NHS
South Central Ambulance Service
NHS Foundation Trust

South Central Ambulance Service NHS Foundation Trust

Green Plan 2025 - 2032

Document Control

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Version	**Description**	**Date**
1.1	Green Plan Refresh – first draft Key Updates on original Green Plan: 1) Material restatement of Carbon Footprint and Carbon Footprint PLUS following change in methodology 2) Development of Net Zero Procurement strategy and decarbonising the supply chain 3) Sustainability feasibility studies for Solar PV, Battery Storage and smart LED 4) Development of EV charging infrastructure requirements using Emergency Vehicle Recharging Infrastructure Tool (EVRIT) 5) Estimated 5-year Capital Budget for Estates Sustainability Upgrades	29/11/2024
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1.2	Resubmitted to Finance & Performance Committee	21/05/2025
1.3	Approved by Finance & Performance Committee. Key updates: 1) 2024/25 year-end carbon data (multiple sections) 2) Digital Transformation (Section 4.5) 3) Amended Year 1 Capital Budget (Section 5)	21/05/2025
1.4	Approved by SCAS Trust Board	31/07/2025

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Executive Summary

Climate change has been identified as the greatest threat to human health this century. Such is the scale of the problem, several local authorities within the SCAS region have already declared a Climate Emergency. As a front-line service provider, SCAS will be directly impacted by climate change. Although our organisation successfully handles thousands of emergencies daily, global warming will add a significant additional burden, whilst the effects of increased flooding and heatwaves will hamper our operations and disrupt our ability to respond.

As a major consumer of diesel, we are a large contributor to global warming from carbon dioxide emissions, but we also pollute the air in the communities we serve with toxic gases and particulates, causing harm to patients and staff.

We have an ethical duty to respond accordingly, to protect our patients, staff and wider society from pollution and the impacts of climate change.

The Government has enshrined this in law. The NHS became the first health system to embed net zero in legislation, through the Health and Care Act 2022. Statutory guidance mandates the NHS to achieve:

1) for the emissions we control directly (the *NHS Carbon Footprint*), net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032

2) for the emissions we can influence (our *NHS Carbon Footprint* ***Plus***), net zero by 2045, with an ambition to reach an 80% reduction by 2036 to 2039.

This Green Plan sets out the scale of the challenge facing SCAS and how we will reach our Net Zero targets. By measuring our carbon footprint and identifying its sources, we can see that:

1) Our Fleet is responsible for 80% of the emissions we control directly (our Carbon Footprint).
2) Procurement / Supply Chain accounts for 83% of our wider emissions, including those we influence. Of this wider Carbon Footprint PLUS, transport-related activities account for 74%.

The measured data shows that, on our current trajectory, we are making good progress with reducing the emissions we can control directly (our Carbon Footprint), remaining on course so far, but the emissions we can only influence (our Carbon Footprint PLUS) have been rising each year, entirely due to a large increase in transport-related emissions from the goods and services we purchase.

This Green Plan details the specific measures we need to implement to meet our Net Zero targets. It prioritises the need for the Trust to reduce its vehicle emissions by fleet electrification. This plan also seeks to ensure that our procurement process compels suppliers to reduce their carbon footprint through similar means and contribute to other sustainable measures.

Other actions that contribute to sustainability and carbon reduction have also been identified. These have a comparatively smaller impact than transport but also need to be addressed if we are to reach Net Zero.

This refreshed Green Plan provides specific, measurable steps to show how SCAS can remain on course to meet its Carbon Footprint Net Zero targets of an 80% reduction by 2028-32, compared to 1990 emissions.

The most important steps are:

1) 100% Electric Vehicle Fleet (excluding Double Crewed Ambulances; these will come later). The adoption of electric vehicles must follow the pathway set out by the October 2023 NHS Net Zero Travel & Transport Strategy.
2) Installation of sufficient electric vehicle charging infrastructure to support the entire Fleet.
3) Installing Solar PV with Battery Energy Storage Systems to generate our own electricity and create significant financial savings
4) Implement mandatory Carbon Reduction Plan requirements to all Procurement contracts, along with other Social Value Theme clauses
5) Reducing Nitrous Oxide emissions by 50%
6) Using synthetic fuels such as HVO to replace diesel and reduce emissions from DCAs on older vehicles with higher emissions and where the warranties have expired.

These steps will form a programme of sustainable transformation within a wider Trust Modernisation Programme, comprised of a portfolio of projects spanning multiple departments, but particularly focused on Fleet Services, Estates and Procurement. This will lead us towards achieving our sustainability goals and maintain compliance with our legal obligations.

The success of this programme requires the support of the Board, with an appropriate governance structure in place, including a Board level sponsor. A Programme Manager to coordinate the cross-departmental workstreams is also essential to success.

Funding the Green Plan requires upfront capital investment, which will be recouped long term from the reduced lifetime operating costs of adopting an electric fleet, particularly the fuel and maintenance savings, as well as savings from Solar PV and smart LED systems. NHS England expect the cost of new electric vehicles to reach parity with diesel and petrol models soon, whilst reforms to the way new grid connections are funded means the charging infrastructure requirements represent a more modest capital investment than previously. Nationwide, fully implementing the NHS Net Zero Travel and Transport Strategy will result in over £59 million saved every year, with Ambulance trusts being the main beneficiaries.

This represents an exciting, generational opportunity for SCAS to become a pioneering leader in the fight against climate change.

1. Context & Key Drivers of the Green Plan

1.1 Trust Background

South Central Ambulance Service NHS Foundation Trust provides a range of emergency, urgent care and non-emergency healthcare services, along with patient transport services.

SCAS employs 4,380 staff across 35 main sites[1] covering a large geographical area encompassing Oxfordshire, Buckinghamshire, Berkshire and Hampshire. These are predominantly rural counties, with a higher-than-average population over the age of 65. SCAS serves a population of over 4.4 million and answers nearly a million 999 and 111 calls a year. Services are provided 24 hours a day, 7 days a week

As of 1st May 2025, the SCAS Fleet comprised 1,144 vehicles, of which 352 were front line ambulances, 341 patient transport vehicles, and a range of rapid response and staff vehicles.

In addition, SCAS has a significant "Grey Fleet" of 1,355 privately owned vehicles which are used to carry out functions on behalf of the Trust, incurring nearly 1.35 million miles of business travel, including 190,000 miles undertaken by volunteer drivers.[2]

SCAS also procures external patient transport services, which adds to the total carbon footprint PLUS of the Trust.

