

Carbon Emissions Reduction – South Wales Fire and Rescue Authority

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Summary report

Summary

What we reviewed and why

- 1 Human behaviour is a major contributing factor to the long-term shift in average weather patterns. Widely recognised as humanity’s biggest challenge, addressing climate change requires individuals, communities, organisations, regions and countries to all play their part. The Paris Agreement, a legally binding treaty on climate change, was adopted in 2015 by 196 parties (including the UK) and reflects international commitment to achieve the economic and social transformation required to reduce greenhouse gas emissions¹.
- 2 In Wales, our legislative framework to reduce greenhouse gas emissions was strengthened through the Environment (Wales) Act 2016. The Act sets a legal target of reducing emissions by 95% by 2050 and sets out a system of five-yearly carbon budgets and interim objectives to progress towards this². As part of this, the Welsh Government has committed to achieving a carbon neutral public sector by 2030, and its climate emergency declaration in 2019 reaffirmed its ambition of increasing the pace of change towards a low carbon economy.
- 3 The Well-being of Future Generations (Wales) Act 2015 is key to how Welsh public bodies are addressing these challenges, including climate change. By implementing the sustainable development principle and contributing to the national wellbeing goal of a Globally Responsible Wales, South Wales Fire and Rescue Authority (the Authority) can demonstrate its role in responding to the climate emergency.

What we found

- 4 We undertook the review during the period November 2021 to January 2022. Our review sought to answer the question: Is the Authority making good progress in reducing its carbon emissions and fully contributing to Wales’s public sector becoming carbon neutral by 2030? Overall we found that: **The Authority is creating the right infrastructure to become carbon neutral by 2030, but needs to deliver its ambitious targets and address some big risks.**
- 5 We reached this conclusion because:
 - the Authority is establishing a more accurate baseline position on all its carbon emissions and is planning to address known gaps;
 - the Authority’s plans are broadly focused on the right things, but need to be tightened in some areas to better support delivery;

¹ [The Paris Agreement, United Nations Climate Change](#)

² [Wales’ commitment to tackling climate change, Welsh Government](#)

- the Authority is making progress but will need to address some significant challenges if it is to become carbon neutral by 2030; and
- many planned actions to reduce carbon emissions are yet to be delivered and some targets are not aligned with Welsh Government goals.

Recommendations

6 The table below sets out the recommendations that we have identified following this review.

Exhibit 1: recommendations that we have identified following this review

Recommendations	
R1	<p>Improve the quality of the carbon baseline by:</p> <ul style="list-style-type: none"> • updating the carbon baseline drawing data from 2021-22; • ensuring gaps in information in respect of water metering, the impact of carbon offset work and data on buildings are captured; • ensure the impact of the pandemic and the switch to more home and agile working are reflected in the carbon baseline; and • ensuring all 'Scope 3' emissions are recorded and added to the carbon baseline.
R2	<p>Review the actions in the Carbon Reduction and Biodiversity and Ecosystems Resilience Forward plans to ensure they are SMART and are focussed on the key risks and challenges facing the Authority.</p>
R3	<p>Revise the Vehicle Replacement Programme policy and agree the Authority's strategy for replacing diesel appliances and improving the charging infrastructure across the force area. As part of this process the Authority should:</p> <ul style="list-style-type: none"> • review the notional lifespan of electric and hybrid vehicles to better inform future planning assumptions; • review current capital spending on fleet replacement and electric charging infrastructure to ensure the Authority has sufficient funding set aside to support the transition to a low carbon fleet; and • identify opportunities and introduce reciprocal agreements to access and make the best use of electric charging points owned by the public sector across the South Wales area.

Recommendations

R4 Engage and involve staff in planning for carbon emissions reduction to ensure they take ownership of the Authority's plans for improvement and are fully contributing to delivery of key actions.

R5 Strengthen how progress in delivering actions to reduce carbon emissions and delivery against Welsh Government targets is progressing and resulting in improvement by:

- regularly reviewing performance against planned actions and the carbon baseline;
- comparing performance with others to benchmark and identify opportunities to support improvement; and reporting on the baseline; and
- revising targets for carbon emissions reduction to align with Welsh Government goals.

