

## Offsetting Darlington Borough Council's residual emissions

### Introduction

In 2019, Darlington Borough Council (DBC) declared a Climate Emergency and committed to achieving carbon neutrality by 2050. Acknowledging the critical importance of this issue, the Council reaffirmed its commitment in 2023 and accelerated the target date for achieving carbon neutrality, bringing it forward to 2040.

Following the release of our Climate Change Strategy in 2020, the Cabinet approved a comprehensive Climate Change Action Plan in 2021, encompassing 198 specific actions. Both the Strategy and Action Plan are being continuously reviewed to align with the new target.

Darlington Borough Council is fully dedicated to reducing its carbon emissions. However, it is important to recognize that achieving net zero solely through reductions in energy consumption is not feasible. All Council activities, even when conducted sustainably, will inevitably generate some level of emissions.

Therefore, there will always be a gap between the emissions reductions achievable through direct actions and our goal of net zero emissions. The approach to bridging this gap is through **"Carbon Offsetting"**.

This document outlines the available options for carbon offsetting, examines the implications of each option, and provides recommendations for the way forward.

### Trajectory options

We report our progress annually through two metrics (see Fig 1). The blue line represents the carbon emissions from our activities, reflecting the average emissions of the energy grid each year. The green line illustrates the emissions based on the electricity tariff selected by the Council, which in this case is a zero-emission tariff. As the national grid becomes progressively cleaner, the gap between these two lines will narrow.

Aligned with the new target date, we have adjusted our planned trajectory to achieve a 40% reduction in emissions every 5 years. This trajectory will leave the residual emissions of approximately 1,000 tonnes by 2040, which will need to be offset every year.

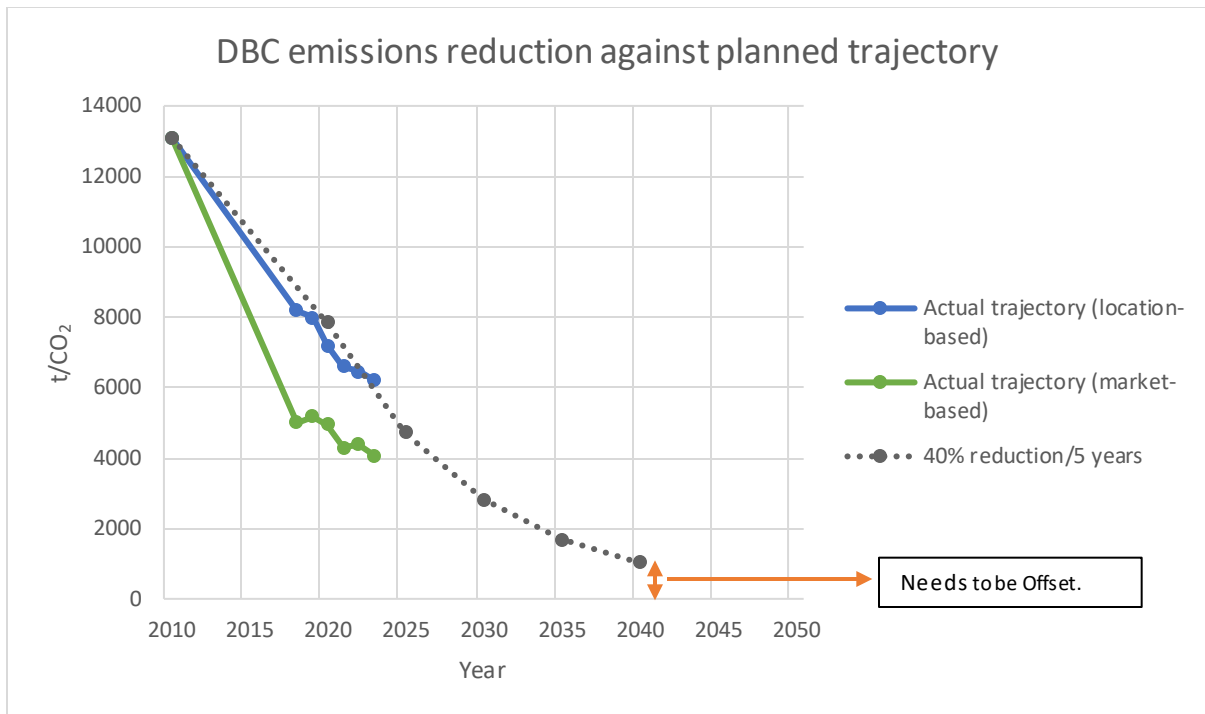


Figure 1: Darlington Borough Council emissions progress.

