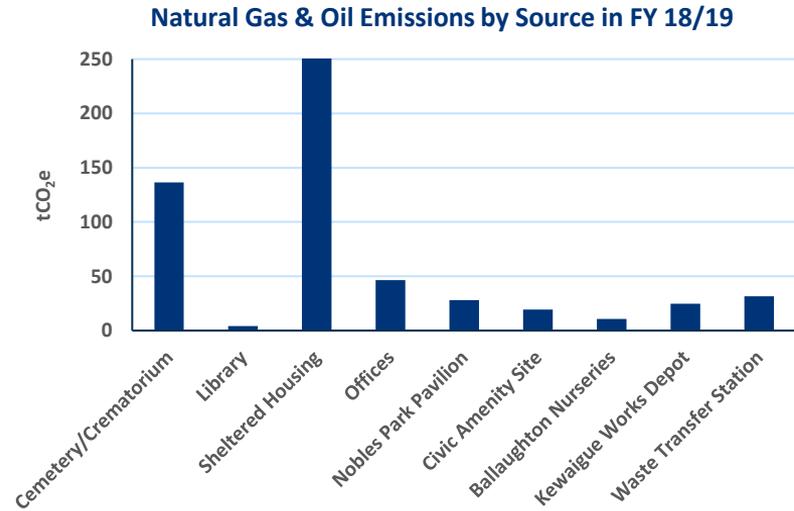
- The pie chart on the right highlights the main sources of DBC's emissions.
- Embodied carbon from goods and services (procurement) contribute a significant amount of total emissions. These result from the production, transportation and energy consumption in the creation and delivery of goods and services purchased or acquired by DBC.
- Equally as significant are emissions from DBC's housing stock as a result of energy consumed by the tenants.

Total Emissions by Source in FY18/19



Gas & Oil Consumption from DBC Operated Assets

- Emissions* arising from the combustion of natural gas in 11 sites and the combustion of oil in 4 sites operated by DBC have been calculated at **581 tCO₂e**. The sites include a mix of sheltered housing**, offices, waste processing facilities and crematoriums.
- It was established that DBC common/landlord operated areas in the sheltered housing stock contributed nearly 50% of the Council's total emissions from gas and oil in Council operated buildings. The burning of gas in the Douglas Borough Crematorium was the other single significant source, emitting around 21%.
- Emissions from other Council sources include gas heating in offices and public buildings as well as oil burning at the Civic Amenity Site, Kewaigue Works Depot and Ballaughton Nurseries.



Natural Gas & Oil accounts for ~4% of total Council emissions

*scope 1 and scope 3 (WTT)

**communal areas in these buildings that DBC operate and pay for.

Gas & Oil Consumption from DBC Operated Assets



- The top five highest emitting sites operated by DBC are shown in the table below, which together contributed **440 tCO₂e** in the year.
- The most effective methods for reducing natural gas consumption and associated emissions in buildings are to upgrade building fabric; service or replace aging boilers; adjust and monitor heating controls and temperature set points; and test and monitor building efficiency.
- DBC should also consider undertaking a feasibility study in to the decarbonisation of the crematorium.
- The total annual spend on natural gas and oil consumption in 2018/19 was in excess of £147,860.

Top Gas and Oil Emission Sources	tCO ₂ e	Cost to DBC
Waverley Court Sheltered Housing* (Gas)	206.3	£55,956
Douglas Borough Cemetery Crematorium (Gas)	119.5	£32,395
Ballanard Court Sheltered Housing* (Gas)	43.4	£11,780
Town Hall (Gas)	39.3	£10,613
Ballacottier Waste Transfer Station (Gas)	31.7	£8,578

