



Our roadmap to
**Net Zero
Carbon**





Our approach

Aligning our Carbon Management Strategy

As a responsible business, we are committed to playing our part in limiting the impact of climate change. To effectively demonstrate this, our strategy is aligned to objectives on an international, national and local level.

■ **2015 Paris Agreement** – the first-ever universal, legally binding global climate deal to keep a global temperature rise this century well below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5°C. The COP26 in 2021 brought nations together in adopting the Glasgow Climate Pact, aiming to turn the 2020s into a decade of climate action and support for 1.5°C. United Nations Sustainable Development Goals – specifically **Goal 13** which relates to climate change.

■ **Climate Change Act 2008** – a legal framework for UK Climate Change Policy. In June 2019, the UK became the first major global economy to pass a law requiring us to achieve 'Net Zero' greenhouse gas (GHG) emissions by 2050.

■ **2019 West Berkshire Council Climate Emergency** – in July 2019 West Berkshire Council declared a 'Climate Emergency'. The council's Environment Strategy 2020-2030 highlights the "expectation that all of the district's residents and businesses will contribute towards the aspiration of becoming a carbon neutral district by 2030".

■ **MOD Climate Change and Sustainability Strategic Report** – which sets out the ambition, the principles and the methods needed for UK Defence to meet the challenge of climate change and Net Zero.

■ **Greening the Government Commitments (GGC)** – the GGC set out the actions UK government departments and their partner organisations will take to reduce their impacts on the environment in the period 2021 to 2025.





Framework and definitions

In developing AWE's Carbon Management Strategy, the Greenhouse Gas Management Hierarchy has been used as a framework for reductions. This sees priority placed on eliminating emissions, followed by reducing emissions, which is then supported by substitution measures and finally compensation of emissions.

For clarity, in this document we are using the following definitions:

Carbon – The term carbon is often used interchangeably with greenhouse gases (GHG) to collectively describe the GHG which contribute to climate change: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride.

Carbon Footprint – The total GHG emissions caused directly and indirectly by an organisation, expressed as tonnes of carbon dioxide equivalent (tCO₂e). Carbon dioxide equivalent is a standardised measure used to compare emissions from various GHG and is based upon their global warming potential.

Decarbonisation – The process by which carbon emissions associated with electricity, industry, and transport are reduced or eliminated.

Net Zero Carbon – Net Zero means that any carbon emissions created are balanced by taking the same amount out of the atmosphere. Net Zero will be reached when the amount of carbon emissions we add is no more than the amount taken away.

Net Zero Carbon Targets – Setting corporate Net Zero targets aligned with meeting societal climate goals means:

- achieving a scale of value chain emissions reductions consistent with the depth of abatement at the point of reaching global Net Zero in 1.5°C pathways; and
- neutralizing the impact of any residual emissions by permanently removing an equivalent volume of CO₂.

Neutralisation – Measures that companies take to remove carbon from the atmosphere and permanently store it to counterbalance the impact of emissions that remain unabated. This could include carbon capture technologies or nature-based solutions (tree planting).

Science Based Target (SBT) – Targets that are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement – to limit global warming to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C. They provide a carbon reduction pathway that defines how quickly an organisation's carbon emissions need to reduce by and is unique to an organisation.

Value Chain – Refers to all of the upstream and downstream activities associated with the operations of the reporting company.





Our carbon management journey

Climate change is one of the biggest challenges we face today, and there is an ever-increasing urgency to reduce carbon emissions if the very worst impacts of climate change are to be avoided. We need to make sure it's an issue that's front and centre.

We are pushing ourselves with an increased ambition of achieving Net Zero Carbon across the value chain by 2050. Given the evidence on climate change and 'code red' warning from the Intergovernmental Panel on Climate Change, we know that striving for Net Zero is ambitious but the right thing to do.

