Data Collection and Input Guidance

Contents

1. Introduction

This guide will provide simple instructions on how to collect accurate data to calculate Carbon Emissions and use the Carbon Tracker. Guidance is aligned to the Welsh Government document "Welsh Public Sector Net Zero Reporting Guide".

2. Importance of Good Data

It is important that data is detailed, accurate, complete, and traceable. This ensures.

- carbon emission figures are a good reflection of an organisation's activity.
- better decision making and prioritisation.
- year on year calculations can be compared to one another.

This guide will help understand what good data looks like and how it can be sourced.

3. Record Keeping

Good record keeping as part of gathering and inputting data into the calculator is key to ensuring that the data is traceable, future calculations are comparable, context can be applied to any significant changes in emissions (e.g., improved methodology) and improvements can be made in future.

In the carbon calculator, each row where information is recorded has a dedicated cell for adding notes and commentary about that data collected, such information could be.

- How it was sourced
- What was the Method Used (some emission sources have multiple ways to collect data)
- Is it complete or did the data need processing to fill any gaps (e.g., applying an average)

Users are advised to create a dedicated file for the Climate Toolkit, with a subfolder for each calculation year where calculations and evidence of data can be stored.

4. Using the Carbon Calculator

4.1 Introduction

The Carbon Calculator is an excel-based tool issued by Welsh Government for public sector use but has been simplified for users ensuring it is relevant for them.

The calculator is structured with tabs at the bottom of the document which contain tables for the Introduction, Summary Results, and different emission categories.
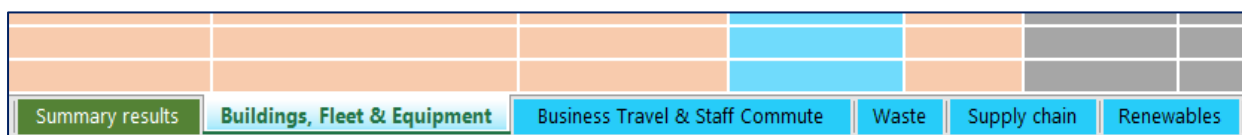

Image 1 *Page tabs at the bottom of the Carbon Calculator excel spreadsheet.*

4.2 Adding Information and Data

In this tool, there are **orange** and **blue** cells where users select and add information. **Orange** cells are drop-down lists where users select a particular piece of information such as an emission source, its details and units for the data. **Blue** cells are where users add the quantity of data for that emission source (e.g., miles travelled, kWh of electricity, etc.). The calculator then processes this into a quantity of carbon emissions in $kgCO_2e$ (kilograms of carbon dioxide equivalent).

Each row must be completed from left to right, as drop-down options are dependent on the information selected in the cell to the left.

Notes and commentary for each row of information should be added into the final **orange** cell under the heading "Notes". All other cells in the calculator are protected.

The following example shows how information is added to the calculator using a number of steps. This example is the collective diesel mileage for staff commute to work and returning home. Total miles are 100,000.

Step 1

Find the relevant table to insert your data by selecting the correctly named tab. Once the correct tab is selected, scroll down to find the relevant table.
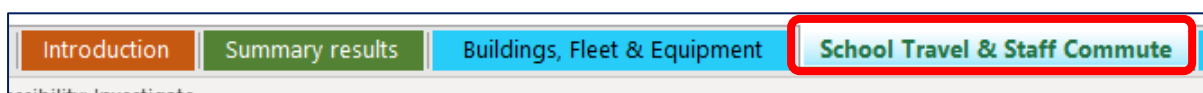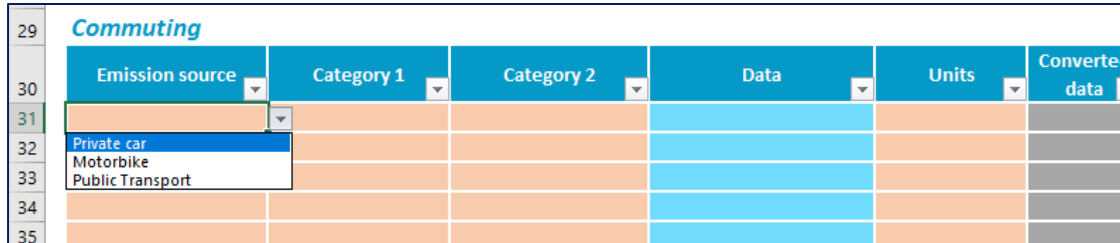