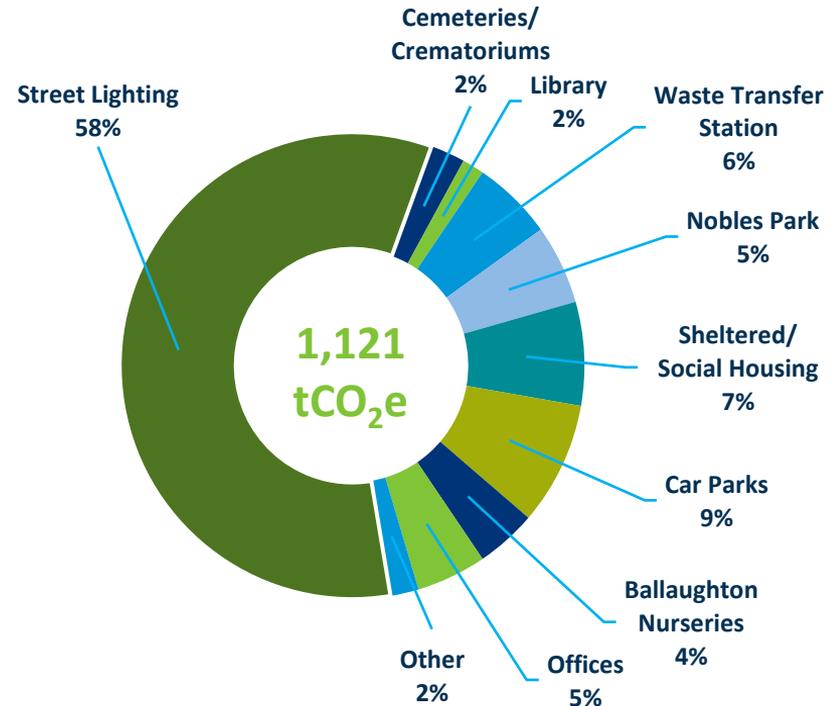
*communal areas in these buildings that DBC operate and pay for.

Electricity Consumption from DBC Operated Assets

- Emissions* from electricity consumption within DBC operated buildings amount to **1,121 tCO₂e**.
- The majority of these emissions arise from the use of electricity for street lighting. The Council manages and maintains over 4,200 street lights. Other emissions arise from the use of electricity in buildings, with a proportion also arising from electricity use in four Council car parks.
- Electricity emissions will naturally decrease over time as a result of the decarbonisation of the UK National Grid. However, further efforts to reduce these emissions from on site renewables and energy efficiency measures are important to reduce stress on the grid, speed up decarbonisation and help to mitigate any increases in electricity prices.

Electricity accounts for ~7% of total Council emissions

Electricity Emissions by Source in FY 18/19



*scope 1 and scope 3 (WTT and T&D)

**communal areas in these buildings that DBC operate and pay for.

Electricity Consumption from DBC Operated Assets

- Emissions arising from electricity consumption have been recorded from street lighting* and 25 separate DBC operated sites including two offices, sheltered housing, public buildings, five public toilets, three car parks*, waste processing facilities and recreational spaces.
- The top five highest emitting assets, are shown in the table below, with an annual cost to the Council of **£503,500**.
- The most effective methods for reducing electricity consumption and associated emissions are to switch to LED lighting (this is of particular importance to streetlighting, car parks and park lighting, but also relevant to all other buildings); service or upgrade HVAC systems, upgrade appliances to energy efficient types and make sure to switch them off when not in use.
- The Council should also consider installing renewable energy generation to provide zero carbon electricity. Building mounted and standalone Solar PV systems will provide the Council with options to relatively cost effectively decarbonise scope 2 emissions (e.g. ~9 years** simple payback).

Top Electricity Emission Sources	tCO ₂ e	Cost to DBC
Street Lighting	652.5	£369,961
Ballacottier Waste Transfer Station	50.5	£34,952
Ballaughton Nurseries	38.0	£26,425
Town Hall	37.3	£25,643
Nobles Park & Playing Fields	35.9	£28,562

*Emissions associated with street lighting and Bottleneck car park are estimated based on associated cost and an average tariff assumption.