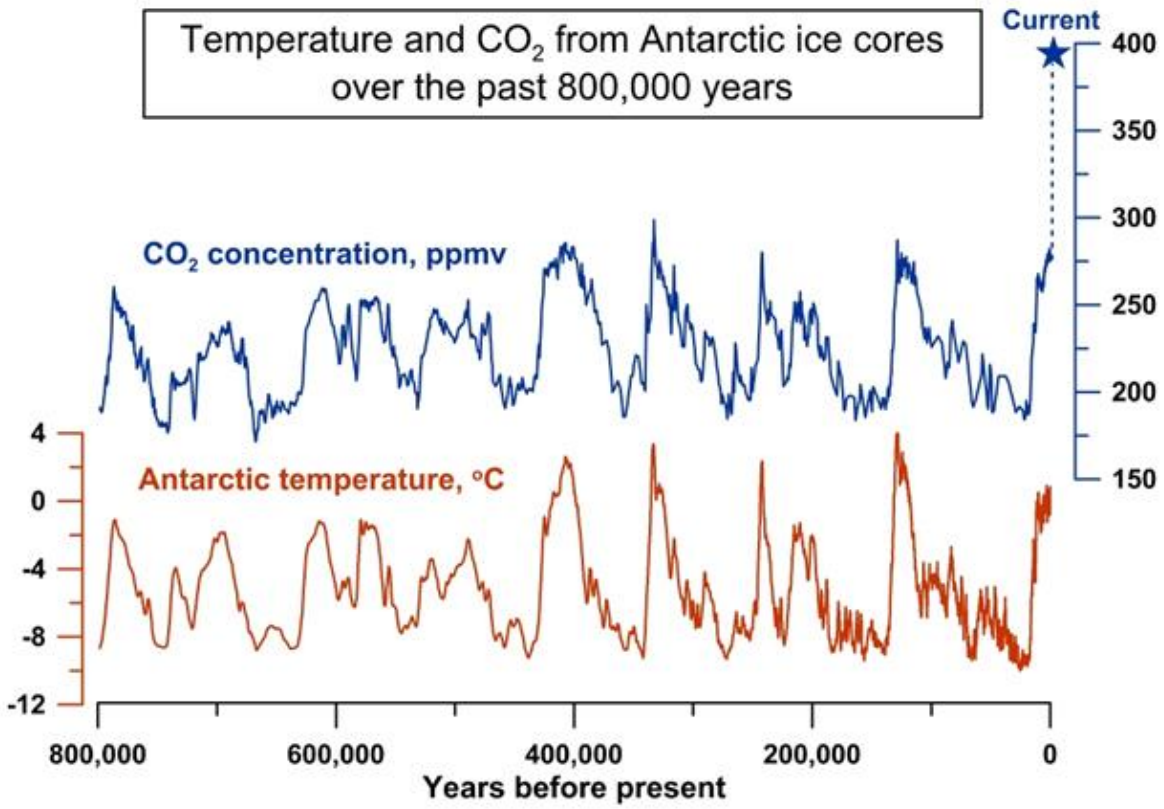
SCAS Fit for the Future Programme

The Trust is currently embarking on a "Fit for the Future" modernisation programme which will see a reorganisation of all departments, particularly Estates and Fleet with regards to the number of buildings and ambulance station locations. The delivery of the Green Plan is intrinsically linked to this programme, and will be updated accordingly, though the carbon reduction targets remain the same.

[1] "SCAS in Numbers", published 01/05/25. Includes Resource Centres, PTS, contact centres, education and workshops. Excludes ambulance stand-by points.
[2] SCAS Business Miles Claims Report from HR Department, 31-03-25

1.2 Climate Change – The Science

Since John Tyndall proved that carbon dioxide can absorb heat in the atmosphere in 1859, scientists have warned that altering the levels of CO_2 could change the climate. By analysing ice core samples dating from 1950 back over 800,000 years, scientists have been able to demonstrate the direct correlation between CO_2 levels and global temperatures:



[3]

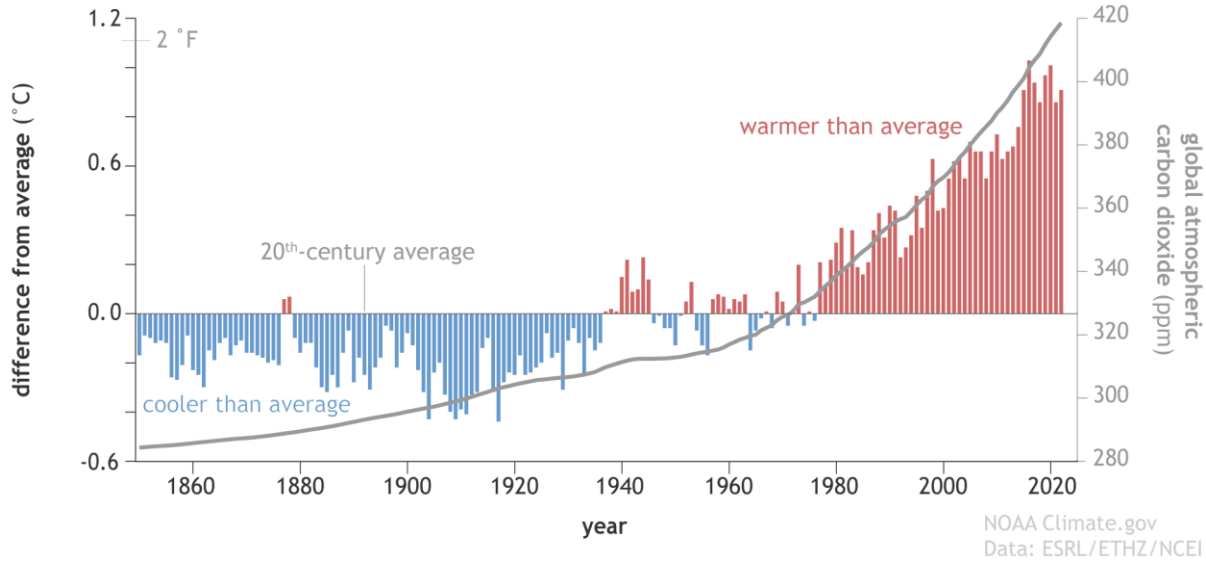
This landmark study, undertaken in 2001, analysed CO_2 and different isotopes in air bubbles trapped in the ice to reconstruct a picture of past temperatures.