Image 2 *Page tabs at the bottom of the Carbon Calculator excel spreadsheet.*

Step 2

When the correct table is found (in this case, commuting), start selecting the correct information using the drop-down lists from left to right. Firstly, emission source needs to be selected and for this example select "Private Car".
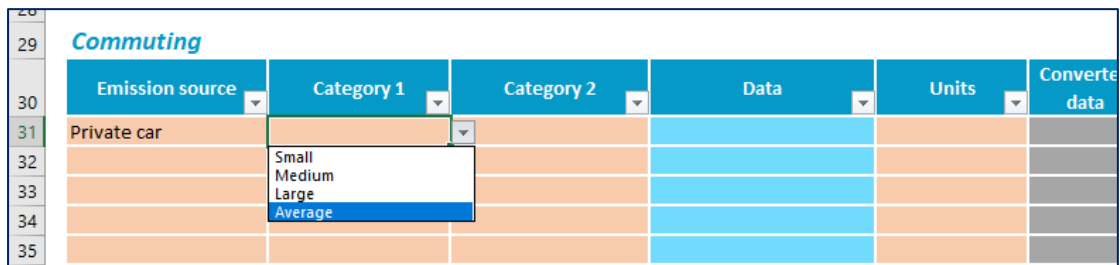

Image 3 *Select the correct emission source using the drop-down list.*

Step 3

Category 1 in the Commuting table asks the user to select the size of the vehicle. Users should always select "Average" to ensure simplicity.

For Public Transport, Category 1 provides the options of public transport-type which includes: Taxi, Bus, Rail or Ferry.
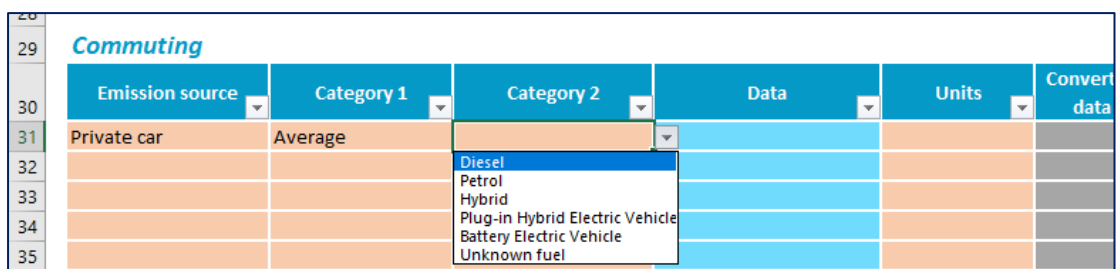
Image 4 *Select the correct category relevant to that emission source.*

Step 4

Category 2 for commuting asks the fuel type of the vehicle giving options such as diesel, petrol, electric vehicle, etc. In this example, diesel is selected.

Where public transport is selected, this asks for the type of taxi, bus, rail or ferry. In most cases, it is likely that Taxis are 'Taxi-Regular', Buses are 'Average Local Bus', and Rail is 'National Rail'. It is unlikely Ferry will be selected but clarify with staff which Category 2 is relevant to them.

Image 5 *Where required, select the correct 2ⁿᵈ category for that emission source.*

Step 5

The next piece of data a user needs to add is total commute distance travelled (100,000) and the units (miles). Depending on the emission source, the drop-down for units can also show litres, kWh, etc. When all of this information is added, a carbon emission value will be given in the column titled "Total Emissions".

Section 5.2 provides a breakdown of typical units of data for emissions sources.

***Image 6** Insert the total data relevant to an emission source and state units.*

Step 6

As a last piece of information, users should add details under 'notes' to explain how the data was sourced (this could be invoices, surveys, meter reads, etc.), and any issues or adjustments. This will ensure future calculations can use the same or improved methodology.

To explain the calculation, The cell highlighted **Yellow** converts the data inserted by the user to a standardised unit preferred by the calculator. The cell in **Dark Blue** shows the emission factor specific to the information added in steps 2-5. The cell highlighted in **Red** shows the total carbon emissions for that line of data, in this case, 100,000 miles of staff commute using private diesel cars produces 34,088.94 kg CO_2e.

***Image 7** Add information in the notes section to record methodology used.*

Step 7

Be sure to repeat these steps for all emission sources the organisation has from energy and water use, fleet travel, waste and supply chain in order to complete the carbon footprint.

