

Appendix 3: SRBC One Carbon World Report 2020

One Carbon World



Report

Presented to:

South Ribble Council

April 2020

Disclaimer:

All reasonable measures have been taken to ensure the accuracy of this report and any errors in data used for

footprint calculations are the responsibility of the grant recipient named in this report.

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Introduction

South Ribble Council have been awarded the One Carbon World Carbon Neutral Gold Standard grant.

This report details the carbon footprint of South Ribble Council and provides recommendations to reduce and off-set its footprint.

The activities included in the carbon footprint measurement were agreed in consultation between One Carbon World and South Ribble Council. The calculation of the footprint was undertaken by One Carbon World after a desk-top review of data provided by South Ribble Council.

This report meets the reporting requirements of the Green House Gas (GHG) Protocol Corporate Standard and is compatible with international standards ISO 14064 and PAS 2060.

One Carbon World have taken all reasonable measures to ensure the accuracy of this report. Any omissions or errors in data are the responsibility of the grant recipient named in this report.

Carbon Footprint Report

Name: South Ribble Council

Address: Civic Centre, West Paddock,

Leyland, PR25 1DH Description: Local

Authority

Footprint boundary: All activities under operational control, covered under Scopes 1, 2 and 3 of the Green House Gas (GHG) Protocol Corporate Standard.

Footprint Period: 01/04/2018 to 31/03/2019

Activities/Emissions included in footprint:

- Fuels
- Material use
- Outside of scopes
- Refrigerant & other
- Transmission and distribution
- UK electricity
- Waste disposal
- WTT- fuels
- WTT- UK & overseas elec

The GHG Protocol Corporate Standard requires reporting a minimum of scope 1 and scope 2 emissions.

Scope 1 - Direct Green House Gas (GHG) Emissions:

Scope 1 (direct emissions) emissions are those from activities owned or controlled by an organisation. Direct emissions are principally the result of the following types of activities:

- Generation of electricity, heat, or steam. These emissions result from combustion of fuels in stationary sources, e.g. boilers, furnaces, turbines
- Transportation of materials, products, waste, and employees. These emissions result from the combustion of fuels in company owned/controlled mobile combustion sources (e.g. trucks, trains, ships, airplanes, buses, and cars)
- Fugitive emissions. These emissions result from intentional or unintentional releases, e.g., equipment leaks from joints, seals, packing, and gaskets; methane emissions from coal mines and venting; hydrofluorocarbon (HFC) emissions during the use of refrigeration and air conditioning equipment; and methane leakages from gas transport
- Physical or chemical processing. Most of these emissions result from manufacture or processing of chemicals and materials, e.g. cement, aluminium, and waste processing

Scope 1 Emissions data supplied and included in footprint:

- Total Refrigerant & other : Ground maintenance - street cleaning : Trustee Amenity – weed killer kg :

- Total Refrigerant & other : Ground maintenance - street cleaning : Qualgex – moss killer kg :
- Total Refrigerant & other : Ground maintenance - street cleaning : Icade - herbicide kg :
- Total Refrigerant & other : Ground maintenance - street cleaning : Finale – weed killer kg :
- Total Refrigerant & other : Ground maintenance - street cleaning : Chikara - herbicide kg :
- Total Refrigerant & other : Ground maintenance - street cleaning : Antifreeze kg :
- Total Refrigerant & other : Ground maintenance - street cleaning : Ad blue kg :
- Total Fuels : Liquid fuels : Petrol (average biofuel blend) litres : Volume
- Total Fuels : Liquid fuels : Lubricants tonnes : Tonnes
- Total Fuels : Liquid fuels : Gas oil litres : Volume
- Total Fuels : Liquid fuels : Diesel (average biofuel blend) litres : Volume
- Total Fuels : Gaseous fuels : Natural gas cubic metres : Volume
- Total Fuels : Gaseous fuels : CNG litres : Volume

Scope 2 - Indirect GHG Emissions:

Scope 2 (indirect) emissions are those released into the atmosphere that are associated with the consumption of purchased electricity, heat, steam and cooling. These indirect emissions are a consequence of an organisation's energy use but occur at sources not owned or controlled.