**Average payback for systems on IoM as quoted by gogreen.im

Fleet

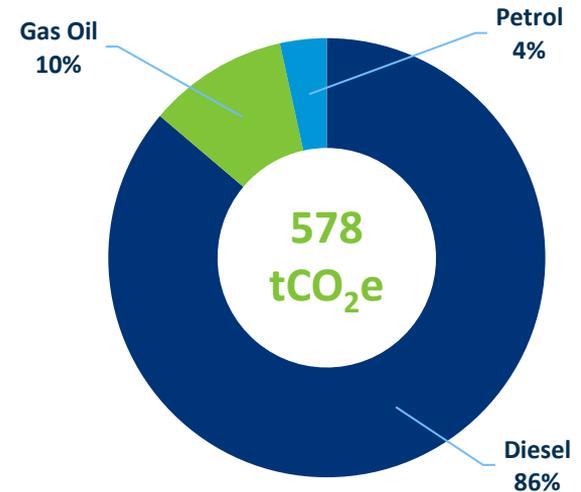


Fleet
accounts
for ~4% of
total
Council
emissions

- Emissions* from use of fleet vehicles contributed to **578tCO₂e** in the FY 2018/19.
- The majority of DBC fleet runs on diesel and includes vans, tippers, tail lifts, hoists, refuse and kerbside collection, sweepers and general HGVs.
- Emissions also arose due to combustion of gas oil and petrol in tractors and plant equipment (14%).
- Around 40% of total fleet mileage was attributed to Council vans.
- Electrification or switching to low/zero carbon fuels for the Councils owned transport fleet will be the main option to decarbonise this area. Cost parity in the near future and the resulting business case for EVs is likely to indicate that DBC should move to low carbon vehicles (LCVs) or EVs soon.

*scope 1 and scope 3 (WTT)

Fleet Emissions by Fuel Type in FY 18/19



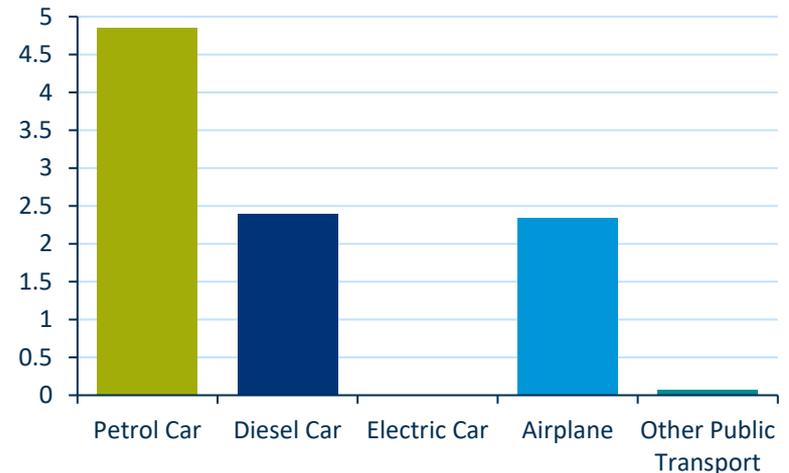
Business Travel



Business travel accounts for 0.1% of total Council emissions

- Business travel is travel carried out by Council employees via public transport and in employee owned vehicles for Council related activities.
- Emissions from business travel was calculated based on expense claims and found to be **10 tCO₂e**.
- In the FY 2018/19, 19,531 miles were carried out in staff owned vehicles and 1,983 miles in Councillor owned vehicles.

Business Travel Emissions by Transport Type in FY 18/19



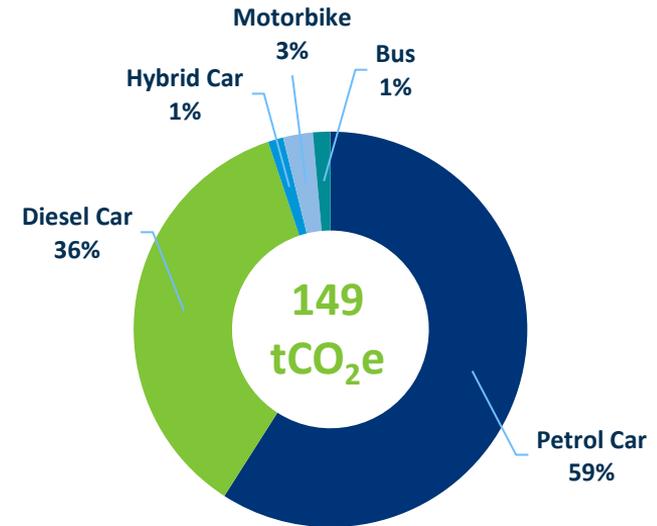
Staff Commuting



Staff Commuting accounts for ~1% of total Council emissions

- A staff commuting survey was undertaken by DBC (Feb 2020). The survey had 106 responses, representing around half of the Council's staff and covered feedback from both office based and operational staff.
- It was established that 86% of staff drive to work, contributing to an estimated 143 tCO₂e in the year.
- Measures to tackle these emissions include encouraging staff to change their mode of transport. 68% of staff have a round-trip commuting distance of less than 12 miles, indicating that this could be achieved by improving awareness of and encouraging use of the cycle to work scheme and facilitating access to public transport services. In addition, only 18% of drivers were reported to car share, so introducing a car-share scheme could be an additional effective decarbonisation measure (in a post Covid-19 world).

