

North Wales Fire and Rescue Authority

Environmental Strategy 2023 - 2030

Residual Carbon Emissions Plan

August 2023

Mae'r ddogfen yma ar gael yn y Gymraeg
This document is also available in Welsh

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1.0 INTRODUCTION

- 1.0.1 The existential threat of climate change, combined with the pivotal role public services play in shaping a sustainable future, necessitates decisive action. North Wales Fire and Rescue Service (NWFRS) stands at the forefront of this challenge, committed to not only responding to emergencies but also to addressing the broader environmental emergency at hand.
- 1.0.2 The environmental challenges faced by today's world are multifaceted, with carbon emissions being a major contributor to global warming and the subsequent climatic anomalies. As we advance towards a sustainable future, understanding and addressing our carbon footprint is paramount. While many emissions can be reduced through direct actions and technologies, residual carbon emissions—those that remain despite best mitigation efforts—present a unique challenge.
- 1.0.3 This Residual Carbon Emissions Plan serves as the guiding framework for NWFRS's strategy to tackle and offset those emissions which are toughest to eliminate. The document acknowledges the environmental footprint of our necessary operations and outlines proactive steps towards minimising, offsetting, and eventually neutralising these emissions.
- 1.0.4 At NWFRS, we recognise our responsibility to the communities we serve, and to the natural landscapes of North Wales that we are sworn to protect. This commitment extends beyond the immediacy of our emergency response duties and encompasses a long-term vision of environmental stewardship. Through this plan, we aim to bridge the gap between our current operational realities and a future where our service operates in a truly carbon-neutral way.
- 1.0.5 As we embark on this journey, we invite all our stakeholders, from our dedicated personnel to the communities and partners we collaborate with, to support and engage with our mission. Together, we can ensure a safer and more sustainable North Wales for generations to come.

2.0 UNDERSTANDING RESIDUAL EMISSIONS

2.1 Definition and Classification

2.1.1 Residual emissions refer to the greenhouse gas emissions that remain after all feasible prevention, reduction, and removal measures have been implemented. These emissions are often considered the most challenging to eliminate, as they stem from essential operations or limitations in current technology.

2.1.2 For the purpose of clarity and focused action, the Service classifies residual emissions into three primary categories:

Operational Emissions

2.1.3 These emissions originate from core and indispensable activities of the Service. They encompass emissions from emergency response vehicles, equipment, and facilities. Given the critical nature of our services, certain emissions are inevitable, even with the best energy-efficient technologies at hand.

Embedded Emissions

2.1.4 These refer to emissions associated with the lifecycle of products and materials procured by the Service. From the manufacturing processes of equipment to their transportation, certain emissions are 'embedded' in the products we use.

Indirect Emissions

2.1.5 These emissions are a result of activities not directly controlled by NWFRS but are intrinsically linked to our operations. Examples include employee commuting, business travel, and emissions from external services leveraged by the Service, such as third-party training programmes or contracted services.

2.2 Key Residual Emission Sources

2.2.1 We anticipate there being residual carbon emissions in a number of areas upon reaching 2030, when the current Environmental Strategy reaches its conclusion. These are:

Diesel and Petrol

2.2.2 Although we anticipate being able to eliminate almost all Scope 1 diesel emissions by switching to HVO, we do anticipate there being some older vehicles which may be unsuitable for substitution, together with some petrol-powered generators and engines still in service.

Natural Gas and LPG

2.2.3 Every effort will be made to replace current hydrocarbon heating systems within the station estate by 2030. However, this will be subject to budgetary constraints and therefore high-emitting premises will be prioritised. Some sites are likely to still be heated using hydrocarbon fuel sources by the end of the Strategy period.

Electricity

- 2.2.4 The Service is committed to purchasing renewable electricity for its whole estate under a 'market-based' approach as defined by the GHG Protocol. However, under the 'location-based' approach which we are required to use, we must report emissions using a national average carbon intensity. This will leave us with a Scope 2 carbon footprint until the National Grid is fully decarbonised, which can only be partially mitigated through on-site renewable power generation.

Supply Chain

- 2.2.5 We are committed to undertake supplier engagement to minimise the impact of our purchasing decisions on the environment. Although we anticipate some success from measures such as environmental weighting in procurement, it is unrealistic to expect that this will mitigate a majority of our Scope 3 emissions by 2030, particularly when countered by other pressing interests such as social value.