Detailed report

The Authority is creating the right infrastructure to become carbon neutral by 2030, but needs to deliver its ambitious targets and address some big risks

The Authority is establishing a more accurate baseline position on all its carbon emissions and is planning to address known gaps

- 7 A carbon baseline is an inventory of sources of carbon emissions from business activities. This is typically one (or more) year's snapshot that serves as a reference point for organisations to understand and track their changing emissions over time. In order to plan and budget for reducing carbon emissions and becoming carbon neutral, public bodies need to confidently understand the extent of their emissions by developing and keeping up to date a carbon baseline. This will then be used as a foundation for a carbon roadmap which can show the pathways that are available to practically meet Welsh Government targets.
- 8 The Authority has developed a baseline that captures some key information related to activity relating to emission of carbon dioxide (CO₂) and other greenhouse gases (measured in carbon dioxide equivalents or CO₂e). For instance, the Authority reported in 2018-19 that its fleet produced 2,655 tonnes of CO₂e; energy consumption contributed 1,848 tonnes of CO₂e; the procurement supply chain 5,283 tonnes of CO₂e; and business mileage 154 tonnes of CO₂e. In addition, the Authority estimated that the annual cost of energy for buildings is £457,247. This is a good starting point for the Authority to build on, but there are some areas for improvement.
- 9 At the time of our fieldwork there has been no update since 2018-19 and the current baseline does not reflect where performance stands today, something the Authority has acknowledged and is a priority for improvement. While most data to measure carbon emissions is collated, there are also some gaps. For instance, water metering and measuring and capturing offsetting activity.
- 10 Currently, the Authority records Scope 1, 2 and 3 emissions data, but needs to extend its reporting and evaluation to cover all potential Scope 3 emissions. The Carbon Trust³ categorises emissions into three categories or 'Scopes', defined as:
 - **Scope 1** – covers direct emissions from owned or controlled sources such as fuel combustion and emissions from fleet;
 - **Scope 2** – covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the Authority; and

³ <https://www.carbontrust.com/resources/briefing-what-are-scope-3-emissions>

- **Scope 3** – includes all other indirect emissions that occur in the Authority’s procurement, supply and value chain. This would cover, for instance, purchased goods and services, business travel, employee commuting, waste disposal, use of sold products and investments.
- 11 The importance of addressing the purchased goods and services element of Scope 3 is underlined by research that shows that these can account for around 60% of an organisations total CO₂e footprint⁴. We found that some Scope 3 emissions are not included in the current baseline. For instance, CO₂e for some estate facilities such as the training facility built under a Private Finance Initiative (PFI) in Cardiff Gate and employee commuting. These are common challenges across the Welsh public sector.
- 12 Consequently, updating and creating a more accurate baseline is a priority for the recently appointed Sustainability Officer who is responsible for coordinating the Authority’s carbon emissions reduction work. The Authority uses the Carbon Trust [Carbon Footprint Calculator](#) to record CO₂e data⁵. The Welsh Government has produced a [Public Sector Route Map](#) for decarbonisation. The Welsh Government also introduced in the Autumn of 2021 a carbon data capture tool to accompany the Route Map. Feedback from our audits highlights that this is onerous and complicated to complete. The Authority sees this as an optional and helpful framework to support its work, but not a mandatory requirement to fully comply with.

The Authority’s plans are broadly focused on the right things, but need to be tightened in some areas to better support delivery

- 13 The Authority adopted a three-year [Carbon Reduction Plan 2020-23](#) and a Biodiversity and Ecosystems Resilience Plan⁶. We found that there is a clear link between these plans and wider strategies and policies such as the Authority’s [Strategic Plan 2020-30](#). The Carbon Reduction Plan 2020-23 has four areas of focus:
- reduce usage of single use materials;
 - explore the use of electric vehicles;
 - reduce energy use and our carbon footprint; and
 - consider how activities impact on the environment.

⁴ [Welsh Procurement Policy Note WPPN 12/21: Decarbonisation through procurement – Addressing CO₂e in supply chains](#), Welsh Government, December 2021.

⁵ The Carbon Trust Standard is a certification scheme. Applicants are awarded certification if they meet three sets of criteria relating to carbon measurement, carbon reduction and effectiveness in managing emissions.

⁶ In line with [Section 6 of the Environment \(Wales\) Act 2016](#), the Authority is required to plan and report on its actions to improve biodiversity within its estate.