Scope 2 Emissions data supplied and included in footprint:

- Total UK electricity: Electricity generated : Electricity: UK kWh :

Scope 3 - Other Indirect GHG Emissions:

Scope 3 (other indirect) emissions are a consequence of actions that occur at sources not owned or controlled and not classed as Scope 2 emissions. Examples of Scope 3 emissions are business travel by means not owned or controlled by an organisation, waste disposal, or materials or fuels an organisation purchases. Deciding if emissions from a vehicle, office or factory are Scope 1 or Scope 3 may depend on how operational boundaries are defined.

Scope 3 Emissions data supplied and included in footprint:

- Total WTT- UK & overseas elec : WTT- UK electricity (T&D) : Electricity: UK kWh :
- Total WTT- UK & overseas elec : WTT- UK electricity (generation) : Electricity: UK kWh :
- Total WTT- fuels : WTT- liquid fuels : Petrol (average biofuel blend) litres : Volume
- Total WTT- fuels : WTT- liquid fuels : Lubricants tonnes : Tonnes
- Total WTT- fuels : WTT- liquid fuels : Gas Oil litres : volume
- Total WTT- fuels : WTT- liquid fuels : Diesel (average biofuel blend) litres : Volume
- Total WTT- fuels : WTT- gaseous fuels : Natural Gas cubic metres : Volume
- Total WTT- fuels : WTT- gaseous fuels : CNG litres : Volume
- Total Waste disposal : Refuse : Municipal waste tonnes : Landfill
- Total Waste disposal : Paper : Paper and board: mixed tonnes : Closed- loop
- Total Waste disposal : Metal : Metal: scrap metal tonnes : Landfill
- Total Transmission and distribution : T&D- UK electricity : Electricity: UK kWh :
- Total Material use : Paper : Paper and board: paper tonnes : Primary material production
- Total Material use : Organic : Compost derived from food and garden waste tonnes : Primary material production

Footprint Calculation Method:

The most common approach for calculating GHG emissions is through the application of documented and approved GHG emissions conversion factors. These factors are calculated ratios that relate GHG emissions to a proxy measure of activity at an emissions source.

Further detail on emissions factors and the methodology behind them can be found at <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

The activity data or amount of 'resources' used are multiplied by the relevant emissions factors to calculate total Greenhouse Gas equivalent (CO₂e) emissions.

$$\text{GHG emissions} = \text{activity data} \times \text{emission conversion factor}$$

There are seven main GHGs that contribute to climate change, as covered by the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). Different activities emit different gases and an organisation should report on the Kyoto Protocol GHG gases produced by its activities.

CO₂e is the universal unit of measurement to indicate the global warming potential (GWP) of GHGs, expressed in terms of the GWP of one unit of CO₂. The GWPs used in the calculation of CO₂e are based on the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) over a 100-year period (this is a requirement for inventory/national reporting purposes).

All conversion factors used in this report are in units of kilograms of carbon dioxide equivalent (kg CO₂e).

Emissions factors used in footprint calculation:

Activity Type	Emissions Factor	Source
WTT- UK & overseas elec	Total WTT- UK & overseas elec : WTT- UK electricity (generation) : Electricity: UK kWh :	DEFRA Conversion Factors Full Set for Advanced Users 2018
WTT- UK & overseas elec	Total WTT- UK & overseas elec : WTT- UK electricity (T&D) : Electricity: UK kWh :	DEFRA Conversion Factors Full Set for Advanced Users 2018
WTT- fuels	Total WTT- fuels : WTT- gaseous fuels : Natural Gas cubic metres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
WTT- fuels	Total WTT- fuels : WTT- liquid fuels : Diesel (average biofuel blend) litres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
WTT- fuels	Total WTT- fuels : WTT- liquid fuels : Petrol (average biofuel blend) litres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
WTT- fuels	Total WTT- fuels : WTT- liquid fuels : Lubricants tonnes : Tonnes	DEFRA Conversion Factors Full Set for Advanced Users 2018
WTT- fuels	Total WTT- fuels : WTT- gaseous fuels : CNG litres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
WTT- fuels	Total WTT- fuels : WTT- liquid fuels : Gas Oil litres : volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
Waste disposal	Total Waste disposal : Refuse : Municipal waste tonnes : Landfill	DEFRA Conversion Factors Full Set for Advanced Users 2018
Waste disposal	Total Waste disposal : Paper : Paper and board: mixed tonnes : Closed-loop	DEFRA Conversion Factors Full Set for Advanced Users 2018
Waste disposal	Total Waste disposal : Metal : Metal: scrap metal tonnes : Landfill	DEFRA Conversion Factors Full Set for Advanced Users 2018
UK electricity	Total UK electricity : Electricity generated : Electricity: UK kWh :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Transmission and distribution	Total Transmission and distribution : T&D- UK electricity : Electricity: UK kWh :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Refrigerant & other	Total Refrigerant & other : Ground maintenance - street cleaning : Ad blue kg :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Refrigerant & other	Total Refrigerant & other : Ground maintenance - street cleaning : Antifreeze kg :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Refrigerant & other	Total Refrigerant & other : Ground maintenance - street cleaning : Qualgex – moss killer kg :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Refrigerant & other	Total Refrigerant & other : Ground maintenance - street cleaning : Trustee Amenity – weed killer kg :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Refrigerant & other	Total Refrigerant & other : Ground maintenance - street cleaning : Chikara - herbicide kg :	DEFRA Conversion Factors Full Set for Advanced Users 2018

