Appendix 1

2024/25 Council own operation carbon emissions

On 1 July 2025, a report was submitted to Cabinet detailing the Council's operational carbon emissions for the 2024/25 reporting year. This report highlighted a significant reduction in emissions, attributed in part to the transition to Hydrotreated Vegetable Oil (HVO) across the Council's fleet from April 2024. An overall reduction of 31% in the Council's carbon footprint was reported, with fleet emissions initially stated as having decreased from 812 tCO_2e to 40 tCO_2e, a 95% reduction. However, during preparation for the mid-year data review, it was identified that the 2024/25 fleet emissions had been reported incorrectly. The data had been reported on the basis that nearly all fleet fuel used during 2024/25 was HVO, whereas in reality, the fleet operated on a combination of HVO, diesel, and unleaded petrol. While this discrepancy does not alter the positive direction of travel, it does mean the emissions reduction for 2024/25 is less significant than originally reported. Measures have since been implemented to improve data accuracy and reporting processes. Despite this correction, the Council's overall carbon footprint still reflects a 26.4% reduction (See table 1) on the previous year (89% reduction on fleet emissions), demonstrating continued and meaningful progress towards carbon neutrality.

	tCO_2e		
Emission	**2023/24**	**2024/25**	**Difference %**
Gas for own consumption	1,014	1,033	2
Vehicle Fleet and Machinery	812	109	-87
Purchased Electricity	426	487	14
EV fleet	5	6	20
Business travel	43	43	0
Losses due to Electricity T&D (Buildings)	37	43	16
Total	**2,337**	**1,721**	**-26.4**

Table 1: Updated Council own operation emissions data 2024/25

Broxtowe Borough emissions update

Borough emission data was updated by the Department for Energy Security and Net Zero (DESNZ) in July 2025. This data is always two years behind.

In 2023, the Borough of Broxtowe was calculated to have emitted 392 kilotonnes carbon dioxide equivalent ($ktCO_2e$), which is a 7% reduction compared to the previous year. This reduction is as a result of reduced emissions from the UK electricity supply, a continued decrease in electricity demand and an increased share of renewables to meet

remaining demand (reference: UK local and regional greenhouse gas emissions statistics, 2005-2023).

Figure 1 provides a breakdown of the key sources of the Borough's carbon emissions for 2023. The figure illustrates that emissions from transport make 35% followed closely by domestic at 33% and non-domestic at 31%. Emissions from agriculture and waste management across the Borough remain minimal at 0.5% and 0.01% respectively.

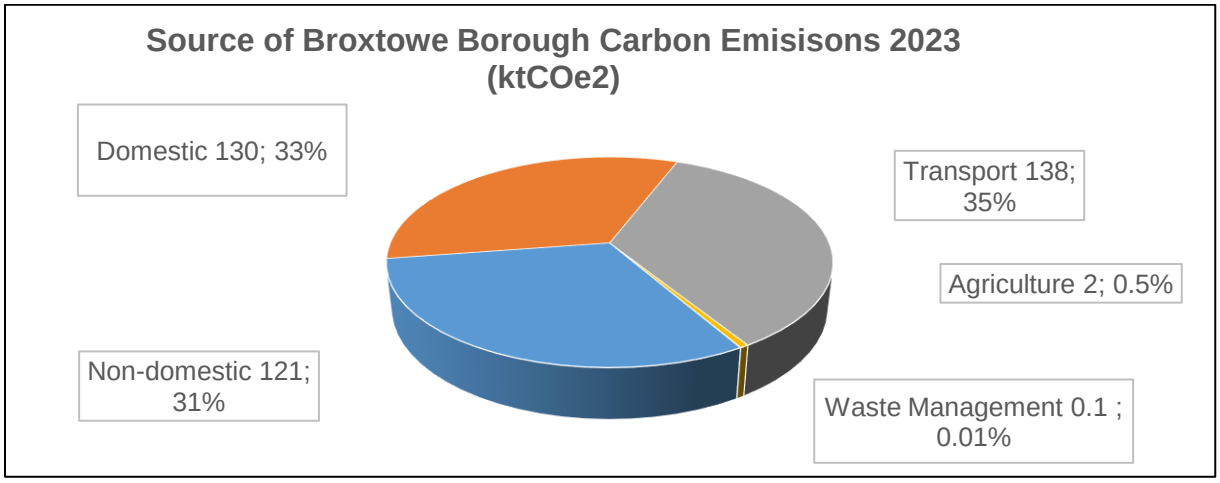

Figure 1 – Source of carbon emissions for the Borough of Broxtowe 2023

A summary of the Borough's carbon emissions from 2005 to 2023 can be seen in Figure 2. The graph shows that Borough emissions have fallen 39% from 642 $ktCO_2e$ in 2005 (6 tCO_2e per capita) to 392 $ktCO_2e$ in 2023 (3.5 tCO_2e per capita).