Emissions from Staff/Councillor Commuting by Transport Type in FY 18/19



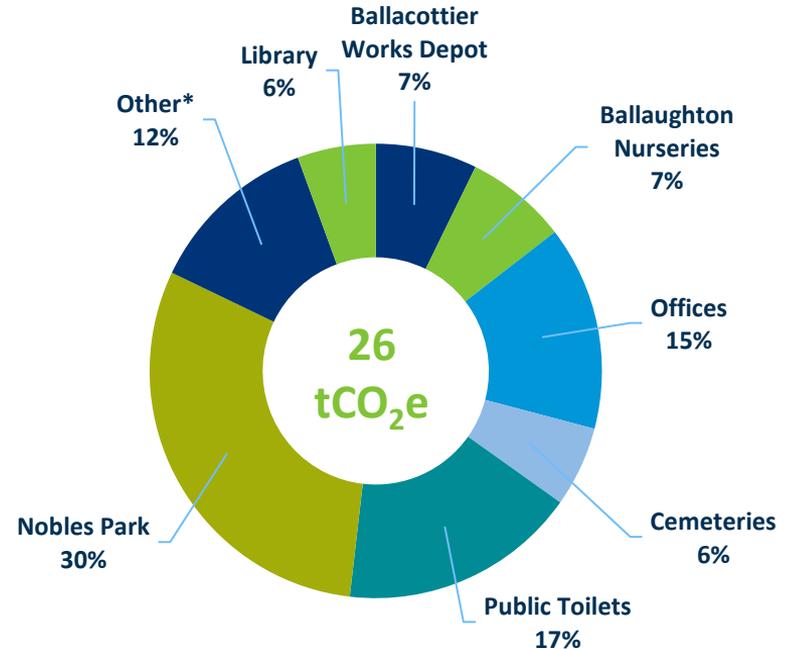
Water Supply & Treatment

- Emissions arise indirectly through the upstream supply and downstream treatment processes of water consumed through Council operations.
- DBC's water consumption contributed to **26tCO₂e**, less than 1% of total scope 3 emissions.

Water accounts for ~0.2% of total Council emissions

Top Water Emission Sources	tCO ₂ e
Nobles Park Pavilion	8.2
Public Toilets	4.6
Town Hall	3.0
Ballacottier Waste Transfer Station	2.0
Ballaughton Nurseries	2.0

Water Supply & Treatment Emissions by Source in FY 18/19



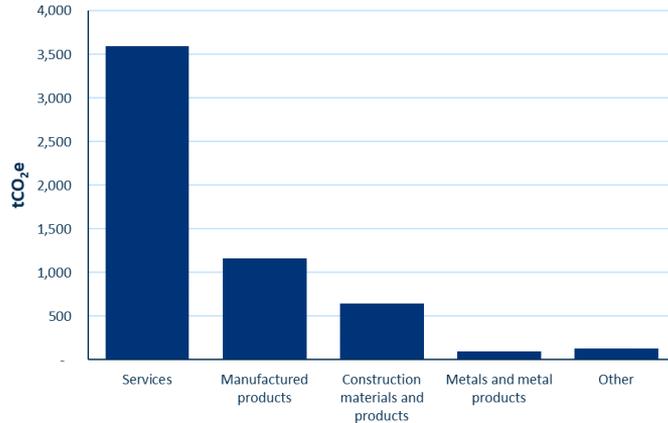
*Other = Spring Valley changing rooms, Summerhill Glen, Market Street Works Depot, Middle River Industrial Estate, Kewague Works Depot, Millennium Water gardens, Pulrose New Police House and Railway Hill Fountain.

Procured Goods & Services

- Emissions arising from contracts held by the Council sum to an estimated **5,610 tCO₂e**; comprising multiple contracts totalling a value of **£10.4million**.
- Despite being an indirect source, the Council is still able to influence third party product and service based emissions. This can be achieved through requiring minimum sustainability/environmental standards when procuring contracts; it is advised that sustainability be a core metric to consider when renewing all contracts.
- The majority of DBC's estimated procurement emissions arise from contracting services from residential maintenance and building services. The full breakdown of categories can be found in appendix 1.