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Refrigerant & other	Total Refrigerant & other : Ground maintenance - street cleaning : Finale – weed killer kg :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Refrigerant & other	Total Refrigerant & other : Ground maintenance - street cleaning : Icade - herbicide kg :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Outside of scopes	Total Outside of scopes : Forecourt fuels containing biofuel : Diesel (average biofuel blend) litres :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Outside of scopes	Total Outside of scopes : Forecourt fuels containing biofuel : Petrol (average biofuel blend) litres :	DEFRA Conversion Factors Full Set for Advanced Users 2018
Material use	Total Material use : Organic : Compost derived from food and garden waste tonnes : Primary material production	DEFRA Conversion Factors Full Set for Advanced Users 2018
Material use	Total Material use : Paper : Paper and board: paper tonnes : Primary material production	DEFRA Conversion Factors Full Set for Advanced Users 2018
Fuels	Total Fuels : Gaseous fuels : Natural gas cubic metres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
Fuels	Total Fuels : Liquid fuels : Diesel (average biofuel blend) litres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
Fuels	Total Fuels : Liquid fuels : Petrol (average biofuel blend) litres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
Fuels	Total Fuels : Liquid fuels : Lubricants tonnes : Tonnes	DEFRA Conversion Factors Full Set for Advanced Users 2018
Fuels	Total Fuels : Gaseous fuels : CNG litres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018
Fuels	Total Fuels : Liquid fuels : Gas oil litres : Volume	DEFRA Conversion Factors Full Set for Advanced Users 2018

Assumptions and/or Omissions:

Emissions from waste production have been calculated over a 52-week period and using 0.5 tonnes weight for a full 1,100 litre bin and 15 tonnes per 20 yd ro-ro skip.

Emissions from water use are not included.

Emissions from use of lubricant and hydraulic oils based on assumption that 1,149 litres weigh 1 tonne (<https://www.quora.com/How-many-litres-of-oil-will-make-one-tonne-oil>).