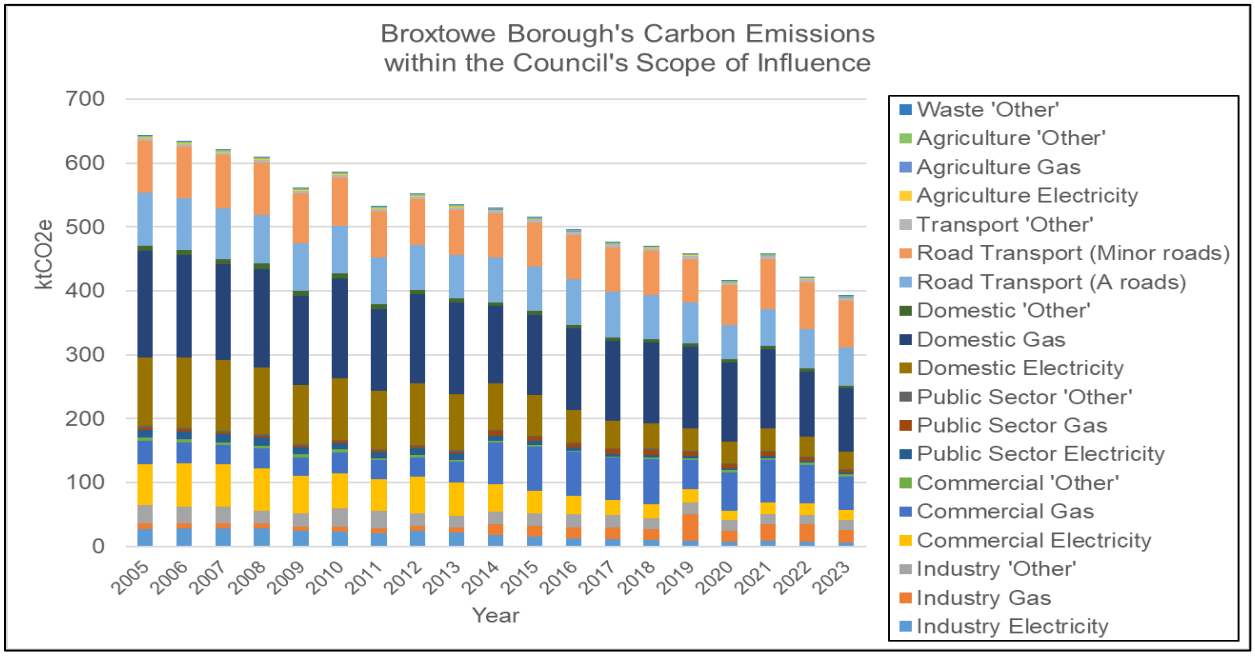

Figure 2 – Broxtowe Borough's carbon emissions within the Council's scope of influence

Council own operation carbon emissions April to September 2025

As highlighted at the outset of this report, utility data essential for calculating Scope 1 and 2 carbon emissions are typically received several months after the reporting period ends. Consequently, it has not been possible to produce a complete carbon footprint assessment for the half-year period. An updated report will be brought forward once full-year data becomes available, aligning with the refresh of the Climate Change and Green Futures Strategy in the new year.

Figure 3 illustrates the half-year carbon emissions arising from council-owned operations, excluding utility data. As shown, the largest contributor to emissions is fuel used in fleet and machinery, accounting for 83% of the total. This is followed by business mileage, which represents 14%, and electric fleet emissions, which contributes the remaining 3%. The data highlights the significant impact of fleet operations on the Council's overall carbon footprint during this period. The total carbon emissions for April to September 2025 has been calculated at 100 tCO_2e.