Since the Industrial Revolution began in the mid-18th Century, we have released billions of tonnes of carbon dioxide into the atmosphere. In 1938, the engineer Guy Callender was the first to discover a connection between human activities and global warming[4]. Using more recent data based on actual observed temperatures and emissions since 1850, climate scientists have demonstrated the causal link between human activities and climate change:

[3] Greenhouse gases and climate sensitivity - insights from ice cores | National Institute of Water and Atmospheric Research, 2001 https://niwa.co.nz/atmosphere/research-projects/greenhouse-gases-and-climate-sensitivity-insights-from-ice-cores

[4] World Economic Forum, 2022, "*Who first discovered the human connection to global warming?*", https://www.weforum.org/agenda/2022/02/climate-change-global-warming-carbon-dioxide-fossil-fuels/

Yearly global surface temperature and atmospheric carbon dioxide (1850-2022)



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Since pre-industrial times the concentration of CO_2 has risen to 417 parts per million (ppm) from 280ppm (based on the average between 1,000 and 1,800 CE). As the Intergovernmental Panel on Climate Change (IPCC) observes, the last time CO2 levels were as high as present was at least 2 million years ago[6] and that human influence has warmed the planet at a rate that is unprecedented in the last 2,000 years[7]. Their modelling accounts for the effect of natural drivers of climate change such as solar and volcanic activity. The IPCC states that "it is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred."[8] IPCC reports are commissioned by the world's 195 national governments and the summary is agreed unanimously, line-by-line, by those governments. Some of those governments are engaged in conflict with each other, yet they set their differences aside to agree on this matter.

[5], National Oceanic and Atmospheric Administration, 2022, "What evidence exists that Earth is warming and that humans are the main cause?" https://www.climate.gov/news-features/climate-qa/what-evidence-exists-earth-warming-and-humans-are-main-cause, accessed 25/08/23

[6] Arias, P.A. et al., 2021 Technical Summary. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, p68, https://www.ipcc.ch/report/ar6/wg1/chapter/technical-summary/ accessed on 30/08/23

[7] Figure SPM.1 in IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. et al)]. Cambridge University Press, Cambridge, UK and New York, NY,USA, pp. 3–32, https://www.ipcc.ch/report/ar6/wg1/figures/summary-for-policymakers/figure-spm-1

[8] Ibid, A.1

1.3 Impact of Climate Change on the SCAS Region

Anthropogenic climate change is already having a serious and noticeable impact on the UK, with the 10 warmest years on record having all occurred since 2002, according to analysis from the Met Office. The summer of 2022 was the joint warmest, with the hottest day ever recorded in the UK occurring in July, registering at over 40°C[9]. The more recent heatwaves across Europe in the Summer of 2023 broke records again.

The Sixth Assessment Report of the International Panel on Climate Change concluded in March 2023 it was likely that warming above pre-industrial levels will exceed 1.5°C during the 21st century, and that it would be difficult to limit warming below 2°C.[10] This will have a profound impact on our lives. At the 2024 Conference of the Parties (CoP) 29 held in Baku, the World Meterological Organization reported that:

- Jan-Sept 2024 global average temperature 1.54 °C above pre-industrial level
- Long-term warming measured over decades remains below 1.5°C
- Past 10 years are warmest on record and ocean heat rises
- Antarctic sea ice second lowest on record and glacier loss accelerates
- Extreme weather and climate events lead to massive economic and human losses[11]

Global warming is already resulting in rising sea levels and more extreme weather in the UK. Since 1901, UK sea levels have risen by 20cm, but the rate of change is accelerating, and levels are now rising by 3.7mm per year[12]. The SCAS region is particularly prone to increased flooding as result of climate change, with expected annual damage (EAD) projected to increase by more than 25% in some areas even if global warming is limited to 1.8°C above pre-industrial levels, according to recent research by Bristol University[13]. The following map shows expected annual damage (EAD), aggregated across 10 km hexagons:

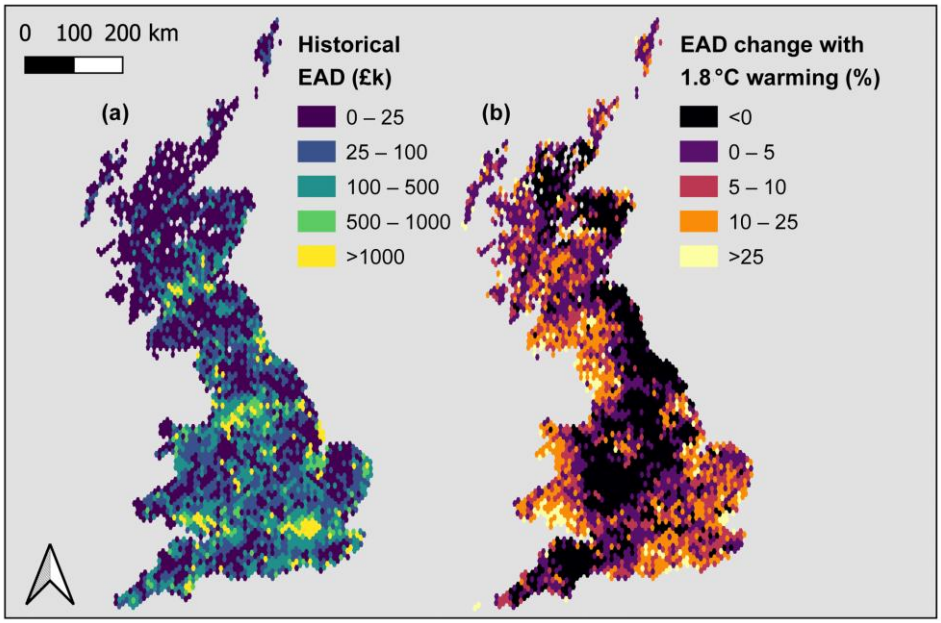
[9] https://www.metoffice.gov.uk/about-us/press-office/news/weather-and-climate/2022/joint-hottest-summer-on-record-for-england

[10] https://www.ipcc.ch/report/ar6/syr/resources/spm-headline-statements/

[11] WMO, 2024, "State of the Climate 2024 Update for CoP29", https://wmo.int/publication-series/state-of-climate-2024-update-cop29

[12] Met Office, 2023, "*Past and future sea level rise*", https://www.metoffice.gov.uk/weather/climate-change/organisations-and-reports/past-and-future-sea-level-rise, accessed 01/09/23

[13] Bates, P. D., Savage, J., Wing, O., Quinn, N., Sampson, C., Neal, J., and Smith, A.: A climate-conditioned catastrophe risk model for UK flooding, Nat. Hazards Earth Syst. Sci., 23, 891–908, https://doi.org/10.5194/nhess-23-891-2023, 2023.