- 14 The Carbon Reduction Plan 2020-23 has been assessed to determine its impact on equalities, diversity and inclusion, including the Welsh language, and is focussed on the right things; the operational areas which are the highest carbon emitters and/or offer the greatest opportunities to reduce emissions. These are:
- **Procurement** – reducing carbon emissions when buying goods and services;
 - **Buildings and estate** – the authority manages 47 stations and three other buildings (its headquarters, a Training facility and an Occupational Health unit);
 - **Mobility and transport** – covering fleet, business travel and staff commuting – the Authority owns 408 vehicles;
 - **Land use** – carbon offsetting⁷ and promoting environmental and biodiversity initiatives; and
 - **Operational and partnership working** – using the Authority's wider influence to encourage others and its own staff to reduce carbon emissions but in ways that enhance and maintain people's wellbeing.
- 15 For 2020-21, the Authority prioritised 76 specific actions under the Carbon Reduction and Biodiversity and Ecosystems Resilience Forward plans. Our review actions highlight that many are not SMART⁸, prioritised or costed and read like a long wish list. For example, a lot of supporting actions include the phrases 'consider', 'explore', 'develop' and 'calculate' and are not focused on delivering specific actions. It has focussed activities in the right areas, but tightening and setting clear actions will support both officers to deliver improvement and members to oversee and scrutinise performance.
- 16 The engagement of employees in energy and carbon saving is an effective way to motivate staff and successfully achieve the Authority's environmental goals. We found that while staff have a broad understanding of the challenges that need to be addressed in how estates, fleet and energy usage contribute to CO₂e, the majority of those who responded to our survey (62.6%) did not know the Authority's starting point for reducing carbon emissions and whether the Authority had an accurate baseline.
- 17 Only 28.2% of those members of staff responding to our survey strongly agreed or agreed that the Authority is measuring progress to reduce carbon emissions. Roughly a fifth (19.6%) believe that the Authority will meet Welsh Government targets, but the vast majority (63.2%) did not know. Finally, only 36.2% were aware of the targets that had been set to reduce carbon emissions. This highlights that

⁷ Carbon offsetting comes from projects that reduce the amount of greenhouse gases entering the atmosphere. They must lead to real reductions or sequestration of carbon, which needs to be measured and quantified. To ensure the validity of the projects they must meet rigorous conditions.

⁸ SMART goals stands for Specific, Measurable, Achievable, Relevant, and Time-Bound. Defining these parameters as they relate to a target helps ensure that delivery of objectives are attainable within a clear time frame.

there is more work for the Authority to do to effectively communicate why carbon emissions reduction is important and the vital contribution individuals can make to helping to promote, lead and deliver the Authority's responsibilities.

- 18 The Authority has also appointed a Member Environmental Champion who has a broad understanding of the carbon emissions reduction agenda. This is a relatively recent appointment, and the Member Champion is developing his knowledge and understanding to ensure he is able to deliver this role.

The Authority is making progress but will need to address some significant challenges if it is to become carbon neutral by 2030

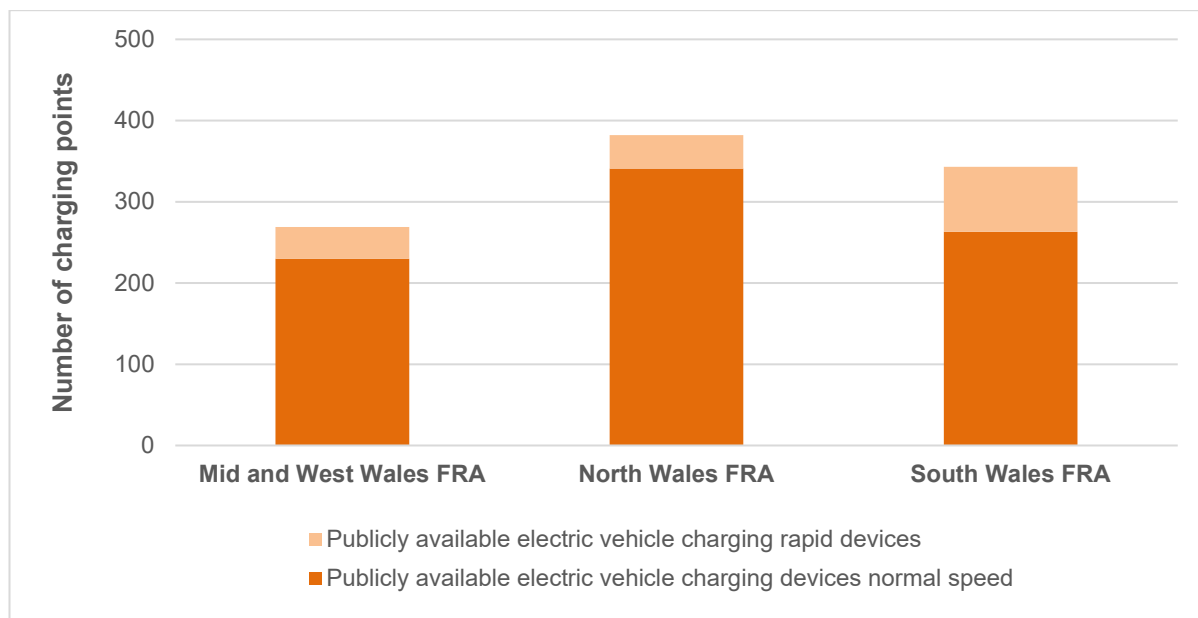
- 19 The Authority is doing some good preventative work to deliver carbon neutrality. For instance, the Authority delivers services from 50 buildings and has carried out some physical improvements to reduce carbon emissions in its estate such as the installation of energy efficient and low carbon producing lighting in most buildings; new drying room technology; completed a programme of boiler replacements to remove outdated and inefficient systems; and linked appliance bay doors to heating controls to automatically switch off when doors are open. There is no plan to rationalise the estate; rather the focus is on co-locating with other emergency services and many of the Authority's buildings are considered by senior managers to lend themselves well to co-location.
- 20 The world of fleet has never seen such a period of change and reducing CO₂ emissions from the Authority's fleet is a big priority. We found that 21 electric non-operational support vehicles are now in use and priority is being given to encouraging take-up of electrical cars when leases are renewed. At the time of our review 20% of the white fleet was fully electric or hybrid.
- 21 While this demonstrates the Authority's commitment to reduce emissions from fleet, some significant risks remain, particularly around heavy vehicles, which make up the majority of frontline fire appliances. Due to their specialist nature they have long life policies and are more challenging to decarbonise. Switching to alternative models, while theoretically feasible in some locations, has to be balanced with the potential impact on operational capability. It is not always appropriate to move to smaller vehicles if this impinges on the Authority's ability to respond to an emergency.
- 22 The Authority adopted a Sustainable Procurement Policy in 2020 which highlights the challenge of modernising its fleet to become carbon neutral. For instance, officers notified us that there are currently only two electric appliances on the market, but they cost in the region of £600,000 per vehicle. The most recent tenders under the Authority's Vehicle Replacement Programme resulted in the Authority spending roughly £299,000 to upgrade each diesel appliance.
- 23 In addition to having to spend twice as much replacing diesel vehicles with electric ones, there is also a likelihood that electric vehicles will need to be replaced more frequently, and the notional 15-year lifespan of a diesel appliance will need to be