4.3 Summary Results Page

As data is populated in the calculator, the Summary Results tab is automatically updated. This displays all the emissions figures per category and overall total (cells are yellow for ease of identification).

Figures are given in $kgCO_2e$ and can be converted into tonnes (tCO_2e) by dividing by 1000.

Once all raw data has been added to the calculator, users should update the Carbon Tracker to reveal graphs and any reductions in emissions if multiple calculations have been completed.

Summary of results

This section provides a summary of greenhouse gas emissions based on data entries.

You do not need to input any information into this sheet. Cells highlighted in Yellow indicate total emissions for each source to be

Total emissions	Units of kgCO₂e			
	Direct	Indirect	Indirect	Total
	Scope 1	Scope 2	Scope 3	
Total Emissions	-	-	-	-

Buildings, fleet & other assets	Units of kgCO₂e			
Categories	Direct	Indirect	Indirect	Total
	Scope 1	Scope 2	Scope 3	
Buildings	-	-	-	-
Fleet and Equipment	-	-	-	-
Buildings, fleet & equipment	-	-	-	-

Business travel, commuting & homeworking	Units of kgCO₂e			
Categories	Direct	Indirect	Indirect	Total
	Scope 1	Scope 2	Scope 3	
Business travel & School Trips	-	-	-	-
Staff Commuting	-	-	-	-
Business Travel, School Trips & staff commuting	-	-	-	-

Image 8 Summary page in Carbon Calculator demonstrating location of emission totals.

5. Data Collection

5.1 Introduction

This section states the emissions categories, the units data can be collected in (kWh, miles, etc.) and explain how data can be sourced.

5.2 Emission Categories

Theme	Emission Source	Data Type	Data Source
Buildings	Building Electricity	Consumption: kWh	Digital Energy Meter Reads Supplier Invoices
	Building Heating	Gas Units: kWh Heating Oil: Litres LPG: Litres Biomass: Tonnes	Digital Energy Meter Reads Supplier Invoices
	Water Use	Volume: Litres or m^3	Digital Energy Meter Reads Supplier Invoices
	Water Treatment	95% of Water Use	Digital Energy Meter Reads Supplier Invoices
	Waste	Weight per Type: kg or tonnes	Bin Survey (Appendix 1) Service Provider Report
	Renewables (Solar)	Generation: kWh	Digital Energy Meter Reads
Mobility & Transport	Fleet Vehicles & Equipment	Fuel Purchased: Litres	Vehicle Records (e.g., MOT) Fuel Card Invoices
	Business Mileage	Distance Travelled: Miles or Km Vehicle Type Fuel	Internal Records Climate Change Team
	School Trips	Distance Travelled: Miles or Km Vehicle Type Fuel	Internal Calculation Request Data from Provider
	Staff Commute	Distance Travelled: Miles or Km Vehicle Type Fuel	Survey (Appendix 2) Head Count Average
Supply Chain	Supply Chain	Spend per Category: £ Supplier Emissions: tCO$_2$e	Internal Records Business Managers Council Accounts Team or AP&ARTeam@flintshire.gov.uk to run a spend report (Schools)

Table 1 *Emissions categories, data type and sources of data*

5.3 Sourcing Data and Good Practice

Electricity, Gas, Heating Oil, LPG, Biomass, Water Use and Water Treatment	
Data Location	Consumption data for these categories are typically simple to source. **Digital Energy**: Schools can access an online platform where meter reads for electricity, gas and water are recorded. Other data for Heating Oil, LPG and Biomass is typically added to the system manually when purchased. A simple user guide is provided as part of the toolkit. **Invoices**: All supplier invoices will state the amount consumed of each category and should be readily available. **Meter Reads**: Check any records of meter reads for electricity, gas and water use and calculate total kWh.
Good Practice & Problem Solving	**Shared Utilities**: Where an organisation shares buildings and utilities with another, consumption should be apportioned as agreed between the organisations. **Input Water Data**: Water and Water Treatment are selected in the table "Buildings" under the column "Fuel/emission source". Each should have its own row of information. **Water Treatment**: If no direct data for Water treatment is available, input this into the calculator as 95% of Water Use (e.g., if 1000L of water is used in a year, then 950L of water is assumed to be treated).
Support	energy.unit@flintshire.gov.uk