Other impacts of climate change include:

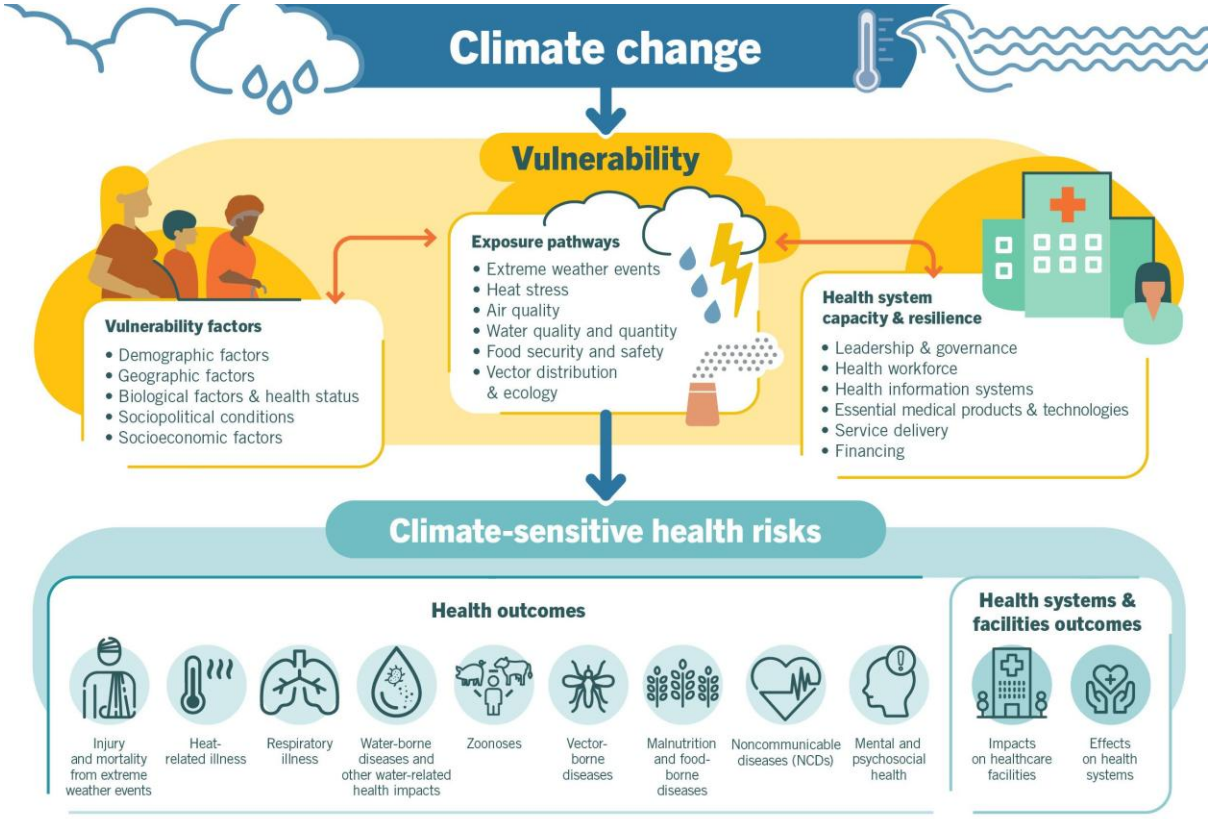
- Coastal and other areas affected by rising sea levels
- Higher temperatures and drier summers
- Increased stress on water resources
- Reduced resilience, longer emergency response times due to flooding
- Increased physical health effects on the elderly and those with pre-existing conditions
- Increased mental health effects of suffering catastrophic flooding or fire

As a result of this, several local authorities within the SCAS region have declared a "Climate Emergency", including:

- Buckinghamshire County Council
- East Sussex County Council
- Hampshire County Council
- Oxfordshire County Council
- West Sussex County Council

1.4 Health Impact of Climate Change

Climate change will impact in myriad ways, but the effects on health will have serious ramifications for SCAS, significantly increasing the demands on our resources. Climate change coincides with a rapidly ageing population, which is more vulnerable to its effects, particularly those suffering from respiratory and cardiac illness, and other chronic diseases.



World Health Organisation, "Climate Sensitive Health Risks",[14]

[14] World Health Organisation, 2023, "Climate-Sensitive Health Risks", https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health, accessed 01/08/23

1.5 Legislative Response to Climate Change

Healthcare is a major contributor to climate change, whilst also being heavily impacted by the consequences of climate change. The NHS is responsible for 4% of the UK carbon footprint. At the same time, one-third of new asthma cases might be avoided from efforts to cut emissions[15]. As a result, the Government has introduced legislation specifically aimed at the health sector:

1.5.1 Health & Care Act 2022

> ***"NHS England must, in the exercise of its functions, have regard to the need to***
>
> ***(a) contribute towards compliance with —***
>
> ***(i) section 1 of the Climate Change Act 2008 (UK net zero emissions target), and***
>
> ***(ii) section 5 of the Environment Act 2021 (environmental targets), and***
>
> ***(b) adapt to any current or predicted impacts of climate change identified in the most recent report under section 56 of the Climate Change Act 2008."***

Taking steps to mitigate the impact of the NHS on climate, the Health & Care Act 2022 established the NHS as the first health system to embed Net Zero into legislation:

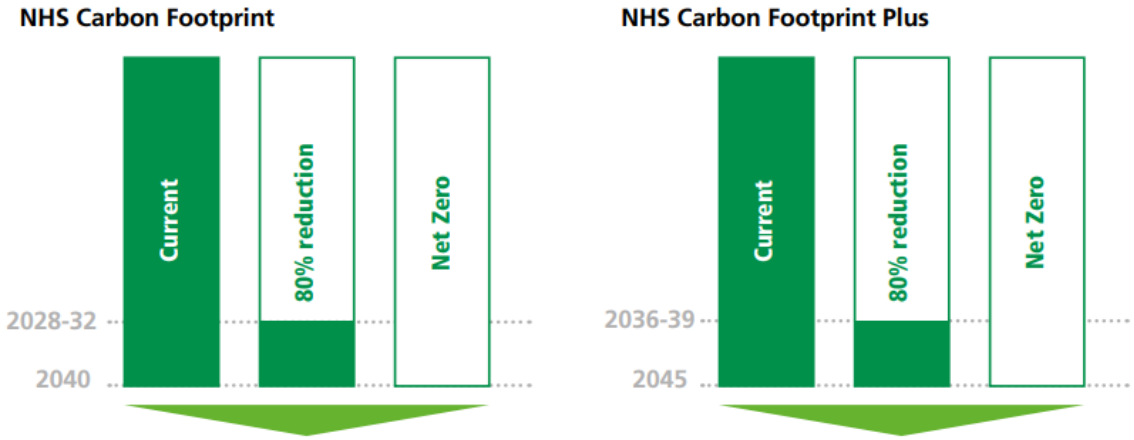
1.5.2 NHS Net Zero Targets

In response to the Health & Care Act legislation, NHS England published its **"Delivering a Net Zero National Health Service"** report in July 2022, in which it set out two "clear and feasible" targets for the NHS to meet its net zero commitment:

3) for the emissions we control directly (the *NHS Carbon Footprint*), net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032

4) for the emissions we can influence (our *NHS Carbon Footprint* ***Plus***), net zero by 2045, with an ambition to reach an 80% reduction by 2036 to 2039.