### What is Carbon Offsetting?

Carbon offsetting is a way of compensating for a carbon footprint. This is done through projects that remove or avoid the equivalent amount of greenhouse gas emissions.



#### Carbon Emissions Avoidance

*Avoidance projects* prevent the release of emissions into the atmosphere in the first place.

Examples include renewable energy projects, avoiding damage to ecosystems, changes to agricultural practices that retain already stored carbon.



#### Carbon Emissions Removal

*Removal projects* absorb or pull carbon out of the atmosphere.

Examples include nature-based solutions like afforestation and reforestation, soil carbon enhancement, ecosystem restoration. Also included in this category are engineered carbon capture and storage.

Basic Principles for Carbon Offsetting Strategy

In alignment with the basic principles outlined in The Oxford Principles for Net Zero Aligned Carbon Offsetting, a document released by the University of Oxford in September 2020, DBC’s strategy for achieving net-zero will incorporate the following guidelines through carbon offsets:



1. Our primary focus will be on reducing our own emissions, thereby minimizing the necessity for offsets as much as possible.
2. Where offsetting is inevitable, we will ensure the high quality of our carbon offsets by using offsets that are verifiable, accurately accounted for, and adhere to key quality aspects such as single counting, permanence, and additionality, while avoiding the risks of overestimation, leakage, and negative unintended consequences for people and the environment.
3. We will maintain transparency in our overall climate change and carbon offset strategies by disclosing current emissions, accounting practices, net-zero targets, and the types of offsets we use. Additionally, we will regularly update our offsetting strategy as best practices evolve, acknowledging that emissions previously considered hard to reduce may become easier to address due to advancements in technology, decreasing costs, or new incentives.

Understanding Quality of Carbon Offsets

To ensure our carbon offsetting projects contribute effectively to achieving our net-zero target, it is crucial to first understand what constitutes a high-quality carbon offset. A high-quality carbon offset delivers long-lasting, quantifiable carbon emissions avoidance or carbon emissions removal, supported by robust estimation methodologies, and regular monitoring and reporting to ensure accuracy. Below are the key aspects that determine the quality of carbon offsetting projects, as well as the challenges we must overcome on our journey to net-zero through carbon offsetting:

Quality Aspect	Description	Example
Credibility and Verification	Governance is required to ensure that our offset projects are genuine. This means that the approach and methodology for the design, development, and ongoing management of our offset projects need to be checked and verified by a carbon standard through an independent third-party, to ensure the method is credible.	e.g. Verification of offsets through Carbon standards like <i>Verified Carbon Standard by Verra, Gold Standard, Puro.Earth, the UK Woodland Carbon Code</i> etc. can be used for verification of offsets.
Single counting	A crucial aspect of carbon offset trading is single counting, ensuring that the carbon benefit is claimed only once. Double counting occurs when multiple entities	e.g. A REGO certificate certifies the renewable origin of electricity generated from eligible renewable energy sources. Once

	<p>claim the same carbon credit, undermining the offset project's impact. The aforementioned carbon standards typically maintain their own carbon registries—online systems that track carbon credits issued to project developers and purchased by buyers—ensuring single counting for verified projects. Double counting has been a notable criticism of some past projects.</p>	<p>a REGO certificate is used by an electricity supplier or consumer to claim that their electricity supply is renewable, it is "retired" and cannot be reused or double-counted. This ensures that the renewable electricity attribute associated with the certificate is not claimed by multiple parties.</p>
<p>Permanence</p>	<p>Permanence refers to the durability of the carbon benefit from our offset projects, considering the risk of reversal. It is typically used as a quality measure for projects involving carbon storage, as the risk of benefit reversal is much lower in projects without storage, such as emissions reductions or avoidance projects like renewable energy. This is a particular challenge for international projects in developing countries and a key advantage of local projects, which can be more easily managed and monitored.</p>	<p>e.g. Trees planted in Africa must still be present there ten years later for the offset to be considered permanent.</p>
<p>Additionality</p>	<p>Offsets must be additional. This means that if a project would have proceeded without the funding from offset money, it cannot legitimately claim to have offset carbon. Additionality can be complex and is often a motivating factor for international projects in developing countries, where additionality is more apparent.</p>	<p>e.g. The local government in a developing country does not have the financial resources to build the wind farm, and there are no other investors willing to fund it. Without the money from carbon offset credits, this wind farm would not be built. When an organisation purchases carbon credits from this wind farm project, their funding enables the construction of the wind farm. Because the project would not have occurred without the carbon offset funding, it is considered additional.</p>
<p>Avoiding overestimation</p>	<p>Accurately quantifying the carbon benefit of an offset project is crucial. Rigorous initial estimates during development and continuous measurement and monitoring are essential to verify the accuracy of claims regarding emissions avoided or carbon removed. Transparency about our methodology for impact estimation, as well as the mechanisms for measurement and monitoring, is imperative throughout the project's lifespan. If verified under a carbon standard, these processes would form part of the verification procedure.</p>	<p>e.g. A solar energy project accurately measures the amount of electricity generated from renewable sources using calibrated meters. Independent auditors verify the project's calculations through above-mentioned carbon standards, to avoid over estimation.</p>