Staff Commuting and Home Working

- 2.2.6 The Service is committed to promoting and supporting sustainable working practices. Although every effort is made to promote awareness of environmental issues, staff remain free to choose their own personal vehicles and to configure their domestic heating however they see fit. Therefore, until zero-emission vehicles are ubiquitous and the heating and power grids have been fully decarbonised, staff commuting and home working will continue to be a notable element of our Scope 3 emissions.

3.0 OFFSETTING STRATEGIES AND INITIATIVES

- 3.0.1 This section lays the foundation for our approach towards neutralising or balancing out the residual emissions identified in section two. This involves an integrated approach that not only focuses on minimizing carbon emissions but also considers investments in projects that reduce, capture, or store equivalent amounts of greenhouse gases elsewhere.
- 3.0.2 Through a combination of internal practices and collaboration with external partners, this plan will outline the practical steps, technological solutions, and partnerships that will contribute to achieving our carbon offsetting goals. Our strategies align with the broader climate change objectives of the region, ensuring that the Service remains at the forefront of environmental stewardship within the emergency services sector.
- 3.0.3 By examining and adopting best practices, setting realistic yet ambitious targets, and maintaining transparency in our progress, we reaffirm our pledge to environmental sustainability and align our operations with the global pursuit of a greener future.

3.1 Direct vs Commercial Offsetting

- 3.1.1 Direct offsetting refers to initiatives taken by the Service that lead to an immediate and measurable reduction in carbon emissions or the capture of existing carbon. Examples include afforestation projects, retrofitting our facilities for energy efficiency, or transitioning to renewable energy sources for our operations.
- 3.1.2 Commercial offsetting involves the Service purchasing carbon credits from third-party entities that have initiated projects leading to carbon reduction or sequestration elsewhere. This method allows us to counterbalance our emissions by financially supporting green projects, often in regions or sectors where the impact per pound spent is greater.

3.2 Biogenic Sequestration

- 3.2.1 Biogenic sequestration refers to the natural process by which living organisms, primarily plants and trees, capture and store atmospheric carbon dioxide (CO₂) through photosynthesis. This can be promoted in a number of ways, including:

Afforestation and Reforestation

- 3.2.2 Collaborating with local communities and environmental organisations, the Service may participate in and sponsor tree planting activities across North Wales, aiming to restore forests and create new green spaces.
- 3.2.3 Given our unique expertise, the Service is already committed to advocate for and assist in creating fire-resilient forests, ensuring that newly planted areas are less susceptible to wildfires, thus maintaining their carbon sequestration capacities.

Wetland Restoration

- 3.2.4 Peatlands serve as vital carbon sinks. Working with local environmental bodies, the Service may support projects aimed at restoring and preserving these sensitive habitats in North Wales.

3.3 Chemical Sequestration

- 3.3.1 At its core, chemical sequestration captures CO₂ emissions at their source or directly from the atmosphere or seas and then reacts these with chemicals to produce stable compounds. These reactions can produce materials like carbonates which are naturally occurring and stable over long periods.
- 3.3.2 Some processes involve stabilising biogenically sequestered carbon through high temperature pyrolysis, such as with methane or the production of biochar.
- 3.3.3 Other sequestration processes sometimes result in materials that can be used in construction, providing a dual benefit of carbon capture and material utility. For instance, carbonates can be incorporated into building materials, effectively storing CO₂ within our infrastructure.
- 3.3.4 Recognising that chemical sequestration is a highly specialised field, the Service may collaborate with research institutions, universities, and environmental technology companies in North Wales and beyond.

3.4 Carbon Capture and Storage

- 3.4.1 Carbon Capture and Storage (CCS) is a technology that aims to capture up to 90% of the carbon dioxide (CO₂) emissions produced from various industrial processes, with the goal of preventing CO₂ from entering the atmosphere. While the technology shows promise in some sectors, its application within the Service's operations is currently considered unproven and likely impractical.
- 3.4.3 The economic viability of CCS for the Service is a primary concern. The costs associated with the capture, transport, and storage of CO₂, along with regulatory compliance, make this approach unlikely to be cost-effective. Additionally, the technical complexity and specialized knowledge required further contribute to its impracticality.
- 3.4.4 Compliance with regulatory guidelines and risk management associated with CCS are complex and demanding. Even with thorough assessments, the potential environmental risks, along with the need for continuous monitoring and stringent compliance, add layers of complexity that may not align with our core capabilities.
- 3.4.5 Given these challenges, the Service will continue to focus on more established and achievable strategies for reducing carbon emissions. While we recognize the potential of CCS as a global solution, its application within our specific context is currently considered unfeasible. We will continue to monitor developments in CCS technology, maintaining an open stance toward future possibilities should the technology prove to be more applicable and effective for our operations.