This document outlines our strategic response to reducing carbon emissions and responding to the impact of climate change. It highlights AWE's current carbon emissions, where we want to be, and the framework and activities we're using to meet our targets. It also addresses how we intend to manage climate-related risks and opportunities so we can continue to operate in a changing climate. As a responsible business – and one that is entering a period of significant growth – we must continually challenge our planning, investment and operations, and play our part in limiting the impact of climate change.

Our journey to Net Zero Carbon is not only challenging but also ambitious. However, the strategic approach and intent outlined over the following pages fills me with optimism and shows a determination that we are well placed to meet this challenge head-on to benefit future generations.

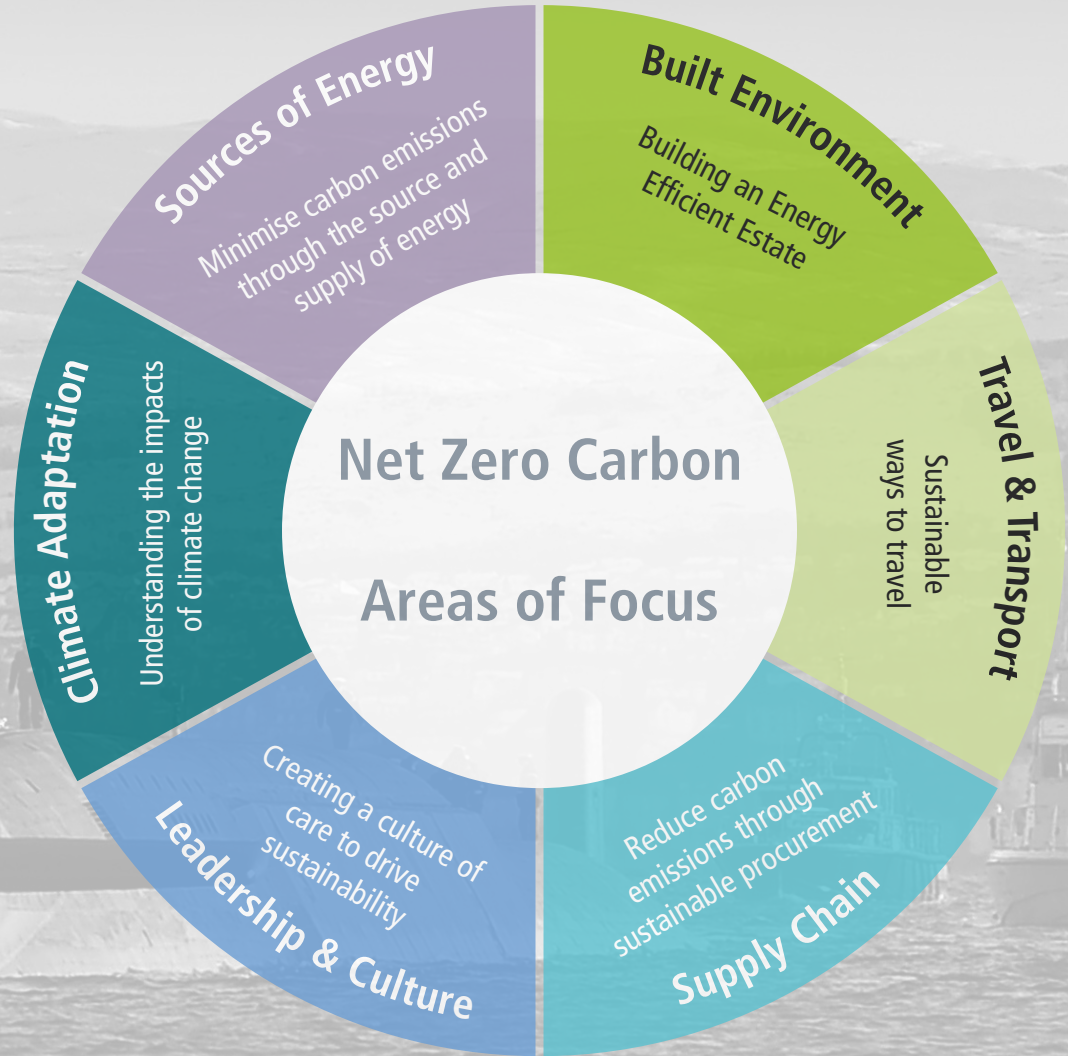
Dominic Jones

Executive Director Environment, Safety, Health & Quality (Interim)