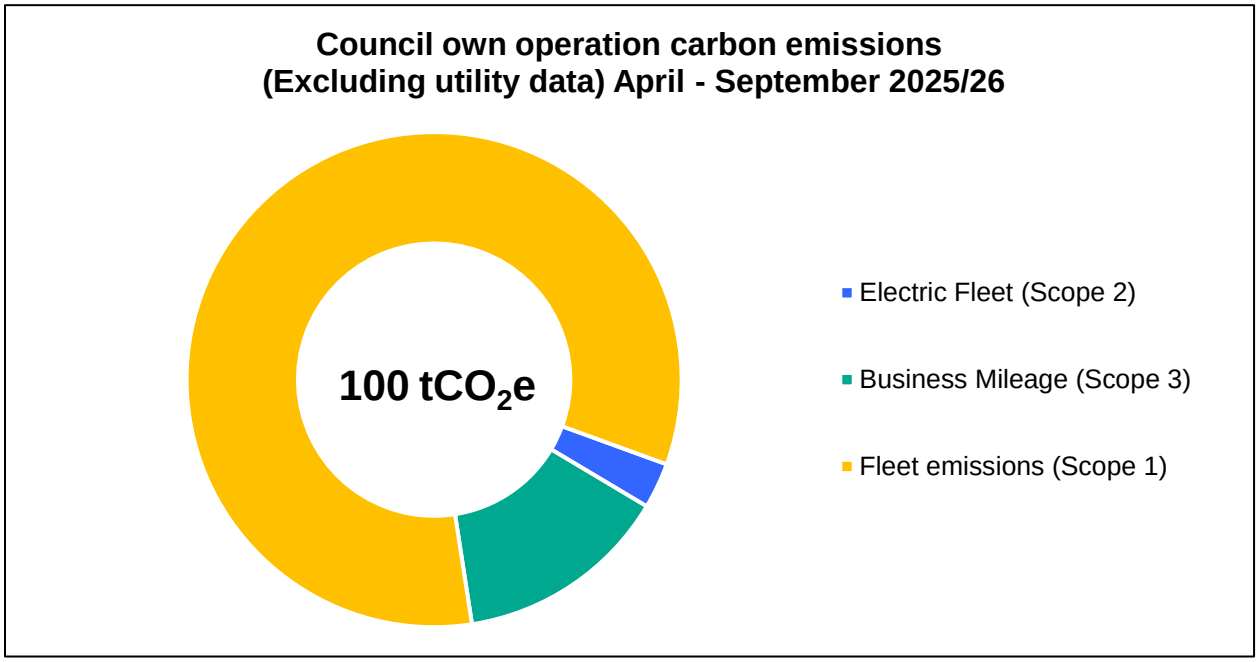

Figure 3: Council own operation carbon emissions. April – September 2025/26

A comparative analysis (April to September 2024/25 and 2025/26) has been undertaken (see Table 2 and Figure 4) using available data, including fuel consumption from fleet and machinery, electricity usage for electric vehicles, and business mileage. When compared to the same period in the previous year, this analysis indicates a 45% increase in overall carbon emissions. This rise is primarily attributable to increased DERV usage within the fleet, which has resulted in an 89% increase in fleet-related emissions. Positively, the data also shows a 36% reduction in business mileage emissions, reflecting progress in reducing travel-related impacts.

	tCO_2e		
	2024/25	2025/26	% Difference
Electric Fleet (Scope 2)	3	3	0
Business Mileage (Scope 3)	22	14	-36%
Fleet (Scope 1)	44	83	89%
Total	**69**	**100**	**45%**

Table 2: Comparison of half year data - April – September.