reduced in future planning assumptions. This means that the Authority will need to invest more money to replace electric vehicles more frequently in the future. Replacing vehicles more frequently will also have a detrimental impact on Scope 3 emissions because of increased carbon emissions in the manufacturing process. Hydrogen vehicles, which could offer a workable solution, are in development but are not considered a realistic option at present.

- 24 To fully realise the potential of electric fleet will also require adequate charging infrastructure across the Authority's area of operation. It is essential that there is a comprehensive and competitive electric-vehicle charging network in place. If the charging network is perceived as inadequate, then this will be a major barrier to electric vehicle take-up by all public bodies. The scale of the shift to electric vehicles should not be underestimated. While it is difficult to know precisely how much charging will be needed, UK Government forecasts⁹ suggest that at least ten times more charge points will be needed by 2030 than currently exist.
- 25 To support this transition requires the Authority to work in partnership with other public sector bodies in its area of operation to make full use of the current charging infrastructure. We found that progress on this has been limited to date and much work remains to progress this matter. For instance, the Authority participated in pre-COVID19 discussions with public bodies in Gwent on working collectively to maximise the potential for charging infrastructure, but this has since ground to a halt as partners prioritised responding to the pandemic. Work is also underway in the wider Cardiff City region to explore the benefits of the public sector collectively making better use of the charging infrastructure.
- 26 The Authority has introduced 22 electric charging points at its headquarters building and is rolling out six charging points at strategic stations with an aim of doubling this number by March 2023. Since our fieldwork the Authority has also received grant funding from the Welsh Government to install 12 charging points at its Cardiff Gate training centre before the end of March 2022. This is a good starting point but much more work is needed to encourage a growth in the use of electric vehicles. ONS data shows that in October 2021 across the South Wales region there are 332 publicly available electric vehicle charging devices (all speeds), of which 80 are rapid charging units – **Exhibit 2**.