The steps we are taking



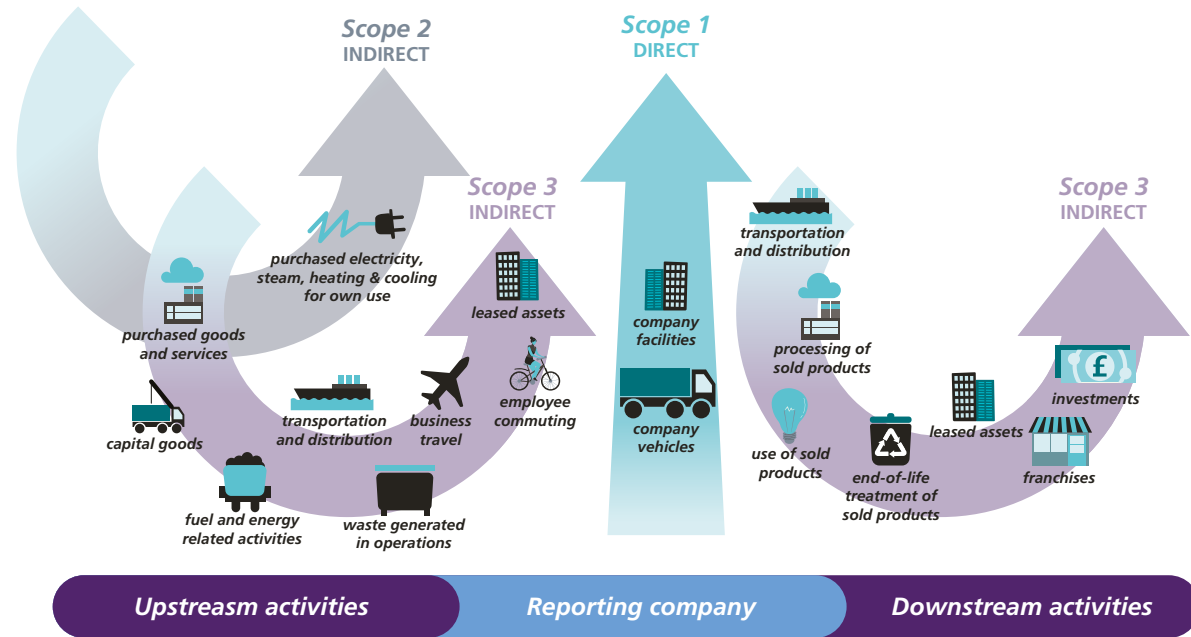


Our carbon footprint

The measurement of a carbon footprint is essential in highlighting areas for improvement. AWE's carbon footprint includes emissions from various sources:

- **Scope 1** – direct emissions that result from activities within an organisational control
- **Scope 2** – indirect emissions from any electricity purchase and use
- **Scope 3** – any other indirect emissions from sources outside the direct control of the business

An overview of scopes and emissions is shown to the right:





Our carbon footprint

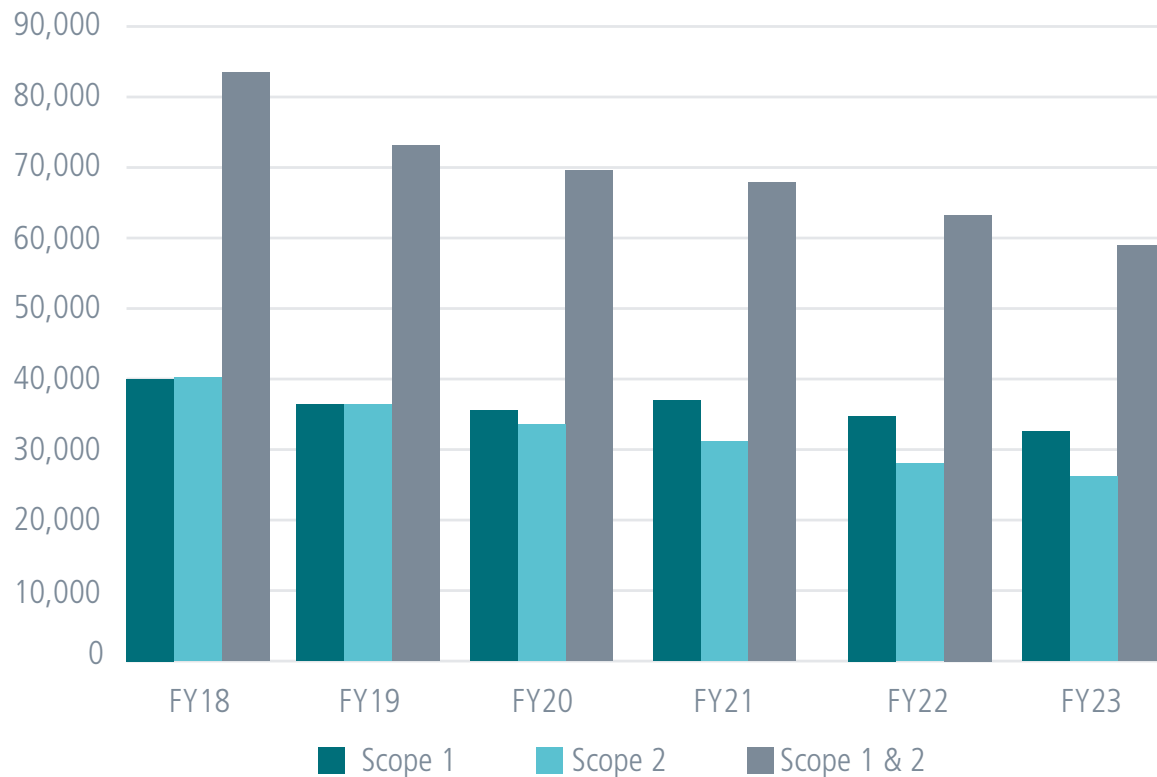
We developed our organisational carbon footprint using the methodology outlined in the Greenhouse Gas Protocol. This was validated in FY18 and since then ongoing work has refined our carbon footprint.

We understand our Scope 1 and 2 carbon emissions and have reduced these by 29% since FY18. The main sources of these emissions are natural gas used for site heating and purchased electricity. This reduction is partly due to decarbonisation of the of the UK national grid, as well as the implementation of a number of energy saving opportunities (see chart to the right).

For most business, the majority of emissions will lie in the value chain, and in AWE's case, our scope 3 emissions are estimated to be 75% of our total footprint. We have undertaken an assessment against scope 3 categories to highlight the areas of greatest contribution and where we can have most influence.

Further baselining and refinement of data is required, although this does not preclude action being taken to reduce emissions.

AWE Organisational Carbon Footprint Scope 1 and 2 Carbon Emissions CO₂e Tonnes



*Scope 2 reported using location-based methodology



Our carbon management targets

Carbon reduction targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C.