Procurement accounts for ~ 35% of total Council emissions

Procurement Emissions by Contract Type in FY 18/19



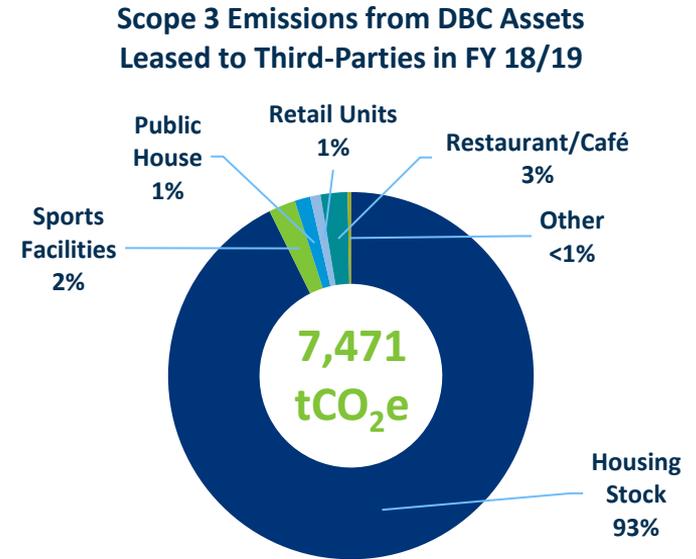
Top Scope 3 Procurement Category Emission Sources	tCO ₂ e	Total Value of Contracts
Residential maintenance and repair services	2,691.8	£5,113,086
Concrete pipes, bricks, and blocks	613.2	£376,203
Motor vehicle bodies	325.9	£555,317
Lighting fixtures	298.8	£500,037
Buildings and dwellings services	204.0	£207,903

*As these emissions are based on benchmark values per procurement spend, emissions resulting from transportation of goods to the island are assumed to be included within the associated spend. For a more accurate breakdown this would need to be established through future market-based scope 3 footprinting of individual suppliers.

Leased Buildings

- Leased buildings are sites that are owned by the Council but leased out to third-party users; this means the Council has no direct control over how energy is used on that site but has control and influence over the built assets, including building fabric, lighting, energy sources, maintenance and upkeep. Therefore, emission reduction measures beyond user behaviour can be undertaken or influenced by the Council.
- The Council currently leases 27 recorded non-residential sites, these comprise community facilities, retail units, and sports / leisure facilities. Estimates of emissions for these non-residential sites are calculated as **548 tCO₂e**.
- DBC also own a housing stock of 2,376 dwellings. These dwellings are mostly gas (65%) or oil (33%) heated (2% are gas/biomass heated) the consumption of which contributes **4,815 tCO₂e** to DBC's footprint. Electricity consumption in the dwellings contributes an additional **2,108 tCO₂e**.
- The consumption of energy in the housing stock properties equates to an estimated annual cost to tenants of approximately £1.6million.

Non-Residential Leased Buildings account for ~3% of total Council emissions

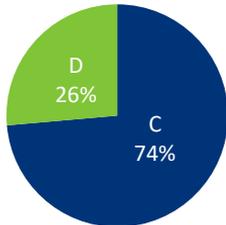


Leased Buildings – Housing Stock

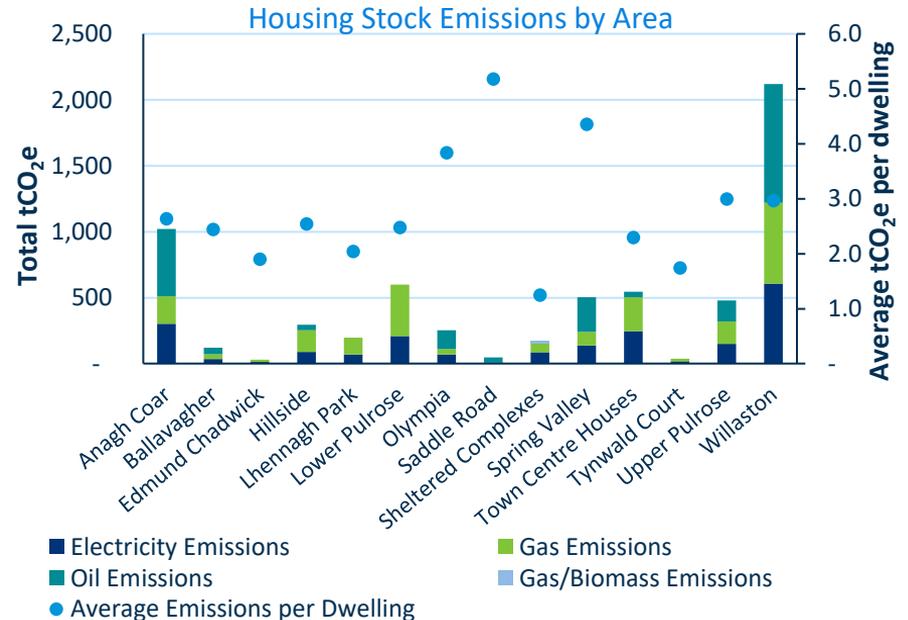
- The graph below on the right shows emissions from the housing stock broken down by area, and also highlights the relative performance of dwellings in each area.
- All dwellings have C or D EPC rating and at the end of the current 5-year central heating contract, the majority of the boilers will be <5 years old. EPC ratings can be improved within the housing stock through measures such as loft and wall insulation and double glazing.
- Tenant behaviours and willingness to support low carbon upgrade and green energy tariffs is also a critical aspect. DBC should look to develop and message it's decarbonisation ambitions in a targeted way to tenants to help build support.