Waste & Recycling	
Data Location	**Waste Service Provider**: The company who removes waste from site can provide data on their online platforms or when directly requested. This should be broken down in to waste categories. **Waste Survey**: Where waste data is not available from a service provider, conduct a simple survey of the main collection bins using **Appendix 1**.
Good Practice & Problem Solving	**No Waste Type**: If you only have a single waste figure from your waste service provider and no breakdown of waste types, select "Commercial and Industrial Waste" in the calculator, with the disposal column stating "Combustion". **Disposal Category**: When Flintshire County Council collects waste, then the following wastes are disposed of as follows: **General waste** is combusted to generate electricity, **Segregated Recycling** is Recycled, **Organic Mixed and Organic Food and Drink** is sent to Anaerobic Digestor, and **Organic Garden** is Composted
Support	WasteData@flintshire.gov.uk climatechange@flintshire.gov.uk

Fleet and Equipment	
Data Location	**Fuel Cards/ Invoices**: Fuel cards or purchase invoices can be used to understand the total volume of fuels and types purchased for both vehicles and any powered equipment (e.g. petrol lawnmower) **Vehicle & MOT Records**: Vehicle service books will record mileage records. Alternatively check the MOT status here for miles travelled between MOTs.
Good Practice & Problem Solving	**Fuel Type**: Where vehicle distance is used, identify the fuel that vehicle uses to improve emissions accuracy. **Notes**: Where possible, add one vehicle for each row in the calculator and add the registration into the notes column to identify the largest emitters. **Double Counting**: Be careful not to include both distance travelled and fuel purchase data for vehicles, this is double counting of emissions. **Category Selection**: Where Diesel and Petrol is the fuel, select "average biofuel blend" under the column "Category 1".
Support	climatechange@flintshire.gov.uk

Business Mileage Claims	
Data Location	**Internal Records**: Check internal records for submitted mileage claims (schools submit these to the council using a paper-based system). **Council Records**: For schools, if business mileage claim records are not available then the climate change team can support with this.
Good Practice & Problem Solving	**Categorise by Fuel**: Where data is available, arrange the total the miles travelled by fuel type, adding further accuracy to emissions figures. Where this is not available then 'average fuel' is selected.
Support	climatechange@flinsthire.gov.uk

School Trips	
Data Location	**Bus Company**: Contact the bus transport companies the school uses and request the total distance travelled in that year by vehicle and fuel type. **Manual Calculation**: Where data is not available, staff may have to calculate figures manually and this is especially likely for any ferry or flights.
Good Practice & Problem Solving	**Data Input**: Travel by Bus, Rail or Ferry will come under the emission source 'public transport'. Flights have their own option.
Support	climatechange@flintshire.gov.uk

Staff Commute Travel	
Data Location	**Staff Commute Calculator**: This calculator provides two methods to calculate commute emissions. **Method 1:** This solely based on staff head count and the number of days worked (minus annual leave entitlement). **Method 2** can be used where an organisation has conducted a Staff Travel Survey and improves accuracy. **Staff Commute Survey**: Staff are asked to complete the survey in **Appendix 2.** The information collected updates the average distance travelled in that year and % of travel by fuel type.
Good Practice & Problem Solving	**Categorise by Fuel**: Where data is available, total the miles commuted by fuel type, adding further accuracy to emissions figures. Where this is not available then 'average fuel' is selected.
Support	climatechange@flintshire.gov.uk

Supply Chain	
Data Location	**Business Manager:** Where an organisation has a business manager, they should be able to access spend information. **SLA in Council Accounts Team:** For schools, the dedicated contact in the council for accounts can supply spend information. Alternatively, schools can request a spend report by e-mailing AP&ARTeam@flintshire.gov.uk .
Good Practice & Problem Solving	**Data Input**: Use judgement to appropriately categorise spend in the Carbon Calculator. In most cases this will be simple, but some data may be more difficult to categorise. In this case, identify the best-fitting category ensuring emissions are being accounted for and make clear notes for future reference.
Support	AP&ARTeam@flintshire.gov.uk

6. Carbon Tracker

6.1 Introduction

The document named "Carbon Tracker and Reduction Tool" is an excel-based tool made of three worksheets.