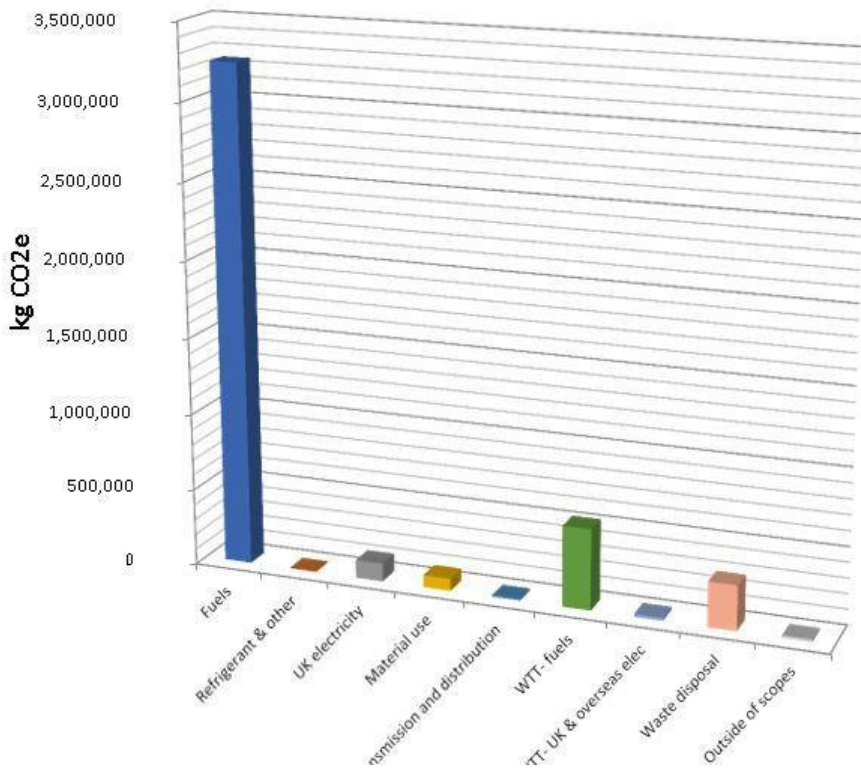
Emissions from use of organic compost based on 700 litres = 1 tonne.

Carbon Footprint:

The Total Carbon Footprint of the activities measured = 4305.41

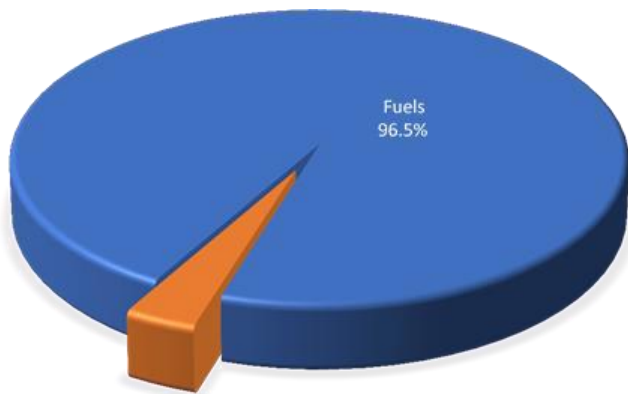
tonnes CO₂e.

Sources of CO₂e by emission activity



Footprint detail

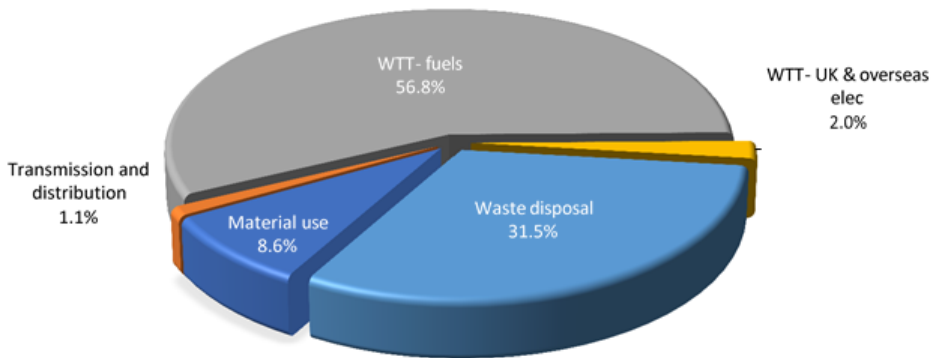
Sources of CO2e emissions by Energy & Fuel Use



UK Electricity 3.5%

Sources of CO2e by Indirect Emissions (Scope3)

Carbon Footprint Reduction Recommendations



Carbon Footprint Reduction Recommendations

The most significant sources of CO₂e emissions identified is:

- Fuel use, primarily natural gas, but also diesel and petrol use in Council fleet.

To reduce these emissions, it is recommended that:

- The amount of natural gas used is reviewed and if possible reduced. As natural gas is primarily used for heating purposes, there could be some very quick wins with a thorough audit of the system. On the back of the audit and identification of

energy use over time, there could be better/more efficient methods to insulate Council buildings, improve heating systems, or supply alternative/renewable energy sources for heating

e.g. infrared panel heaters, air source heat pumps (ASHPs), ground source heat pumps (GSHPs), solar thermal, solar PV plus others.