Avoiding Leakage	This pertains to projects that appear to reduce carbon emissions on the surface but actually result in higher emissions elsewhere.	e.g. Planting trees on peatlands could lead to the degradation of peat, thereby increasing emissions rather than reducing them.
Avoiding Negative Consequences	Offsets must be implemented in a manner that avoids any unintended negative consequences. It is essential to ensure that offset projects enhance rather than undermine the social and ecological resilience of landscapes.	e.g. Nature-based offsetting initiatives should safeguard against potential adverse effects such as loss of livelihood for farmers and indigenous communities dependent on forest resources, displacement of agricultural land, infringement upon local community land rights, reduced biodiversity in monoculture tree plantations, and negative impacts on ecosystems like grasslands and peatlands where tree planting could disrupt hydrological and nutrient cycles.

### General Categorisation of Carbon Offset Projects

Taking into account the previously mentioned quality aspects of carbon offsets and in accordance with The Oxford Principles for Net Zero Aligned Carbon Offsetting, offset projects can generally be categorized into the following five types:

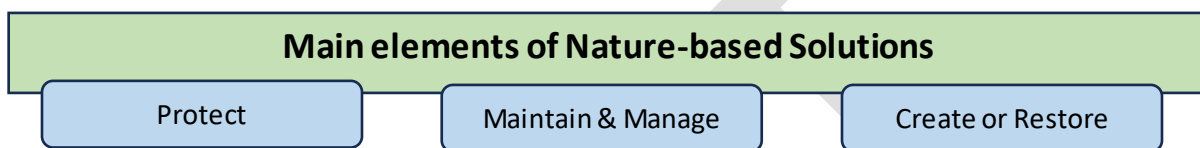
<b>1</b>	<b>Emissions avoidance without storage</b>
<b>Example</b>	Renewable Energy Projects.
<b>2</b>	<b>Emissions avoidance with short-lived storage*</b>
<b>Example</b>	Avoided damage to ecosystems, changes to agricultural practices that retain already stored carbon.
<b>3</b>	<b>Emissions avoidance with long-lived storage*</b>
<b>Example</b>	Carbon Capture and Storage (CCS) on fossil fuel power plants and on industrial facilities.
<b>4</b>	<b>Carbon removal with short-lived storage*</b>
<b>Example</b>	Afforestation and Reforestation, Soil Carbon Enhancement, Ecosystem Restoration.
<b>5</b>	<b>Carbon removal with long-lived storage*</b>
<b>Example</b>	Direct Air Carbon Capture and Storage (DACCS), Bioenergy with Carbon Capture and Storage (BECCS).
<b>*</b>	Short-lived storage means “in the order of decades” & Long-lived storage means “in the order of centuries to millennia”.

Offsetting & Insetting

It is important to understand that offsetting schemes within a local council area are sometimes referred to as 'insetting.' These might include nature-based solutions on their own land or activities within their local authority boundary. Insetting offers a local authority the opportunity to reduce emissions within its own value/supply chain and locality, rather than through international emissions reduction programmes.

Understanding elements of Nature based Solutions:

As a landowner, DBC could implement nature-based carbon absorption and sequestration projects within its Estate. Before proceeding further, it is essential to keep in mind the three main elements of nature-based solutions which will be explained later in the strategy:



Potential Offset Projects – Council Specific

Given our resources, the extent of our operations, and the need for offset measures, we aim to offset our remaining approximately 1000 tonnes of carbon emissions by 2040 using the previously mentioned Category 1, Category 2, and Category 4 projects.