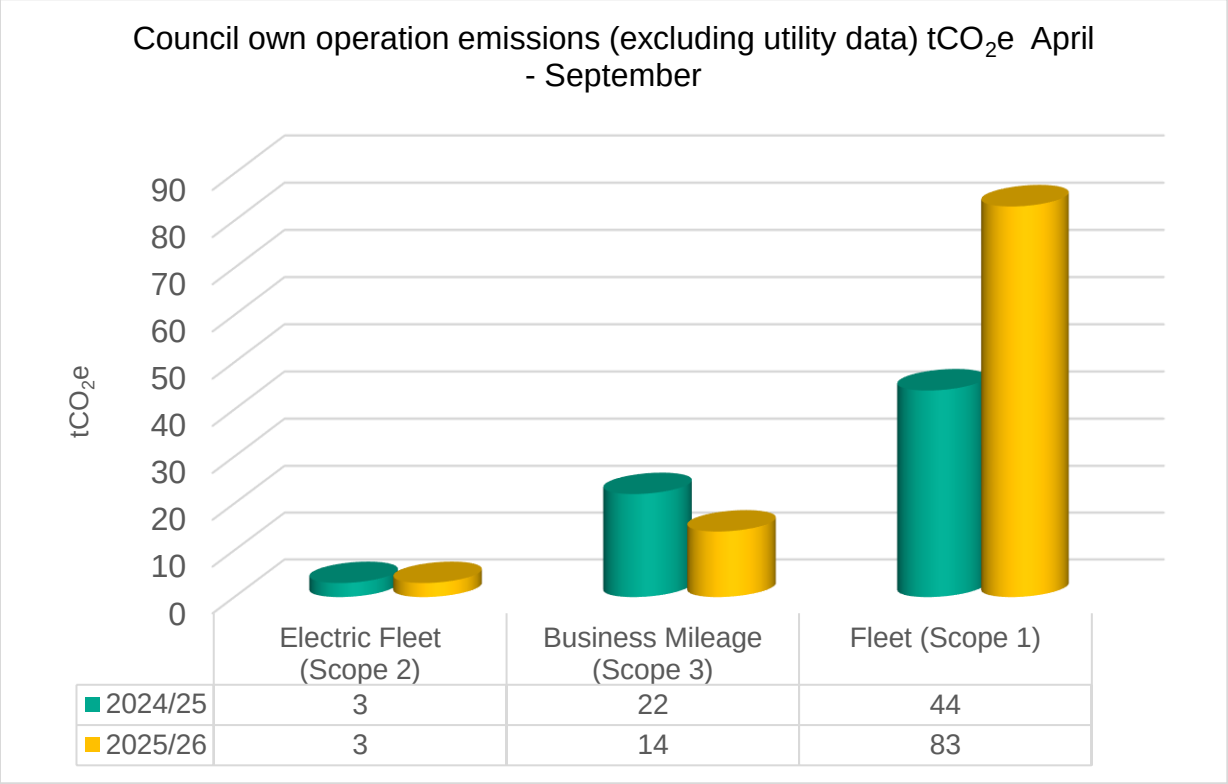

Figure 4: Comparison of half year carbon emission data 2024/25 and 2025/26

Table 3 and Figure 5 present a comparison of different fuel types used across the Council fleet between April to September 2024/25 and 2025/26. Overall, there has been a 5% decrease in total fuel usage, which is a positive trend. However, diesel usage has increased, while HVO usage has declined. This shift is primarily due to a temporary issue with one of the fuel pumps at the depot, which was out of service for several weeks and necessitated the use of diesel instead of HVO. Additionally, hire vehicles used during this period are contractually required to operate on diesel.

The pump issue has since been resolved. It is worth noting that one of the operational risks associated with HVO is its limited availability, unlike diesel, it cannot be sourced from standard petrol stations in the event of a depot pump failure. Nonetheless, a key

advantage is that vehicles can switch between HVO and diesel seamlessly, without any mechanical issues.

	Litres		% Difference
	2024/25	2025/26	
HVO	157,727	133,823	-15%
Unleaded	6,747	5,455	-19%
DERV	9,560	25,874	171%
Total	**174,034**	**165,152**	**-5%**

Table 3: Comparison of fleet fuel used, April – September

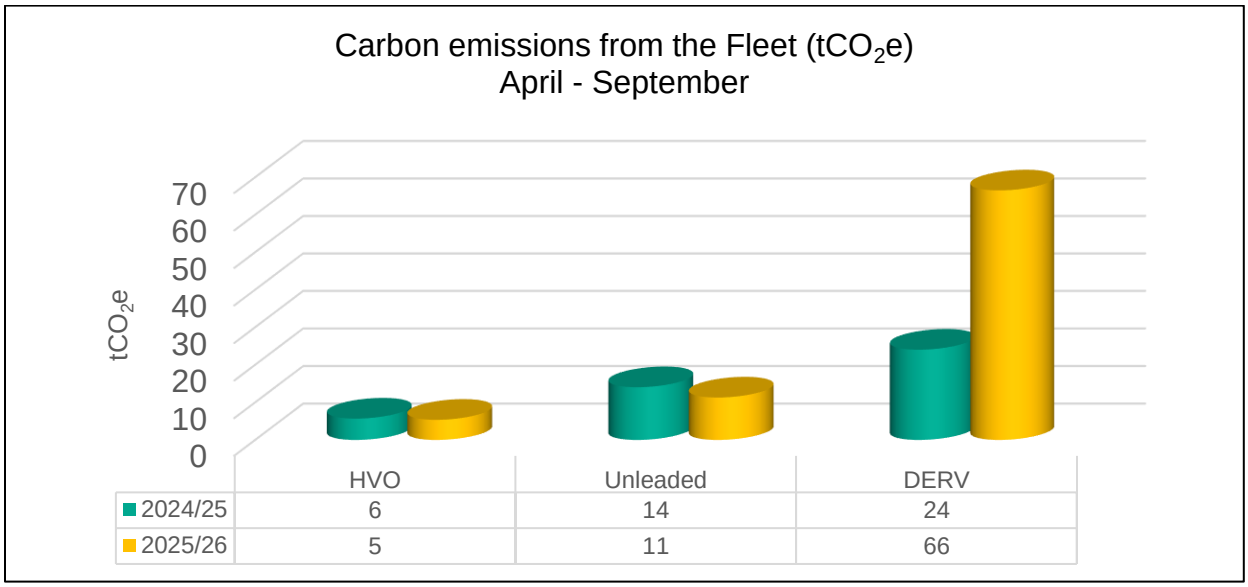

Figure 5: Comparison of different fuel carbon emissions for the fleet.