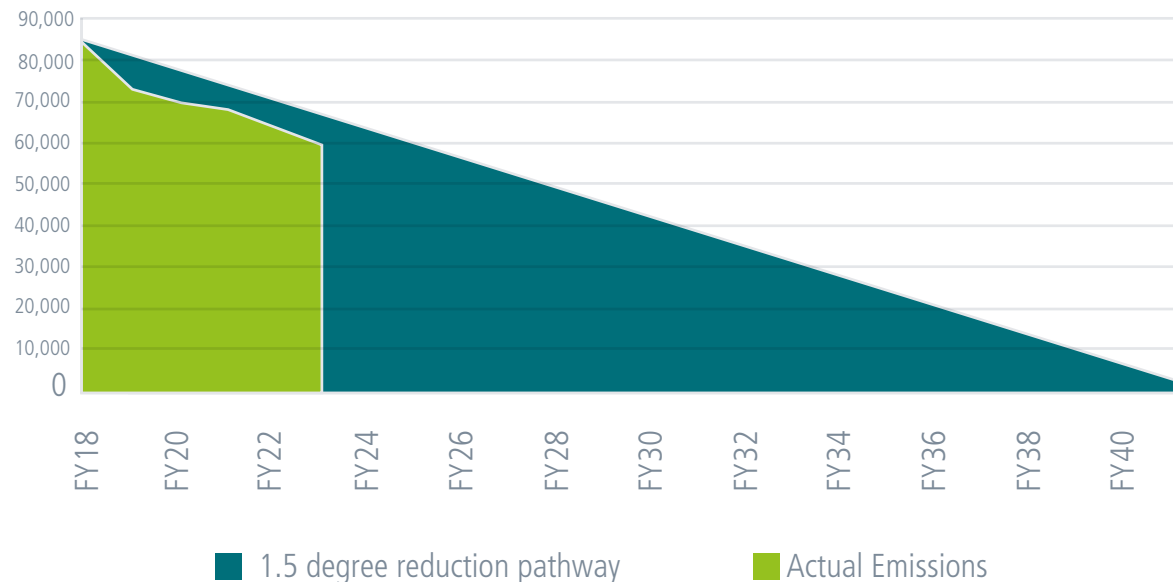
In 2019 AWE set a science based target for Scope 1 and 2 emissions aligned to a Well Below 2°C pathway.

Setting Net Zero Targets

Our increased ambition to achieve Net Zero for Scope 1 and 2 carbon emissions by 2040 has required our target to be realigned to the 1.5°C pathway in accordance with the Science Based Targets initiative (SBTi) Net Zero Standard.

As a minimum this will require at least a 90% reduction in carbon emissions by 2040.

Scope 1 and 2 Net Zero by 2040 Progress against carbon reduction target Tonnes CO₂e





Sources of energy

AWE has seen carbon emission reductions, this is partly due to decarbonisation of the of the UK national grid, as well as implementing energy saving opportunities.

The rate of grid decarbonisations is set to continue. However, in the short term AWE's energy usage is forecast to increase – particularly electricity usage.

To mitigate this impact, we are:

- purchasing electricity from renewable sources
- decarbonising heat across the enduring AWE estate
- driving energy efficiency into both operations and capital programmes to reduce overall energy demand

We are working on solar farm opportunities, with the aim to serve approximately 20% of annual electricity demands from direct wire low carbon solar power generation.

AWE has also developed a Site Heating Strategy to move away from our reliance on fossil fuels. This includes both immediate and longer-term actions, including:

- No new builds to connect to the current steam heating system and for all projects to explore options for low carbon technologies to supply heating demands
- Refurbishment and re-kit programmes to replace heating systems with localised low carbon heating solutions
- A phased removal of steam from AWE estate with alignment to re-kit and decommissioning programmes

AWE's purchased electricity is a "Renewable Backed Supply" via the Renewable Energy Guarantees of Origin (REGO) scheme. We remain committed to maintaining REGO-backed purchased electricity supplies.



Built environment

There are considerable opportunities to reduce carbon emissions through the operation of an energy efficient estate.

All our new builds are required to achieve a Defence Related Environmental Assessment Methodology (DREAM) Excellent Rating, this includes the requirement for Energy and Carbon Management Plans.