[15] NHS England, "*Delivering a Net Zero NHS*", 2022, p8



However, these targets are set against a baseline year of 1990. It is difficult for some Trusts to collect relevant historical data, especially where Trusts such as SCAS have changed their composition significantly over time. The Trust that exists today is very different in size, organisation, and scope to what existed in 1990.

To address this problem, the Greener NHS Methodology for measuring Trust contributions to the NHS Carbon Footprint Plus has established a more recent **baseline of 2019/20** against which to measure progress and has adjusted the emissions reduction trajectories accordingly:[16]

As data is available to SCAS for all years since 2019/20, this makes it easier to see whether we are on track to meet the Net Zero targets.

*Defined against the new **2019/20 baseline**, the national targets are equivalent to:*

- *reducing emissions by at least 47% by 2028-2032 to reach Net Zero NHS Carbon Footprint by 2040*
- *reducing emissions by at least 73% by 2036-2038 to reach Net Zero NHS Carbon Footprint Plus by 2045*

[16] NHS England, 2023, "Trust contributions to the NHS Carbon Footprint Plus", cited in Greener NHS Carbon Footprint Plus – Trust Methodology, Greener Analytics Workspace.

1.5.3 The NHS Standard Contract 2024/25

To ensure that NHS Trusts are working to deliver a Net Zero National Health Service, the NHS Standard Contract[17] includes a list of **minimum** foundations that must be in place:

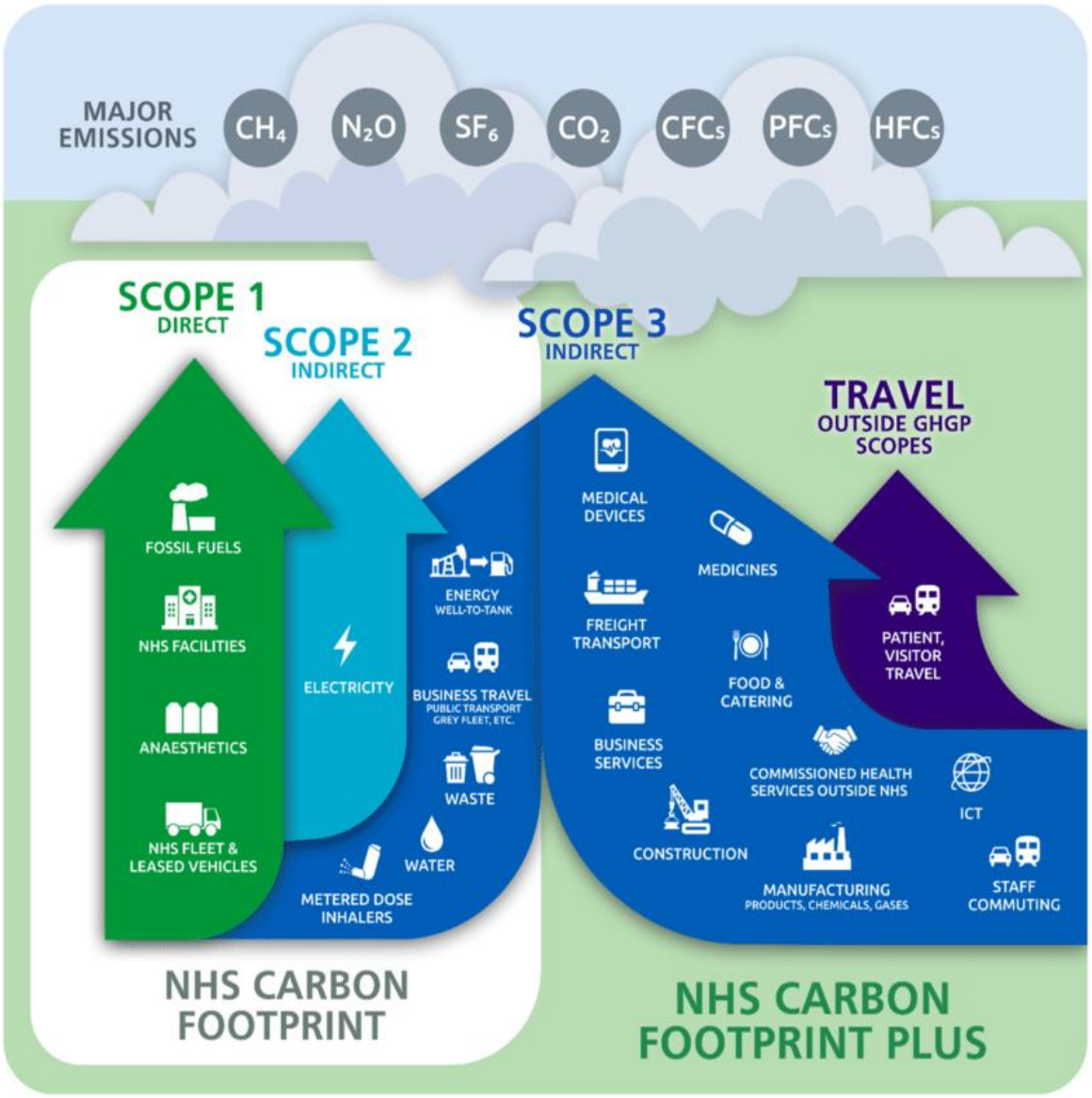
NHS Standard Contract, Section 18:

- Every trust to ensure they have appointed a Net Zero lead and are maintaining and delivering a Green Plan, approved by its Governing Body.
- Every trust must ensure that, as far as reasonably feasible, that all electricity it purchases is from Renewable Sources. NB *Currently, SCAS purchases Zero Carbon (Nuclear) energy under the Zero Carbon for Business tariff from EDF.*
- Provide detailed plans as to how it will contribute towards a 'Green NHS' with regard to delivering 'Net Zero' National Health Service commitments in relation to air pollution from Fleet and burning fossil fuels to heat buildings.
- Implement NHS Net Zero Travel & Transport Strategy
- Develop plans to adapt buildings to reduce risks associated with climate change.
- Comply with requirements set out in Net Zero Supplier Roadmap.

[17] Section 18 Green NHS and Sustainability, NHS Standard Contract 2023/24, https://www.england.nhs.uk/wp-content/uploads/2023/04/03-nhs-standard-contract-fl-scs-2324.pdf

1.6 Understanding the Carbon Footprint and Carbon Footprint Plus

The following schematic highlights the various sources of emissions that form the NHS Carbon Footprint and Carbon Footprint Plus:



The “scopes” are derived from the Greenhouse Gas Protocol, the universally adopted standard for measuring carbon emissions.

Scope 1: Direct emissions from owned or directly controlled sources, with these emissions occurring on site e.g. from a gas boiler or fuel used by an ambulance.

Scope 2: Indirect emissions from the generation of purchased energy, mostly electricity

Scope 3: All other indirect emissions that occur in producing and transporting goods and services, including the full supply chain.