3.5 Emissions Abatement

3.5.1 Even as the Service intensifies its internal efforts to reduce residual emissions, we recognise that external collaborations and initiatives can provide additional avenues for emissions offsetting. Emissions Abatement encompasses a range of initiatives in which the Service can invest or participate, directly leading to carbon reductions outside the direct operational boundary of the service but within the broader ecosystem.

3.5.2 The Service will consider emissions abatement as a means to offset its own residual emissions under the following scenarios:

Renewable Energy Investments

3.5.3 **Collaboration with Energy Producers:** Partnering with local renewable energy producers to finance or invest in projects such as wind farms, solar installations, and hydroelectric projects in the North Wales region.

3.5.4 **Green Energy Certificates:** Purchasing renewable energy certificates or guarantees of origin, to stimulate renewable energy production, even if the immediate environment does not permit direct use. However, this should be undertaken only in the context of the requirements of the Power Decarbonisation Plan, and with consideration given to avoidance of double-counting within national inventories.

Afforestation and Reforestation

3.5.5 **Local Tree Planting Initiatives:** Collaborate with local authorities and environmental NGOs to plant native trees, supporting not only carbon sequestration but also biodiversity.

3.5.6 **Woodland Conservation:** Investing in projects that safeguard existing forests from logging and ensure their longevity.

Carbon Capture and Storage (CCS) Initiatives

3.5.7 **Investment in CCS Technologies:** Engage with technological institutes and environmental start-ups that are pioneering new methods of capturing and storing carbon.

3.5.8 **Promotion of Bioenergy with CCS (BECCS):** Collaborating with local energy producers to utilize bioenergy coupled with carbon capture and storage for cleaner energy production.

Waste-to-Energy Initiatives

3.5.9 **Partnerships with Waste Management Companies:** Investing in or partnering with projects that convert non-recyclable waste into energy, simultaneously addressing waste and energy challenges.

Methane Reduction Projects

3.5.10 **Agricultural Collaborations:** Given the significant agricultural presence in North Wales, working with farms to reduce methane emissions through the promotion of practices such as anaerobic digestion or advanced feed techniques.

4.0 AUTHORITY-BASED INSETTING

4.1 Definition and Significance

- 4.1.1 Authority Based Insetting refers to the integration of carbon offsetting initiatives within the organizational boundary of NWFRS, aligning with both our mission and the specific environmental and societal context of North Wales. Rather than merely investing in third-party projects or distant carbon offsetting initiatives, Authority Based Insetting emphasizes local, relevant, and immediate actions that directly reflect the Service's values, commitments, and responsibilities.
- 4.1.2 Through Authority Based Insetting, the Service can embed carbon reduction, capture, and offsetting within the very fabric of our operations. This approach resonates with our commitment to environmental stewardship and strengthens our connection to the local communities we serve.
- 4.1.3 The success of Authority Based Insetting relies on close collaboration with local authorities, environmental organizations, educational institutions, and other stakeholders within North Wales. By working together, we can identify and pursue initiatives that are both meaningful and effective within our unique regional context.

4.2 Potential Initiatives

- 4.2.1 Some potential initiatives under the Authority Based Insetting umbrella may include:

Local Afforestation and Reforestation

- 4.2.2 Partnering with local councils to plant native trees within the region, fostering biodiversity and enhancing carbon sequestration.

Value Chain Decarbonisation

- 4.2.3 Collaborating with local industry to support decarbonisation initiatives outside our immediate supply chain, but providing wider benefits to the region we serve.

Investment in Local Renewable Energy

- 4.2.4 Supporting community-based renewable energy projects, such as small-scale wind or solar installations, that directly contribute to the region's sustainable energy goals.

Waste Reduction and Recycling Partnerships

- 4.2.5 Working with local waste management authorities to implement recycling and waste reduction initiatives within our facilities, extending the reach of environmental best practices.