- The amount of diesel/petrol used is reviewed and if possible reduced. On the back of a thorough audit and identification of diesel/petrol use over time, better/more efficient use of vehicles can be achieved through planning to reduce journey numbers. Also, more and more hybrid and electric vehicles are available in the marketplace with much lower emissions. By phasing out over time vehicles that run on diesel/petrol and replacing them with vehicles that use hybrid technology or that are electric powered, South Ribble Council will be able to reduce the carbon footprint of its operations (and potentially reduce fuel costs).

To effectively monitor the Carbon Footprint of South Ribble Council over time, it is also recommended that a relevant performance indicator is chosen e.g. tonnes CO₂e per Employee.

4305.41 tonnes CO₂e / 250 employees = 17.22 tonnes of CO₂e per person per year.

Other performance indicators could also be used, such as those based on financial data e.g. KgCO₂e per £, with the cost indicator linked to financial turnover and/or profit.

These recommendations are non-exhaustive and are designed to provide guidance only.

Further reduction recommendations

In addition to reducing its own emissions through action targeted reduction strategies, South Ribble Council can off-set its unavoidable CO₂e emissions **now**. This can be achieved through investing in verified projects that support reduction of CO₂e emissions even further. In doing so, South Ribble Council will be provided with time to develop effective emissions reduction strategies.

South Ribble Council has been awarded the One Carbon World Carbon Neutral Gold Standard grant which includes the retirement of up to 300 tonnes equivalent of carbon credits. The 300 carbon credits that will be retired in the name of South Ribble Council come from both verified international afforestation projects and from United Nations clean development mechanism projects. With the retirement of these credits the 2018 - 2019 Carbon Footprint of South Ribble Council will be offset to a total of **4006 tonnes**.

Further to the retirement of the 300 carbon credits, with the support of the One Carbon World grant, South Ribble Council can optionally offset the balance of its 2018 - 2019 Carbon Footprint of 4006 tonnes for a cost of **£4807.20**.

By offsetting the balance of its 2018 - 2019 Carbon Footprint, South Ribble Council will achieve the One Carbon World Carbon Neutral Gold Standard and can communicate to all stakeholders that they have measured and off-set all emissions arising from Energy, Fuel, Waste & Materials Use.

kg CO2e Summary Table

Activity Type	Total kg CO2e	Total Tons CO2e
Fuels	3,243,018.19	3,243.02
Refrigerant & other	2,706.17	2.71
UK electricity	117,441.21	117.44
Material use	79,229.21	79.23
Transmission and distribution	10,011.15	10.01
WTT- fuels	526,016.14	526.02
WTT- UK & overseas elec	18,902.12	18.90
Waste disposal	292,193.89	292.19
Outside of scopes	15,889.14	15.89
Total	4,305,407.22	4,305.41

Type kg CO2e Summary Table

Type	Total kg CO2e	Total Tons CO2e
Organic	29.43	0.03
Metal	810.00	0.81
Paper	81,423.74	81.42
T&D- UK electricity	10,011.15	10.01
WTT- gaseous fuels	337,800.56	337.80
WTT- liquid fuels	188,215.59	188.22
WTT- UK electricity (generation)	17,416.83	17.42
WTT- UK electricity (T&D)	1,485.28	1.49
Refuse	289,159.93	289.16
Total	926,352.51	926.35

Class & UOM kg CO2e Summary Table

Class & UOM	Total kg CO2e	Total Tons CO2e
Compost derived from food and garden waste tonnes	29.43	0.03
Metal: scrap metal tonnes	810.00	0.81
Paper and board: mixed tonnes	2,223.96	2.22
Paper and board: paper tonnes	79,199.78	79.20
Electricity: UK kWh	28,913.27	28.91
CNG litres	2.90	0.00
Natural Gas cubic metres	337,797.66	337.80
Diesel (average biofuel blend) litres	168,228.17	168.23
Gas Oil litres	14,925.18	14.93
Lubricants tonnes	2,165.94	2.17
Petrol (average biofuel blend) litres	2,896.30	2.90
Municipal waste tonnes	289,159.93	289.16
Total	926,352.51	926.35