Table 4 and Figure 6 illustrate the changes in business mileage across different travel modes. Overall, there has been a 36% reduction in business mileage compared to the same period last year, which is a very positive outcome. While electric vehicle mileage has decreased slightly, the most notable improvement is in cycling for business travel (not detailed in the table), which has seen a 229% increase, rising from 12 miles in 2024/25 to 287 miles in 2025/26. This marks a significant and encouraging shift toward sustainable travel, demonstrating growing support for active and low-carbon transport options within the Council.

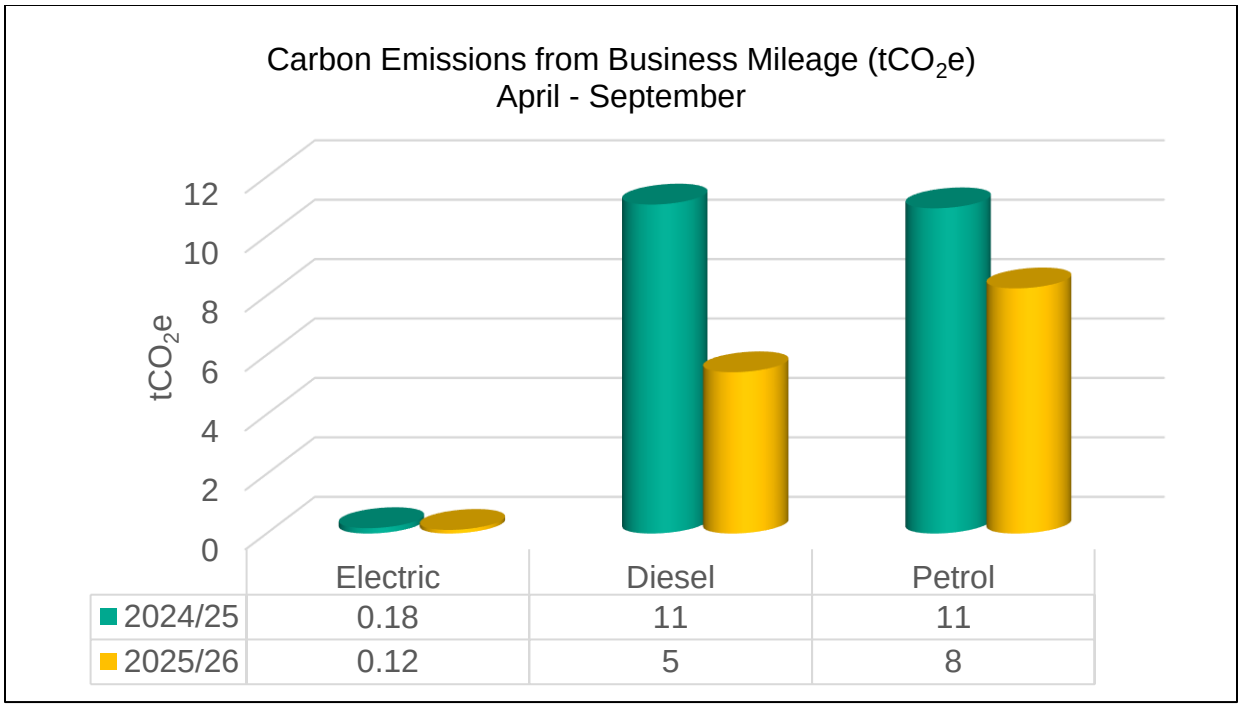

Figure 6: Comparison of business mileage fuel types

	Mileage 2024/25	Mileage 2025/26	% Difference	
Cycle	12	287	2292%	↑
Electric	2,580	2,084	-19%	↓
Diesel	40,500	31,491	-22%	↓
Petrol	41,338	19,471	-53%	↓
Total	**84,418**	**53,046**	**-37%**	↓

Table 4: Comparison of business mileage fuel types. Cycle mileage has not been included in the overall total.