The NHS Carbon Footprint concerns the emissions *controlled directly*, whereas the NHS Carbon Footprint *PLUS* includes the additional emissions that are *influenced* by the NHS.

An example of this would be emissions from privately contracted ambulance services, where SCAS can only influence the choice of fuel and vehicle, but for which we are ultimately responsible as those emissions would not arise if we were not purchasing those services.

2. SCAS Carbon Emissions

2.1 Organisational Boundary

SCAS reports GHG emissions on the basis of "operational control[18]" of owned and leased assets such as vehicles and estate, as well as emissions arising from the supply chain, encompassing all the direct and indirect emissions arising from SCAS activities, whether controlled or influenced.

2.2 Methodology and Approach

SCAS uses the methodology outlined in the NHS Carbon Footprint Plus Model, which uses UK and international standards on calculating emissions in a way that is consistent with the UK's GHG Inventory and the Greenhouse Gas Protocol.

METHODOLOGY:

- The carbon footprint has been calculated from applying Department of Energy Security & Net Zero GHG conversion factors to activity data, such as kWh of energy, miles travelled, and litres of fuel used.
- The Kyoto Protocol identifies seven main Greenhouse Gases (GHGs) that contribute to climate change: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).
- Of these Greenhouse Gases, SCAS uses nitrous oxide (N_2O) as an analgesic. Its global warming potential is 265 times greater than carbon dioxide, expressed in terms of "kilogrammes of carbon dioxide equivalent", $kgCO_2e$. This is converted into tonnes, tCO_2e. At 6% of the carbon footprint for SCAS in 2024/25, it is the third largest source of direct emissions after transport activities and electricity.
- Emissions factors for vehicle electricity consumption, fuel well-to-tank (WTT), and transmissions & distribution (T&D) emissions are calculated using Greenhouse Gas Conversion Factors for Company Reporting
- The version of the factors that correlates most with the data being reported has been used, per Department of Energy Security & Net Zero guidelines. For example, the 2024 factors have been applied to data in reporting year 01/04/24 – 31/03/25.
- Accurately calculating the wider Carbon Footprint Plus relies on obtaining Scope 3 data from 3rd parties, or analysing procurement data. There is no data available for Staff Travel (Scope 3); a mandatory 100% staff survey is the only way to obtain this.

[18] World Resources Institute and World Business Council for Sustainable Development, 2004, updated 2015. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition). Washington, DC: World Resources Institute, Appendix F, Categorizing GHG Emissions Associated with Leased Assets

2.3 Materiality & Restatement

A material restatement under the GHG Protocol refers to a significant revision or correction of previously reported greenhouse gas (GHG) emissions data.

Definition of Materiality:

The GHG Protocol encourages organisations to define a materiality threshold, typically as a percentage of total emissions, to determine what constitutes a significant change. While this can be subjective, generally a change is considered to be material if its value exceeds 5% of the total inventory for the part of the organisation being verified[19].

Material restatements can arise from:

- Changes in Methodology: Adoption of improved measurement techniques or updated emission factors.
- Structural Changes: Mergers, acquisitions, divestitures, or significant changes in operational boundaries.
- Discovering Omissions: Previously excluded emissions sources that are now deemed significant.
- Errors: Miscalculation, applying incorrect emission factors, or data entry mistakes.

As part of an ongoing process of continuous improvement, SCAS has worked to improve the quality of activity-based data informing the carbon footprint calculations (e.g. fuel and utility consumption data).

Previously, the carbon footprint PLUS, which includes the emissions from the supply chain, was estimated by applying carbon intensity factors to different spend categories.

Instead of relying on general estimates for supply chain emissions, SCAS has engaged the services of CO_2 Analysis to produce a more accurate evaluation of the Carbon Footprint PLUS for all years since 2019/20, using their *GreenInsight* Artificial Intelligence-assisted tool to assess individual line items of purchasing data and calculate their carbon footprint using Multi-Regional Input Output datasets.

This change in methodology has resulted in a material restatement of the Trust's Carbon Footprint PLUS due to considerable divergence from the previously estimated figures.

[19] Ibid., p69

2.4 SCAS Carbon Footprint & Carbon Footprint PLUS

	Sub-category	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Carbon Footprint	**SCOPE 1**						
	Building Energy - Gas	599	534	615	621	1,077	882
	Fuel - Ambulance & PTS Fleet	12,185	11,586	11,372	10,447	9,858	10,361
	Anaesthetic Gases - N_2O	1,765	1,436	1,508	1,278	1,105	995
	Total Scope 1:	14,548	13,556	13,495	12,347	12,040	12,238
	SCOPE 2						
	Electricity	1,134	941	888	800	1,099	920
	Total Scope 2:	1,134	941	888	800	1,099	920
	SCOPE 3 (Indirect emissions arising from activities *directly controlled* by SCAS)						
	Business Mileage	634	371	347	398	349	297
	Upstream Fuel - Well to Tank	2,900	2,784	2,768	2,506	2,413	2,538
	Upstream Electricity	254	212	316	266	359	303
	Upstream Gas - Well to Tank	72	66	99	103	178	146
	Water - Supply & Treatment	27	17	8	8	7	5
	Waste	-	-	-	44	70	66
	Total Scope 3:	3,887	3,450	3,538	3,325	3,377	3,355
	SCAS Carbon Footprint:	**19,570**	**17,948**	**17,920**	**16,472**	**16,515**	**16,512**