DBC's Housing Stock accounts for ~44% of total Council emissions

EPC Breakdown



Streets with Highest Scope 3 Housing Stock Emissions	tCO ₂ e	No. Dwellings
Willaston Crescent	357	93
Heather Crescent	282	82
Keppel Road	271	87
Hillside Avenue	265	98
Springfield Avenue	251	55

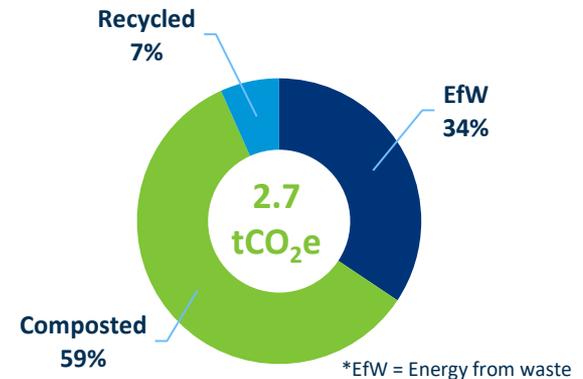


Waste

Waste Produced by DBC

- Emissions resulting from the downstream processing of waste generated across 22 DBC operated sites was calculated and found to amount to **2.7tCO₂e**.
- DBC produced a total of **204 tonnes of waste from its own operations** in the year 18/19. Nearly 75% of this arose from composted garden waste produced at Ballaughton Nurseries. Due to this high volume, 59% of emissions from Council produced waste comes from composted materials.
- In addition to this, the Council operate a Household Waste Kerbside Collection Service and two waste processing facilities, the Eastern Civic Amenity (CA) Site and the Ballacottier Waste Transfer Station (WTS). The Civic Amenity Site processes waste from six local authorities while the Waste Transfer Station processes recycled waste (excluding glass) from the Borough's Kerbside Collection Service. Because DBC take responsibility of this collected and processed waste and have control over how and where it is finally disposed of or re-processed, it was concluded that these emissions associated with this waste fall within the footprint boundary and so were included in the scope 3 emissions, as summarised on the next page.

Emissions from Waste Arising from DBC Operations by Waste Terminal in FY 18/19



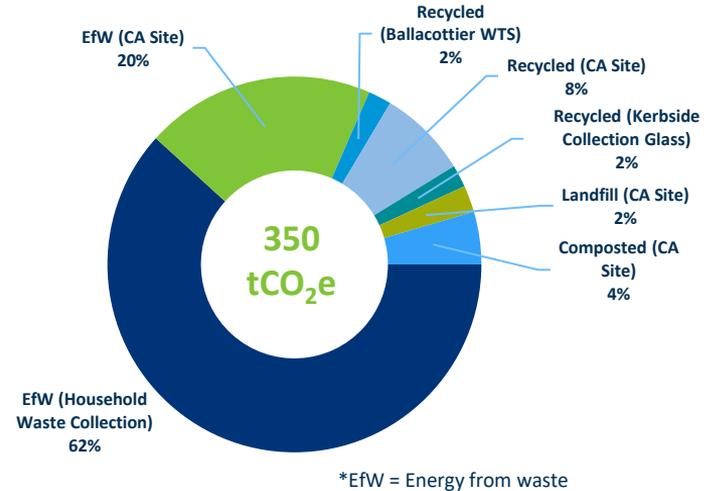
Waste accounts for ~2% of total Council emissions