The data presented in this section of the report highlights both challenges and encouraging progress in the Council's carbon reduction efforts. While overall emissions have increased, primarily due to fleet-related factors, there are notable positives, including a 36% reduction in business mileage and a 2,292% rise in cycling for work purposes, reflecting a growing shift toward sustainable travel. Operational issues such as fuel pump failures have impacted fuel choices, but the flexibility of the fleet to switch between HVO and diesel has helped mitigate risks. These insights will inform the refresh of the Climate Change and Green Futures Strategy and support continued efforts to reduce emissions across council operations.

Progress towards Carbon Neutral 2027

Progress toward the Council's carbon neutrality target accelerated in 2024/25, driven significantly by the transition to HVO fuel across the fleet, as illustrated in Figure 7. With just 764 days remaining until the carbon neutral target date of 31 December 2027, it is vital to maintain momentum and explore further measures to reduce emissions.

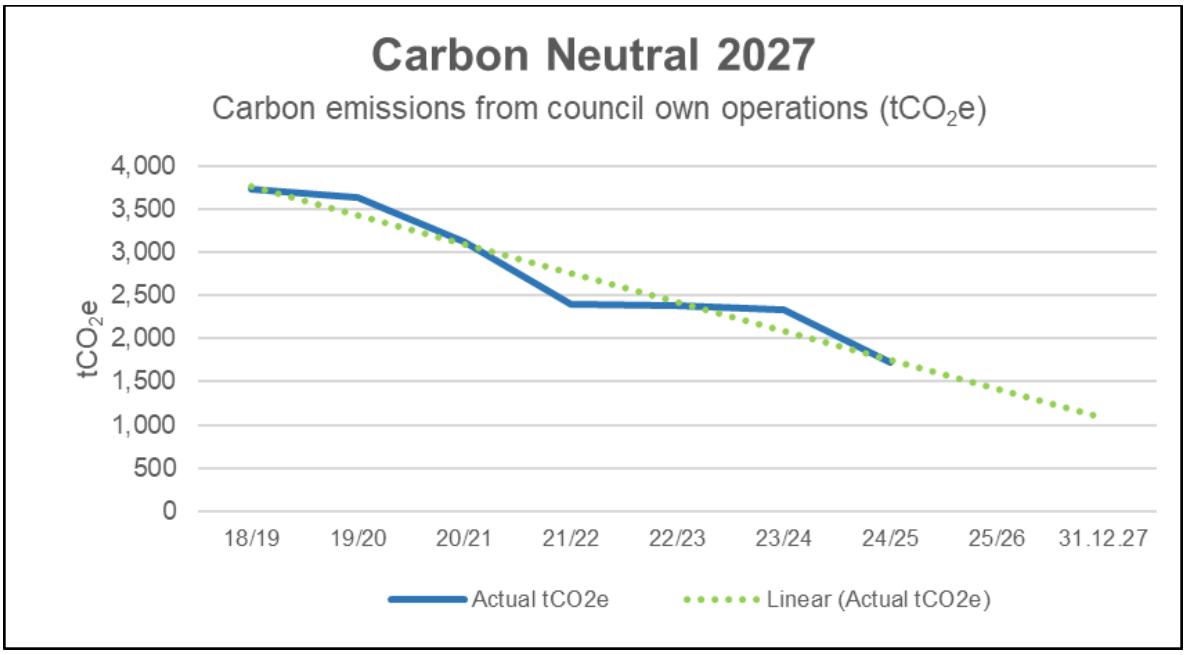

Figure 7: Progress towards carbon neutrality

In 2024/25, the Council moved to a 100% renewable green energy tariff, a key milestone in the Councils' sustainability journey. While carbon emissions reporting continues to follow a location-based approach, as recommended by the Carbon Trust, a market-based scenario, which accounts for the renewable tariff, demonstrates a substantial reduction in emissions, as shown in Figure 8.

Definitions

- **Location-Based Approach**: This method calculates emissions based on the average carbon intensity of the electricity grid in the geographical area where the energy is consumed. It reflects the environmental impact of electricity use regardless of the specific energy supplier or tariff. This approach is recommended by the Carbon Trust as it helps maintain awareness of energy consumption and encourages continued efforts to reduce usage across the council estate.

- **Market-Based Approach**: This method accounts for the specific energy contracts or tariffs an organisation has in place, such as purchasing electricity from renewable sources. It reflects the emissions associated with the actual energy purchased, which can significantly lower reported emissions if the organisation is on a certified green tariff.