4.3 Localised Impacts

- 4.3.1 The effectiveness of any Authority Based Insetting initiatives undertaken will be continuously monitored and evaluated, ensuring alignment with our overall carbon offsetting goals. Regular reports will communicate progress to all stakeholders, reflecting our commitment to transparency and accountability.

- 4.3.2 Authority Based Insetting represents an opportunity to lead by example within the emergency services sector. By focusing on initiatives that are deeply rooted in the local context, the Service can demonstrate a model of environmental responsibility that is tangible, relatable, and replicable. Through this approach, we strengthen not only our carbon neutrality efforts but also our bonds with the communities we serve and protect.

5.0 STAKEHOLDER ENGAGEMENT

5.1 Key Stakeholders

5.1.1 The key stakeholders in this Plan are those individuals, groups, and organisations that have a vested interest in the environmental performance and sustainability efforts of North Wales Fire and Rescue Service. They include:

Service Personnel

5.1.2 This includes all members of staff, from frontline firefighters to administrative and managerial personnel, who are responsible for implementing the various initiatives laid out in the Residual Carbon Emissions Plan.

Local Government

5.1.3 Collaboration with local councils and environmental agencies will be essential to ensure alignment with regional and national policies.

Community Members

5.1.4 As primary beneficiaries of the services provided, the community's input and cooperation will be instrumental in achieving the goals laid out in the Plan.

Suppliers and Partners

5.1.5 Vendors and partners providing goods and services must align with the sustainability goals of the Plan, ensuring environmentally friendly practices in procurement and operations.

Environmental NGOs and Academia

5.1.6 Collaborating with environmental organisations and academic institutions can provide expertise, research, and advocacy support in reaching and maintaining carbon reduction goals.

Regulatory Bodies

5.1.7 Compliance with legal and regulatory requirements is essential, and engagement with relevant authorities will be key to ensure adherence to all applicable laws and standards.

5.2 Engagement Methods

5.2.1 Different stakeholders require varied modes of engagement. The Service will employ a combination of the following:

- *Workshops and Forums*: For reviewing elements of the Strategy, sharing experiences, and fostering open dialogue.
- *Surveys and Feedback Forms*: To gather quantitative data and understand stakeholder preferences.
- *Regular Updates*: Using newsletters, websites, and community boards to keep stakeholders informed of progress and changes.
- *Open Door Days*: Inviting stakeholders to NWFRS facilities to showcase offsetting practices and gather direct feedback.
- *Collaborative Partnerships*: Establishing formal partnerships with certain stakeholders for deeper, ongoing collaboration.

6.0 MONITORING AND REPORTING

6.1 Commercial Offset Accreditation

6.1.1 It is imperative that any commercial offset schemes in which we invest are credible, verifiable, and aligned with the Service's environmental objectives. To ensure this, the Service will adhere to the following guidelines for selecting and accrediting commercial carbon offset projects:

Certification

6.1.2 The carbon offset project should have verifiable certification from accredited bodies such as the Verified Carbon Standard (VCS), Gold Standard, or equivalent international frameworks.

Relevance

6.1.3 The project should align with NWFRS's long-term sustainability goals, focusing on areas like renewable energy, forestry, or community development projects that have environmental and social benefits.

Additionality

6.1.4 Projects must prove that they are providing additional environmental benefits which would not have occurred without the offsetting funding.

Permanence

6.1.5 The emissions reductions generated by the project must be long-lasting and not at risk of reversal.

Transparency

6.1.6 The project operators should provide full transparency in terms of their financials, project status, and actualised carbon reductions, ideally backed by third-party audits.

6.2 Quantifying Direct Offsets

6.2.1 The methodology for calculating direct offsets will follow the Greenhouse Gas Protocol, which provides comprehensive global standards for measuring and managing greenhouse gas (GHG) emissions.

6.2.2 Carbon sequestration through the planting of trees will be calculated based on the type, age, and density of trees, following guidance from credible environmental organisations.

6.2.3 Data will be gathered from a range of sources, including internal operation logs, third-party audits, and directly from the technology or initiatives involved. The accuracy of this data is vital; therefore, it will be subject to verification processes in line with the Environmental Management System.

6.3 Reporting Mechanisms

6.3.1 Offsetting activity will be included within our annual carbon accounts.

7.0 COST IMPLICATIONS

7.0.1 The implementation of this Plan involves both initial capital expenditure and ongoing operational costs. This section outlines these financial requirements, aiming to provide stakeholders with a comprehensive understanding of the budgetary implications.