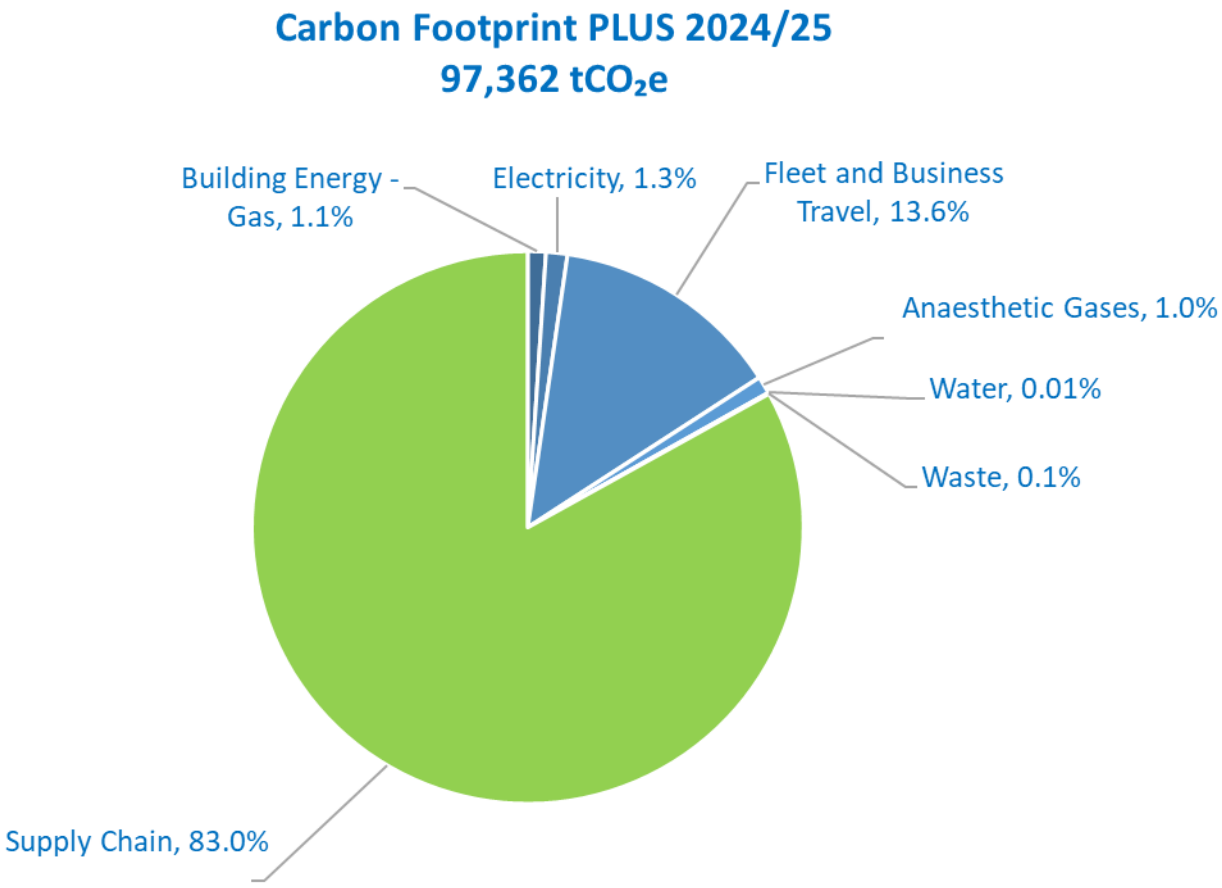
Carbon Footprint PLUS	**SCOPE 3 (Indirect emissions *influenced* by SCAS)**						
	e.g. Private ambulance / PTS provider, Medicines, Medical Equipment, Other Supply Chain	58,577	61,248	70,117	86,879	96,348	80,850
	Staff Commuting - no accurate data available						
	SCAS Carbon Footprint PLUS:	**78,147**	**79,196**	**88,037**	**103,351**	**112,863**	**97,362**

All figures expressed as tonnes CO_2 equivalent / tCO_2e.

SEE ANNEXE A1 FOR CONVERSION FACTORS

2.5 SCAS Carbon Footprint PLUS:

(*the emissions we influence in addition to those we control directly.*



Previously**, "**Business Travel & Fleet" was assumed to be the greatest contributor to the Trust's total carbon emissions based on high-level financial analysis using carbon intensity factors applied to spending categories for the baseline year of 2019/20 only. No other data was available at the time.

Using revised methodology, conducting a detailed analysis of procurement spend using the AI-assisted GreenInsight tool reveals that the Supply Chain accounts for 83% of the Carbon Footprint PLUS for SCAS, whilst Fleet & Business Travel are only 13.6%.

Some of the reduced fleet and business travel emissions is due to the change in methodology. For example, emissions from private PTS providers were included previously in the Scope 3 data for the Carbon Footprint, based on estimated emissions from mileage data collated by SCAS. In the new methodology, this figure has been removed from the Carbon Footprint 'fleet and business travel' figure and added to the Carbon Footprint PLUS 'supply chain'.

However, the “Supply Chain” includes a significant number of transport services providers, which at first glance conceals the extent to which transport contributes to SCAS emissions.

Ten suppliers account for 46% of the SCAS Carbon Footprint PLUS and all are transport-related:

Supplier:	Emissions tCO_2e	% Total Emissions Cumulative
ELITE EMS LTD	7,008	8%
AMBULNZ COMMUNITY PARTNERS LTD	6,112	15%
ENHANCED CARE SERVICES	4,862	20%
ELITE MEDICAL AND AMBULANCE SERVICE LTD	4,104	25%
SOUTH CENTRAL FLEET SERVICES LTD*	4,092	30%
ION AMBULANCE CARE LTD	3,284	33%
MEDI4 AMBULANCE SERVICES LTD	3,156	37%
SOUTHERN MEDICAL RESCUE	3,076	40%
MEDI WAV LTD	2,348	44%
MEDICARE EMS GROUP UK LTD	2,338	46%

*wholly-owned subsidiary of SCAS

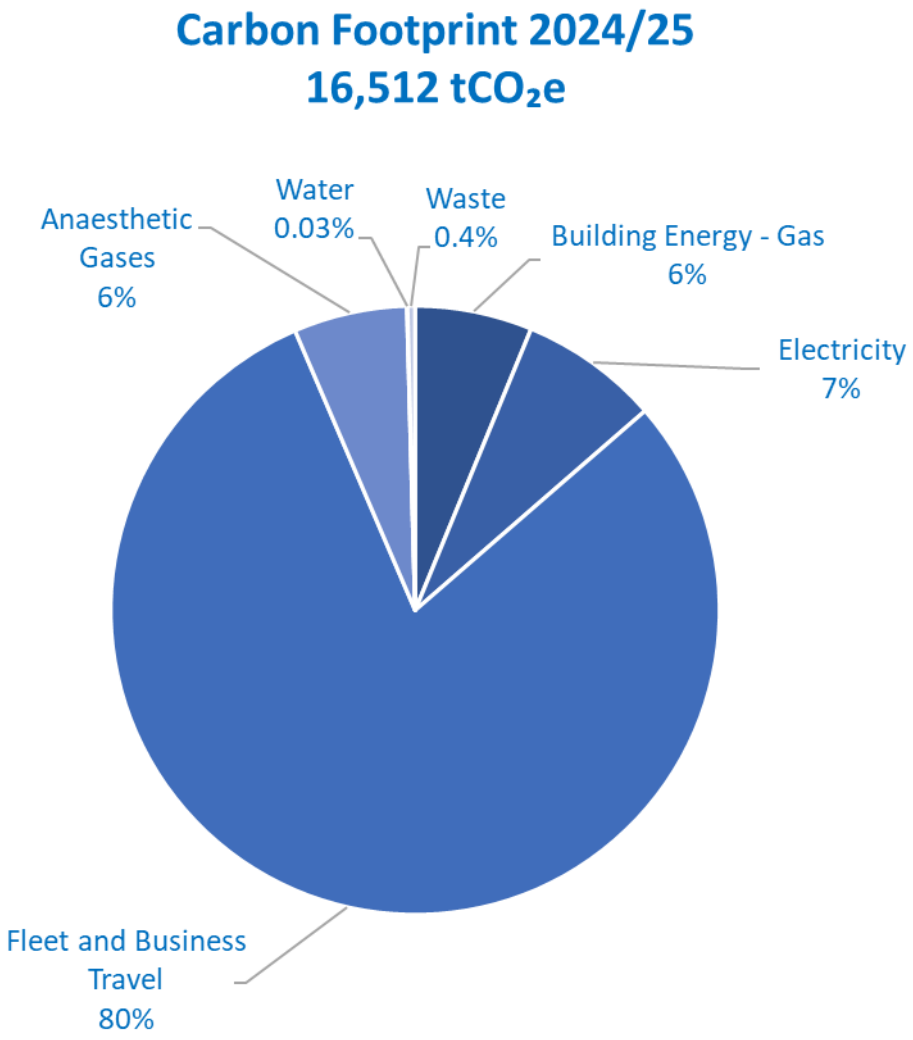
SCAS has 825 suppliers in total. If we undertake a Pareto analysis, just 39 of them account for over 80% of the Carbon Footprint PLUS. Of those 39, the majority are transport providers. According to the GreenInsight report, transportation activities account for **74% of total emissions**.