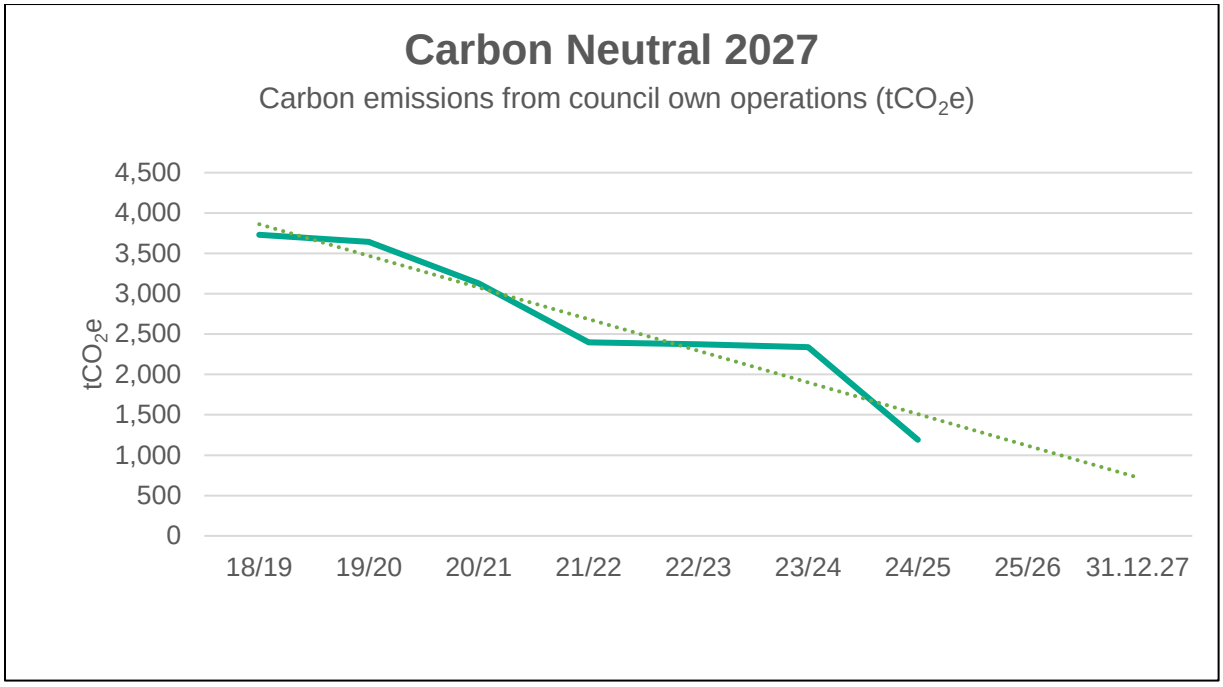

Figure 8: Progress towards carbon neutrality using a market-based approach for the purchase of electricity.

Moving forward this dual approach helps maintain awareness of energy consumption while also illustrating the potential impact of strategic decisions on the pathway to carbon neutrality. As the Council approaches the carbon neutral target date, a transition to market-based reporting will be considered to better reflect the Council's progress.

Residual Emissions

It is inevitable that residual emissions will remain. These are defined as the emissions that are difficult to avoid or difficult to fully eliminate due to technological, financial or other limitations. For the Council, these are anticipated to be from utilities, fleet and business travel. Such emissions will require to be balanced out through compensation mechanisms, which may include carbon sequestration (the process of capturing and storing atmospheric carbon using the Council's own natural estate) or carbon offsetting (involving paying others to reduce or remove carbon emissions), or both. Actions to remove residual emissions also come with their own associated carbon emissions and costs.

Carbon Sequestration

The Council's approach to achieving carbon neutrality by 2027 includes a strong emphasis on natural climate solutions, particularly through carbon sequestration across the Borough. The Council has undertaken a detailed assessment of its natural assets, including woodlands, grasslands, and waterbodies, using mapping data and site-specific knowledge. This analysis, informed by the "Rewilding and Climate Breakdown: how restoring nature can help decarbonise the UK" produced by the Rewilding Britain, estimates that these habitats collectively sequester approximately 1,471 tonnes of CO_2 equivalent annually. The methodology, while not yet formalized or governed by a recognised industry body, represents a pragmatic and evolving approach to quantifying nature-based carbon capture. It highlights the importance of habitat quality and management, with woodlands (including scrub, hedgerows, and parkland) being the most effective carbon sinks at 3.5 tonnes of carbon per hectare per year, followed by ponds and wetlands (1.4 t/ha/yr) and species-rich grasslands (1 t/ha/yr).