⁹ <https://www.gov.uk/government/publications/electric-vehicle-charging-market-study-final-report/final-report>

Exhibit 2 – publicly available electric-vehicle charging points by Welsh Fire and Rescue Authority area in October 2021



Source: ONS, Electric vehicle charging device statistics: October 2021

- 27 Given these challenges it is unsurprising therefore that our survey of staff found that the main barrier to becoming carbon neutral is the cost of investment required in infrastructure, vehicles, offices and stations. We conclude that the Authority is steadily shifting to a low carbon fleet, but without significant investment in charging infrastructure and development of alternatives to diesel appliances, this will be impossible to deliver.
- 28 While avoiding and reducing emissions remains the Authority’s priority, the ability to achieve Net Zero by 2030 will be extremely difficult without a form of offsetting due to the scale of technology and investment required. Carbon offset schemes allow public bodies to invest in environmental projects in order to balance out their own carbon footprints. The projects are most commonly designed to reduce future emissions and soaking up CO₂e directly from the air through the planting of trees and other biodiversity projects. Some organisations offset their entire carbon footprint while others aim to neutralise the impact of a specific activity.
- 29 Offsetting is growing in importance and there are some positive examples of how the Authority is seeking to maximise these opportunities. A number of initiatives have been rolled out including the development of ‘wellbeing gardens’ at its Maesteg and Ely fire stations; the creation of beehives at the Ebbw Vale Station; ‘rainwater harvesting’ to collect, filter and store rainwater in several fire stations;

the inclusion of a 'green roof' at the Hirwaun station¹⁰; and ongoing work with several organisations to plant trees across the South Wales region. Unfortunately, the Authority is not able to demonstrate the impact of these initiatives on its carbon footprint in its baseline at this time.

- 30 Changing how organisations work, consume products and services that come from natural resources, can measurably reduce CO₂e. We found that the Authority has focused on some good initiatives to both change behaviours but also the way it delivers services. The Authority has a long history of upcycling materials and equipment – most notably as part of [Operation Florian](#) where the Authority has donated vehicles, equipment, supplies and expertise to help services in less well-off countries.
- 31 The Authority has also introduced a number of initiatives to reduce single-use plastics providing staff with refillable aluminium water bottles. The shift to home working brought on by the pandemic also helped the Authority reduce carbon emissions, although the long-term impact of this has not been worked through. It is also, to an extent, increasing carbon emissions resulting from staff working from home which are not being captured or measured at all. The Authority has also signed up to a number of active travel charters and is committed to facilitating more sustainable travel.
- 32 The engagement of employees into energy and carbon saving is an effective way to motivate staff and successfully achieve environmental goals. By taking a strategic approach to engagement, public bodies can establish shared ownership of carbon and energy targets and ensure that leaders are held to account. And a robust and clear sustainability strategy will have employee engagement at its core.
- 33 Our survey of staff found that the Authority needs to do more to engage with its workforce. For example, three of the five main barriers identified by staff to help become carbon neutral relate to their lack of awareness of plans within services; a lack of staff involvement and limited opportunities to contribute ideas; and a limited understanding of the Authority's carbon emissions reduction work more generally.

Many planned actions to reduce carbon emissions are yet to be delivered and some targets are not aligned with Welsh Government goals

- 34 The Authority reports performance quarterly to its Finance, Audit and Performance Management Committee against its Business Plan Action Strategic Health Check report. This is an ambitious programme of change and, while both plans have been subject to monitoring, many of the targets set have not been completed and there remains much work for the Authority to do to deliver its ambitious programme of change.

¹⁰ A green roof consists of a drainage layer with 'filterfleece', extensive roof garden substrate, and a vegetation blanket to create a natural habitat for flora and fauna which can aid biodiversity encouraging a wider spread of species in the area.

- 35 For example, at its meeting of July 2021, the Authority most recently reported on its annual performance against both plans. This highlighted that of the 26 actions under the Carbon Reduction Plan set for delivery in 2020-21, 23 are in progress, two have been completed and one has not started. With regard to the Biodiversity and Ecosystems Resilience Forward Plan, the Authority has set itself six objectives and adopted 49 actions. As of July 2021, 37 were in progress, eight were to be confirmed, four were yet to be started and only two were complete.
- 36 In addition, the annual monitoring report on performance lacks key data to judge progress against the CO₂e targets set. It is therefore difficult to evaluate whether the Authority's performance is good or bad. There is no evidence to show how the Authority compares its performance with others and, because actions are not SMART, the narrative of performance over the year does not enable a full and accurate understanding of impact to be drawn.
- 37 With regard to the Authority's targets for reducing CO₂ emissions, we found that these are lower than the ones set for the public sector by the Welsh Government. For example, the Authority has adopted a target to reduce carbon emissions by 50% by 2030, which is below the Welsh Government target of 58%. Similarly, the Authority set targets of reducing carbon emissions by 65% by 2040 and 80% by 2050. The targets set by the Welsh Government for these periods are 80% and 95% respectively.



Audit Wales
24 Cathedral Road
Cardiff CF11 9LJ

Tel: 029 2032 0500

Fax: 029 2032 0600

Textphone: 029 2032 0660

E-mail: info@audit.wales

Website: www.audit.wales

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