Carbon Tracker: Records and monitors carbon emissions over time
Carbon Reduction Plan: Reports on the organisation's carbon emissions and the actions it has chosen to reduce them (a word version of this is also available)
Climate Actions (potential actions organisations can select in their Carbon Reduction Plan)

6.2 Carbon Tracker Data Input

The carbon tracker is a simple excel spreadsheet to record year-on-year carbon emissions by category, helping to identify any changes. The tracker provides a % change for each year, comparing against the baseline year, as well as graphs helping to visualise share of emissions and change.

When an organisation completes the Carbon Calculator, the results on the calculator's 'Summary results' tab can be input into the **blue** cells located within the table's "Emissions by Source (tCO$_2$e)" and "Renewable Generation (kWh)". Once this is done, all tables and graphs are automatically updated.

The first year an organisation completes a carbon calculation is called the "baseline year". This is shown in the yellow title and total. Each year's emissions are compared against the baseline year in the neighbouring column titled "% Change". Any reductions in emissions from the baseline year are shown in **green** text, and increases shown in **red**.

	Baseline	2023/24	% Change	2024/25	% Change
Buildings	100		-100.0%		-100.0%
Waste	100		-100.0%		-100.0%
Fleet & Equipment	100		-100.0%		-100.0%
Business Travel & School Trips	100		-100.0%		-100.0%
Staff Commute	100		-100.0%		-100.0%
Supply Chain	100		-100.0%		-100.0%
Total GHG Emissions	600	0	-100.0%	0	-100.0%

	Baseline	2023/24	% Change	2024/25	% Change
Renewables			#DIV/0!		#DIV/0!

Image 9 *Example of Carbon Tracker*

6.3 Visualising the Data

The Carbon Tracker calculates carbon emissions into their respective themes as determined by the council's climate change strategy (buildings, transport, and supply chain).

The tracker provides three graphs which automatically update each time new data is added, these are;
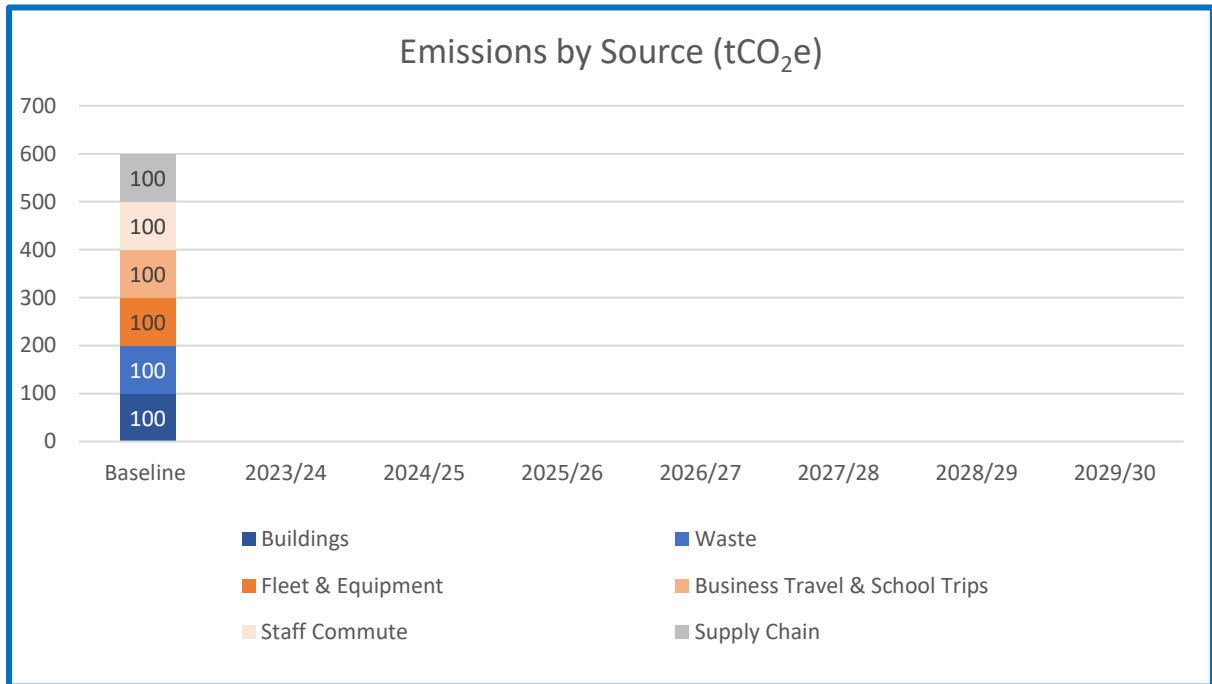