Waste

Waste Collected/Processed by DBC

- The council collected ~10,750 tonnes of recycling and household waste from the kerbside in 2018/19, 94% of this was disposed of at an IOM EfW facility, 3% was sent for re-processing at a local glass crushing facility and the rest was recycling processed at the Council's Waste Transfer Station.
- At the Council's two waste processing facilities, around 7,300 tonnes of waste was processed in the financial year. The breakdown of emissions from waste associated with the two facilities and collection service is shown on the right.
- Total emissions from waste collected and/or processed by the Council amounted to 350tCO₂e**, around 82% of which arose from waste incinerated with energy recovery.
- Around **1,400 tonnes** of recycled waste produced and processed by DBC was shipped to the UK for final processing. Due to lack of raw data available on this activity, emissions due to shipping waste were estimated based on spend associated with the waste shipping services and included with the procurement emissions section of this report. It is recommended that this aspect is more accurately assessed in future market-based scope 3 footprinting to give greater understanding of the impact of this and for comparison with the Council's own waste processing operations.

Emissions from Waste Collected and/or Processed by DBC by Waste Terminal in FY 18/19



Footprint Summary Table



The table below summarises all of Douglas Borough Council's greenhouse gas emissions in the financial year 2018/19.

Source	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	Scope 3 (tCO ₂ e)	Total (tCO ₂ e)
Electricity	-	899.6	221.5	1121.1
Gas	458.1	-	63.7	521.8
Oil	49.2	-	10.4	59.6
Water	-	-	25.7	25.7
Fleet	468.4	-	109.7	578.1
Business Travel	-	-	9.7	9.7
Procurement	-	-	5,610.7	5,610.7
Waste	-	-	351.3	351.3
Staff Commuting	-	-	148.8	148.8
Non-Residential Leased Buildings	-	-	548.1	548.1
Housing Stock	-	-	6,923.7	6,923.7
Total	975.6	899.6	14,023.3	15,899

9

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 DBC aims to complete a carbon footprint at regular intervals in order to demonstrate progress in carbon reduction.
- As DBC 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



- DBC 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 and suppliers. This creates an inventory of supply chain emissions, which can be updated at regular intervals.
- Furthermore, DBC 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 kgCO₂e/tonne of waste collected and treated, whereas the metric for passenger transport could be kgCO₂e/km of service delivered, or passengers served. For construction, it could be kgCO₂e/km of road laid or m² of building completed. For all suppliers however, there will always be the fall-back option of measuring kgCO₂e/£ spent.
- To further improve the accuracy of the estimates around the energy consumption in the housing stock, primary energy consumption data for candidate properties should be sought to validate the assumptions made, and accurate EPC data should be collated for all properties.
- It is also recommended that emissions from shipping waste to the UK is assessed in future footprinting to give greater understanding of the impact of this and for comparison with the Council's own waste processing operations.

Carbon Neutral & Net Zero Targets

- Now that a carbon footprint has been calculated, it can be used as a baseline to derive a target for emissions reduction. DBC should be ambitious with their target setting and join Council's and organisations across the world setting carbon neutral or net zero targets.
- 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



- DBC have the option to set a target that is in line with what the latest science says is needed to limit warming to 1.5°C or well below 2°C. 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.
- Benefits of setting a science-based target:
 - Credibility and reputation - shows that the Council is not only ambitious in its plans for reducing carbon, but acknowledges its role within a global framework
 - Drive innovation and competitive advantage – short and long-term pathways to emissions reduction will drive innovation and shape long term business strategy
 - Increase resilience against upcoming regulation – reducing emissions in line with the science reduces exposure to future carbon emissions-related regulation
 - Engage internal and external stakeholders – create a 'buy-in' from stakeholders that helps the Council achieve and even exceed your targets.

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 organisation, 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.
- An action plan is an essential component of a strategy, and maps out how the target set will be reached through costed and quantified policies, projects and interventions.
- **Carbon Trust would be pleased to discuss the development of a bespoke strategy and action plan with DBC**, building on the completed footprint work to design interventions that reduce the Council's footprint and move it forwards to meeting its target.

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Appendix

Appendix 1: Procurement Categories



The following table provides greater detail on what is included within the scope 3 procurement emissions categories as well as further emission breakdown within the category.