7.1 Initial Capital Expenditure

7.1.1 Certain initiatives under the Plan, such as investment in local renewable energy projects or afforestation efforts, will necessitate an upfront capital investment. These costs will be itemised and included in the annual budget proposal.

7.1.2 Factors that will be considered when assessing initial costs include equipment purchase, land acquisition where applicable, and initial project set-up costs.

7.2 Operational Costs

7.2.1 Ongoing operational costs include maintenance, manpower, monitoring, and reporting activities. These costs are expected to be recurrent and will be accounted for in the Service's annual operating budget.

7.2.2 These operational costs also extend to the periodic assessment and accreditation of commercial offset schemes, which may involve fees for third-party auditing and verification services.

7.3 Commercial Offset Investments

7.3.1 Commercial offset schemes may involve a varying range of costs, depending on the credibility, scale, and impact of the projects. These costs will be carefully evaluated to ensure they align with the Service's sustainability goals and offer a high environmental return on investment.

7.4 Contingency Plans

7.4.1 A contingency budget will be established to account for unforeseen circumstances that may impact the cost of initiatives. This provides a financial cushion and ensures the continued smooth implementation of the Plan.

7.5 Funding Sources

7.5.1 Funding for the Plan will be sourced from a variety of channels, including the Service's operating budget, grants, and potential partnerships with local businesses and environmental organisations.

7.5.2 Efforts will be made to seek additional funding from governmental and non-governmental organisations that align with our sustainability objectives.

8.0 FUTURE PROSPECTS AND INNOVATIONS

8.0.1 As the landscape of climate science and technology evolves, so too must our strategies. This section aims to address upcoming innovations and potential avenues for growth. This dynamic approach allows us to be resilient, adaptable, and remain at the forefront of environmental stewardship.

8.1 Technological and Methodological Advances

8.1.1 The Service will continue to scan the horizon for technological advancements that can offer greater efficiencies and environmental benefits. Specifically, NWFRS will closely monitor innovations in renewable energy generation methods, carbon capture technologies, and data analytics platforms. For example, advancements in solar panel efficiency, battery storage capabilities, and AI-driven data analytics could be seamlessly integrated into our existing frameworks, allowing for more accurate tracking and increased carbon reduction.

8.2 Policy and Partnerships

8.2.1 It is crucial to stay aligned with local, national, and international environmental legislation as it evolves. These provide both guidance and mandates for our activities. Additionally, the Service aims to cultivate a more extensive network of partnerships.

8.2.2 This could include joint ventures with academic institutions for targeted research initiatives, public-private partnerships to pilot new environmental technologies, or collaborations with non-governmental organisations to drive awareness and community engagement around sustainable practices.

8.3 Financing and Adaptability

8.3.1 Financial sustainability underpins the long-term viability of our environmental strategies. The Service may explore various financing models, including green bonds and grants for sustainability-focused initiatives. Crowdsourcing and community fundraising could also be employed for projects that directly benefit local populations. The overall strategy is built with a high degree of adaptability, able to incorporate new technologies, data, and stakeholder feedback to refine and update the Plan continually.

9.0 MANAGING RISK

9.0.1 The successful implementation of this Residual Carbon Emissions Plan hinges on the effective management of various environmental, financial, and operational risks. By proactively identifying and addressing these potential hindrances, the Service can enhance its ability to achieve sustainability goals, remain compliant with regulations, and maintain stakeholder trust.

9.1 Risk Identification and Assessment

9.1.1 A comprehensive risk assessment framework will be employed to identify and evaluate potential risks associated with each offsetting strategy selected for implementation. Such risks may range from technological failures and financial shortfalls to regulatory changes and stakeholder disengagement.

9.1.2 The risk assessment will categorise these issues based on likelihood and impact, allowing for a prioritised approach to risk mitigation. Where possible, external expertise in environmental science and risk management may be consulted to strengthen the assessment process.

9.2 Mitigation Strategies and Monitoring

9.2.1 For each identified risk, targeted mitigation strategies will be developed. These could include contingency plans, financial reserves, technological backups, and ongoing stakeholder communication.

9.2.2 All mitigation measures will be integrated into the Environmental Management System, ensuring a cohesive and systematic approach to risk management. The effectiveness of these strategies will be continually monitored and reported, with adjustments made as needed to ensure the ongoing resilience and success of the Residual Carbon Emissions Plan.