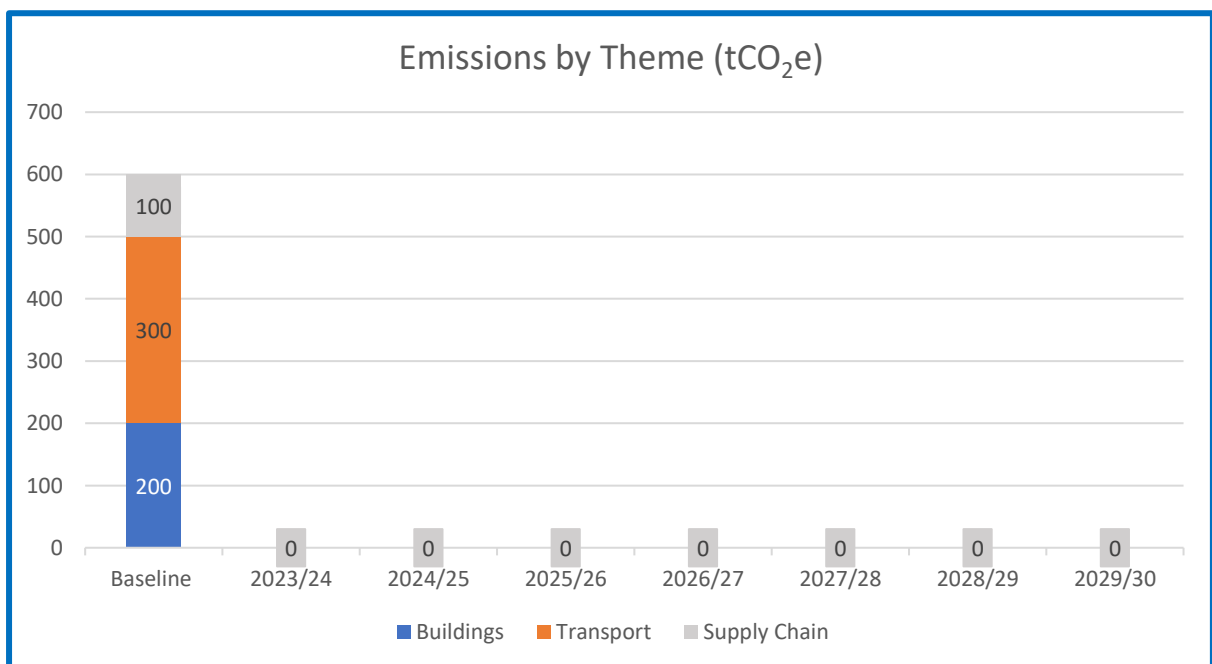*Image 10 Example showing year on year Emissions by Source.*

Image 11 Example showing year on year Emissions by Theme.

The graph titled "Progress to 2030" automatically creates a carbon reduction target trajectory (dotted lines) using baseline emission figures and is categorised by theme. This is based on Flintshire County Council's carbon reduction targets for 2030 to achieve Net Zero Carbon.

- **Buildings**: 60% reduction by 2030
- **Transport**: 80% reduction by 2030
- **Supply Chain**: 60% reduction by 2030