Category 1:

**Emissions Avoidance without storage**

***a- New land-based renewable energy facilities***

An example of this would be wind or solar generation with a direct wire connection to a business. These projects can include a power purchase agreement, offering lower bills for the business and guaranteed income for the Council. Additionally, installing solar PV on council owned buildings where the tenant is responsible for paying the bill, the carbon reduction can be counted as an offset.

***b- Exporting energy to Grid***

If the Council occupies the building or it pays the electricity bill (as is the case with some communal areas) then the Council has already benefited from reduced electricity usage from the grid so this cannot be included as an offset. However, generating renewable energy and exporting it to the grid can be used for offsetting. A potential solar farm project in council owned farmland that can export the electricity into the grid might present a good opportunity for one of council's carbon offset project.

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 Category 2:

**Emissions  
Avoidance  
with short-  
lived storage**
***Nature-based solutions - Protecting the existing landscapes***

Darlington has 16 parks, and 10 nature reserves that stretch right across the town. It is crucial to protect these landscapes to prevent deforestation, forest degradation, and biodiversity loss. By avoiding the conversion of ecosystems, we prevent the release of carbon into the atmosphere and maintain their ability to sequester carbon. Protection can also provide significant near-term climate mitigation, as ecosystems rapidly lose carbon when disturbed, such as during forest harvesting or the tilling of grasslands for crops. In many cases, it can take decades to centuries for the carbon to recover. Improved agricultural practices to reverse land degradation and preventing the clearing of forests for new agricultural lands are also vital components of protecting landscapes.

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## Category 4:

**Carbon  
Removal with  
short-lived  
storage**
***a- Nature-based solutions – Maintaining & Managing***

Enhancing management practices on farmed land can lower emissions and boost carbon sequestration. This may involve collaborating with tenant farmers to adopt sustainable farming practices. For instance, council-owned land taken out of farming could be used for carbon absorption projects, requiring a plan for soil management and tree planting. Improved fertilizer application to reduce NOx emissions could also be included.

The Council has planted over 20,000 trees in Darlington as part of the Tree and Woodland Strategy 2021-2031. However, these areas need at least 15 years of management before CO2 absorption becomes significant, along with ongoing efforts to maintain adequate levels of absorption and storage for the offset claims.

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***b- Nature-based solutions – Creating or Restoring***

Creating and restoring carbon sinks like wildflower meadows, grasslands, and freshwater habitats is crucial for carbon sequestration. We must seize opportunities to meet both Biodiversity Net Gain (BNG) and offsetting targets. BNG improves the natural environment through development and land management, but the Department for Environment, Food and Rural Affairs (Defra) prohibits using the same activity for both BNG and carbon offset credits unless further enhancement is achieved. This practice, known as "stacking," is only allowed when further enhancement beyond the initial carbon sequestration is achieved.

Planting more trees on council-owned farmland can convert it into woodland, aiding CO2 removal. Additionally, such projects can serve as offsite nutrient mitigation to support developments, including Council-owned ones, to achieve nutrient neutrality. This land use change from active agriculture to woodland must be maintained permanently.

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### Purchasing Carbon Credits

Along with the above-mentioned projects, Darlington Borough Council, as part of its carbon offsetting strategy, can also purchase Carbon Credits generated by projects that aim to reduce or remove carbon emissions in other parts of the world, mainly the developing countries. The price of the carbon credits can vary depending upon various factors like the standard under which the credits have been issued and the scale, technology and impact of the project, normally starting from £10 per ton of CO<sub>2</sub>e as a minimum. However, there are challenges associated with it. As most of the projects are happening in other parts of the world, there are risks involved like credibility and legitimacy, risk of reversal, additionality risk and political instability etc.

### Challenges of Voluntary Carbon Market

The voluntary carbon market (VCM) is relatively new, unregulated, and not covered by international treaties, making it vulnerable to abuse due to its lack of legal foundation. Consequently, many offset projects lack credibility or legitimacy, with concerns about greenwashing and double counting being prevalent. Voluntary offset funds carry significant risks. However, in 2020, Mark Carney, former Governor of the Bank of England, entered the field of climate change finance and regulation. He led efforts to establish the Taskforce on Scaling Voluntary Carbon Markets, emphasizing the importance of voluntary markets in combating climate change and the need for transparent standards. This initiative offers hope for a future regulatory framework to legitimize offsetting schemes.

### Way Forward