Since 2009, Broxtowe has planted approximately 138,000 trees, a significant contribution to its sequestration potential. While the precise sequestration value per tree varies depending on species, age, and growing conditions, a general estimate based on woodland averages suggests that each tree could sequester around 0.03 to 0.06 tonnes of CO_2 per year over its lifetime. This equates to an estimated annual sequestration of 4,140 to 8,280 tonnes of CO_2 from these trees alone, underscoring the long-term value of sustained tree planting initiatives. This figure has not been captured individually within Figure 9, which focuses on habitat-based sequestration, but it represents an additional and substantial contribution that strengthens the Council's pathway toward carbon neutrality.

As the Environment team continues to explore the use of this evolving methodology, Figure 9 illustrates where the sequestration value sits within the Councils overall carbon neutrality commitment. The analysis shows that natural habitats across Broxtowe, particularly woodlands, play a critical role in offsetting emissions. While this approach is not yet formalised, it provides a strong evidence base for how habitat management and tree planting can support the Councils 2027 carbon neutrality target.

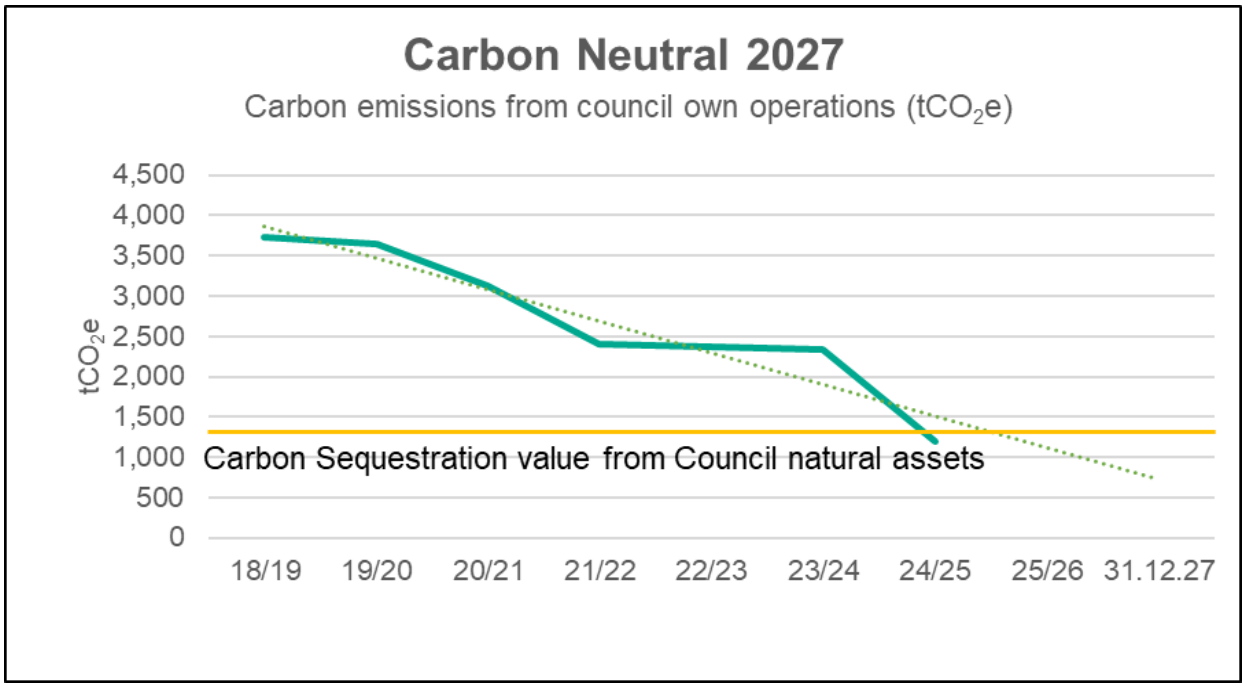

Figure 9: Progress towards carbon neutrality using a market-based approach for electricity and the potential sequestration value from the Councils' own natural assets.

ISO 14068 – Carbon neutrality

As the Council moves toward its 2027 carbon neutrality goal, it will be important to secure formal sign-off for any carbon neutrality claim. ISO 14068 provides a structured and internationally recognised framework for making such claims. The benefits of adopting ISO 14068 include:

- Credibility – Aligns with global standards and best practice.
- Transparency – Clear rules for measuring, reducing, and offsetting emissions.
- Scientific Validity – Ensures claims are evidence-based and verifiable.
- Risk Reduction – Minimises reputational and compliance risks.
- Clear Roadmap – Defines five steps: Measure, Set Targets, Reduce, Offset, Verify.

The Environment team will explore the indicative costs and resources required to complete this standard, with a view to presenting recommendations to Cabinet. This will ensure that when the Council does declare carbon neutrality, it will do so with assurance.