When data for following years is added, these show as solid lines and visualise how close the organisation is reducing emissions compared to the trajectory. This can help an organisation identify where to focus carbon reduction actions in following years.
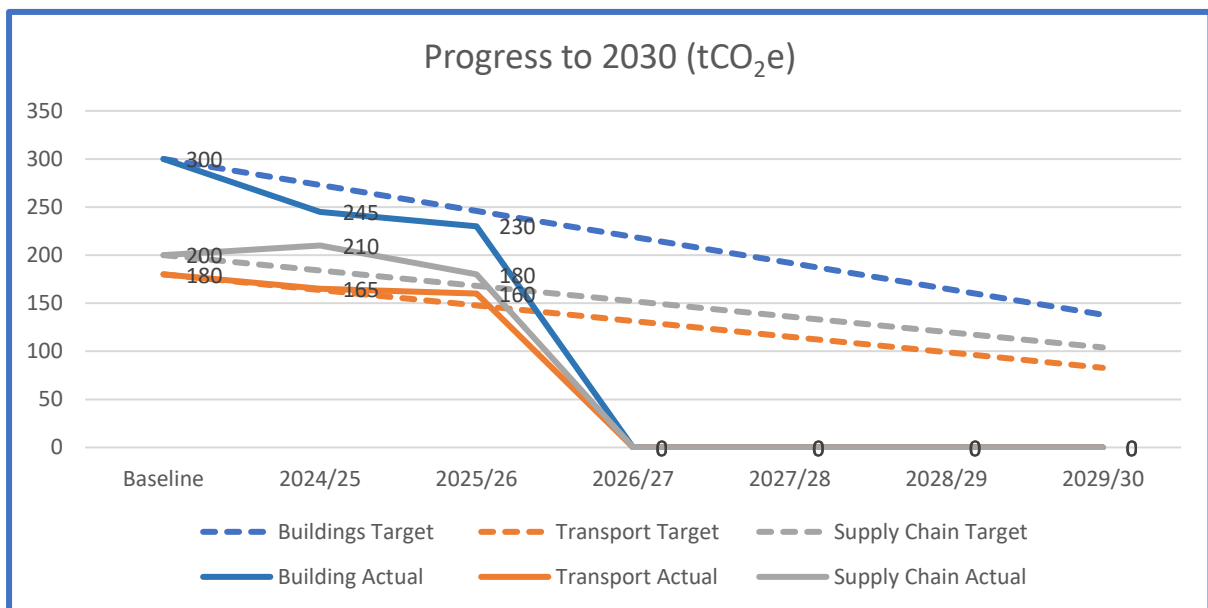

Image 12 *Example showing progress towards net zero carbon by 2030 based on themes.*

7. Appendices

7.1 Appendix 1 – Waste Audit

Waste Type	Bin Sizes (litres)	No. Bins	Collections (year)	Waste Factor*	Total Waste (kg)
Example (paper recycling)	1100	2	52 (weekly)	0.2105	24,081
Batteries				1.35	
Clothing				0.2	
Electrical (WEEE) Cables, Electronic Devices				0.2131	
Glass (mixed) Recycling Glass Bottles				0.3332	
Metal Can (mixed) Recycling Food & Drinks Cans				0.23	
Mixed Recycling Paper, Plastic, Metal, Glass				0.26	
Mixed Municipal General Waste				0.26	
Organic Mixed Food, Drink, Garden				0.38	
Organic Food & Drink				0.2	
Organic Garden Grass & Tree cuttings				0.38	
Paper (Mixed) Recycling Incl. Card				0.2105	
Plastics (Mixed) Recycling Bottles, Food Trays				0.14	

*Waste factor figures can be found in the 'Benchmarking' tab in the Carbon Calculator.

7.2 Appendix 2 – Staff Commute Survey

Days Worked per Week	
Main Transport Type	Car ☐ Car Passenger ☐ Taxi ☐ Walking ☐ Motorbike/Moped ☐ Bus ☐ Train ☐ Cycle ☐ Work from Home ☐
Private Vehicle Fuel Type	Diesel ☐ Petrol ☐ Hybrid ☐ Plug-in Hybrid ☐ Electric ☐
Single Day Return Commute (miles)	

This template will collect staff commute travel information which can be applied to the **Blue** cells in the **Staff Commute Calculator** excel tool, in the table titled **Method 2 Surveyed Calculator**.

To update **Method 2 Surveyed Calculator**, determine the following information:

- **Total Staff** is the staff headcount of the school (not taken from the survey)

- **Working Days in Year** are the average number of days a single member of staff works for the school, minus bank holidays and annual leave (not taken from the survey)

- **Average Return Commute** is the average distance staff travel from home to work and back again. This average figure can be calculated from the commute travel survey results (total miles travelled (be sure to double the distance for return commute) divided by respondents).

- The **%** column in **Method 2 Surveyed Calculator** shows how staff travel is portioned by travel/fuel type. This is determined by the total number of days travelled by each travel/fuel type, and the total days worked per week provided by the survey. For example;

  If there are 30 survey responses, and each one states 5 working days per week, the total days worked per week are 150. If 10 of those responses state travel type is 'petrol private car', then multiply 10 by 5 days working days per week (50), and divide that figure by the total days worked per week (150), then multiply by 100 for percentage. This will give a figure of 33% for Petrol Private Car travel.

  Do this for all returned travel/fuel types, of which their totalled percentages will add to 100%.