Procurement Category	Description	tCO ₂ e
Manufactured products	Air conditioning, refrigeration, and warm air heating equipment	1.3
	Automobiles	35.6
	Blinds and shades	15.7
	Communication and energy wires and cables	1.3
	Cutlery, utensils, pots, and pans	0.3
	Electrical appliances (small)	1.2
	Electrical equipment and components (miscellaneous)	104.2
	Farm machinery and equipment	42.7
	Garden and lawn equipment	19.6
	Handtools	0.5
	Heating equipment (except warm air furnaces)	19.6
	Lighting fixtures	298.8
	Manufactured products (miscellaneous)	89.6
	Motor vehicle bodies	325.9
	Motor vehicle parts	0.5
	Office furniture and custom architectural woodwork and millwork	13.5
	Plate work and fabricated structural products	0.7
	Plumbing fixture fitting and trims	18.0
	Pump and pumping equipment	0.5
	Showcases, partitions, shelving, and lockers	0.2
Signs	0.3	
Special tools, die, jigs, and fixtures	0.2	
Sporting and athletic goods	10.9	
Stationery products	11.0	

Appendix 1: Procurement Categories



Procurement Category	Description	tCO ₂ e
Manufactured products (continued)	Transportation equipment (miscellaneous)	1.9
	Vending, commercial, industrial, and office machinery	20.3
	Watches, clocks, and other measuring and controlling devices	1.4
	Wood kitchen cabinets and countertops	1.0
	Wood products (miscellaneous)	122.1
Construction materials and products	Asphalt shingle and coating materials	14.4
	Concrete pipes, bricks, and blocks	613.2
	Non-residential structures (miscellaneous)	4.3
	Residential permanent site single- and multi-family structures	0.3
	Stones (mined and quarried)	8.8
Electronics	Broadcast and wireless communications equipment	1.3
	Communications equipment (miscellaneous)	2.3
	Computers	4.6
	Electronic components (miscellaneous)	25.4
	Printed circuit assembly	5.4
Food and Drink products	Food (miscellaneous)	1.7
	Soft drinks and ice	0.4
Glass and glass products	Flat glass	11.0
Industrial gases and dyes	Industrial gases	6.8
Metals and metal products	Iron, steel and ferroalloys	15.5
	Metal products (ornamental and architectural)	17.5
	Other fabricated metals	15.0
	Turned products, screws, nuts, and bolts	47.9
Textiles	Apparel accessories and other apparel	0.3
	Carpet and rugs	9.0
	Curtains and linen	0.03
	Textile products (miscellaneous)	0.7

Appendix 1: Procurement Categories



Procurement Category	Description	tCO ₂ e
Paints, varnishes and printing ink	Paints and coatings	0.6
Pharmaceuticals	Pharmaceutical preparations	2.6
Plastics products	Plastics pipe and pipe fittings	0.1
	Plastics products (miscellaneous)	0.9
Pulp and paper	Paper products (converted)	50.5
Services	Accommodation services	0.1
	Accounting, tax preparation, bookkeeping, and payroll services	10.4
	Advertising and related services	2.1
	Agriculture and forestry support activities	16.5
	Amusement and recreation industries	0.1
	Amusement parks, arcades, and gambling industries	3.7
	Architectural, engineering, and related services	12.8
	Automotive equipment rental and leasing services	1.0
	Automotive repair and maintenance, except car washes	7.1
	Book publishers	4.4
	Buildings and dwellings services	204.1
	Business support services	8.1
	Commercial and industrial machinery and equipment rental and leasing services	2.4
	Commercial and industrial machinery and equipment repair and maintenance services	47.8
	Data processing, hosting, and related services	0.4
	Dry-cleaning and laundry services	0.4
	Educational Services	5.0
Employment Services	2.7	
Environmental and other technical consulting services	3.9	

Appendix 1: Procurement Categories



Procurement Category	Description	tCO ₂ e
Services (continued)	Facilities support services	67.7
	Food services and drinking places	17.4
	Information services	0.0
	Insurance carriers	14.7
	Legal services	15.8
	Management of companies and enterprises	10.8
	Monetary authorities and depository credit intermediation	0.2
	Non-residential maintenance and repair services	54.4
	Office administrative services	0.1
	Photographic services	3.8
	Pipeline transportation services	12.1
	Postal services	16.1
	Printing services	16.2
	Professional, scientific, and technical services (miscellaneous)	4.0
	Residential maintenance and repair services	2691.8
	Scientific research and development services	4.5
	Securities, commodity contracts, investments, and related activities	23.9
	Software publishers	15.6
	Software, audio, and video media reproduction services	95.5
	Telecommunications services	22.8
	Transit and ground passenger transportation services	169.0
	Travel arrangement and reservation services	0.1
	Truck transportation services	2.0



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