As refrigerant gases – widely utilised in cooling systems – have gases with a high global warming potential (GWP), there is a programme to utilise equipment containing gases with a lower GWP.

Once AWE's current phase of investment and new infrastructure is operational, older buildings and infrastructure will be decommissioned, closed and eventually removed from site.

Over the last few years, a range of activities have identified energy efficiency opportunities for the existing estate including energy assessments and audits.

Energy Saving assessments were undertaken in both offices and production facilities. Over 100 opportunities were identified that mainly covered:

- extract ventilation optimisation
- LED lighting replacements
- improved local heating controls and plant room insulation
- building management system recalibration and optimisation.

The carbon savings due to the implementation of these low-cost opportunities is estimated to save ~5000 tCO₂e per year.





Travel and transport

AWE is exploring ways of transitioning on-site vehicle fleet to ultra-low emissions vehicles. In support of this, we are committed to install 100 on-site electric vehicle charging points over the next few years to meet future demands – serving both fleet and personal vehicles.

We continue to promote sustainable business travel for our employees.

The car-sharing scheme – Liftshare – continues to prove popular and is supported across our sites. Carbon data on business travel is already collated and we have set reduction targets to reduce the carbon emissions from domestic business flights. We are currently baselining international flights.



Due to travel restriction during the Covid-19 pandemic the number of domestic flights reduced by 95% and new ways of working were established without the need to travel – demonstrating the importance of new ways of working in reducing emissions from business travel. We continue to work in identifying improvements and raising employee awareness of the carbon impacts of different modes of travel when planning journeys.



We have installed 10 electronic vehicle charging points as part of a successful trial and there is ongoing work to install up to 100 further points on our sites.



Supply chain

In order for AWE to reach its Net Zero ambition, it's essential to work closely with suppliers who share our goals. Purchased services and goods and capital goods are the largest challenge with respect to Scope 3 emissions. The biggest contributor to this is construction with other high-ranking purchases including machinery and equipment, metal products, computing and electronic equipment, and chemicals.

To accurately capture and quantify Scope 3 emissions we are continually refining data collection and improving accuracy by following the GHG Protocol for Scope 3 Emissions. Given AWE's new build programme we are developing a greater understanding of all projects' carbon footprints.





Leadership and culture

Part of AWE's ongoing culture creation work focuses on encouraging our people to play their part in the continual improvement of our environmental performance across all operations.

We know that in order for us to be successful in our ambitions we need all of our people to engage with our efforts. Work continues to embed and promote our commitments across the business. Research by the Carbon Trust has suggested an investment of between 1-2% of energy spend in an effective employee engagement campaign, can save up to 10% on energy costs. Behavioural change and culture have long been recognised as a low-cost, high-impact way of reducing an organisation's carbon footprint. AWE consistently runs a range of campaigns to engage, educate and inspire our people.



The onset of the Covid-19 pandemic saw more staff embracing Smarter Working, resulting in less employee commuting and business travel. Carbon emissions from homeworking are calculated under Scope 3 emissions.



Climate adaptation

We are taking steps to prepare for a changing climate. AWE is undertaking **Climate Impacts Risk Assessments following MOD Methodology** – designed to improve the resilience of Ministry of Defence establishments to climate related hazards. This assessment identifies the risks posed by current and projected impacts of climate change or extreme weather events, along with the associated actions required to maintain and optimise operational capability.

AWE has undertaken a readiness review against the Task Force on **Climate Related Financial Disclosures** (TCFD) recommendations, reviewing how climate related risks are addressed in corporate governance, the impacts on business strategy and how climate related risks and opportunities are identified and managed.

Nature Based Solutions

Nature can provide important solutions to climate change, both by helping to lock up carbon and by helping society cope with the inevitable changes. The AWE Nature Recovery Plan outlines our plans to protect and enhance habitats on the AWE estate.





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