The majority of SCAS’ carbon footprint and carbon footprint PLUS is transport-related, which will directly inform the carbon reduction strategy, for both fleet and procurement.

By their very nature, ambulance trusts such as SCAS have a different emissions profile due to the extremely high number of vehicle movements compared to a hospital trust. Therefore, the focus of carbon reduction efforts will be different for ambulance trusts compared to hospital trusts.

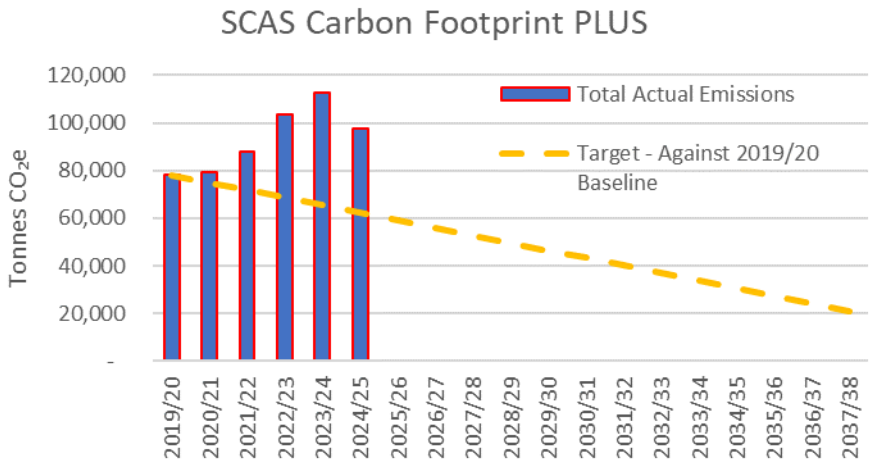
2.6 SCAS Carbon Footprint 2024/25:

(directly controlled emissions)



For the activities *directly controlled* by SCAS, Fleet and Business Travel account for 80% of the Carbon Footprint. Although private PTS emissions have been moved into the Carbon Footprint PLUS, as they are emissions SCAS can influence rather than control directly, Fleet emissions have still risen due to increased consumption of diesel. Improved modelling has also allowed for the inclusion of upstream emissions for gas and electricity, such as their transportation and distribution.

2.7 SCAS Carbon Reduction: Performance Against Targets



To be on track for Net Zero, SCAS needs to reduce its Carbon Footprint PLUS by 73% from 2019/20 emissions of 78,147 tonnes to 21,100 tonnes by 2037/38.

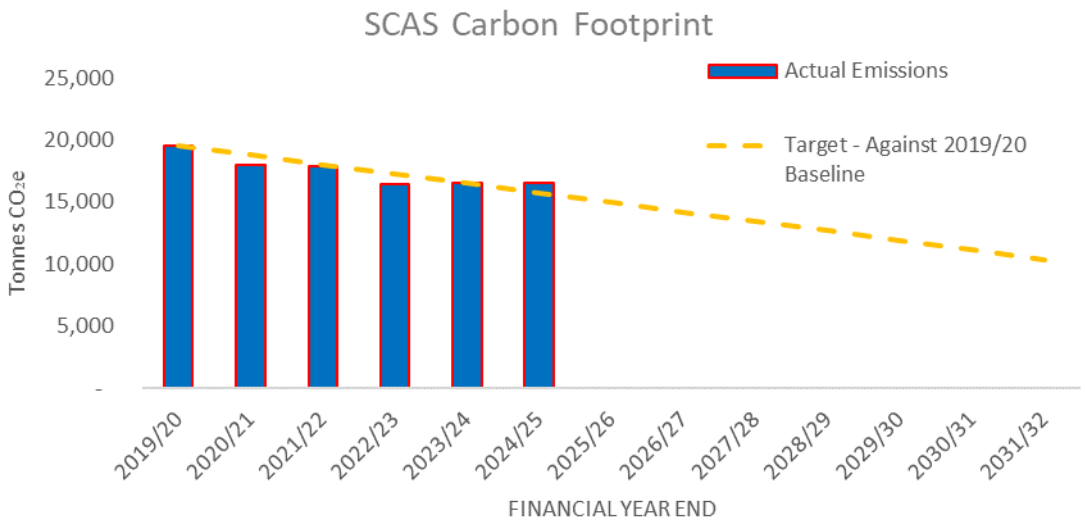
At first glance, the huge increase in total emissions for SCAS looks a failure, posing a seemingly insurmountable challenge. However, granular analysis in the GreenInsight model reveals that emissions from transportation activities increased from 47,528 tonnes in the baseline year of 2019/20 to a peak of 80,722 tonnes last year, but have now fallen significantly in 2024/25 to 72,048 tonnes. This reflects a reduction in transportation activity, most likely linked to the loss of PTS contracts.

Transport accounts entirely for the overall increase in emissions since 2019/20 and reflects the higher level of transport activity in and on behalf of the Trust.

Most transportation is undertaken by third party private providers.

Effective use of procurement contracts will enable the Trust to influence carbon reduction strategies for these suppliers, whilst national legislation such as the Zero Emissions Mandate (ZEV) and the development of electric ambulances will accelerate the transition to electric fleets, which will help the Trust meet the bulk of its Carbon Footprint PLUS targets.

SCAS has made good progress reducing emissions for the activities directly within its control since 2019/20 (Carbon Footprint):



The SCAS target is to achieve a 47% reduction in emissions for the Carbon Footprint by 2028-32 against the 2019/20 baseline, which is equivalent to an 80% reduction against 1990 figures, as calculated by NHS England.

Using the later date of 2032, deemed to be more realistic in view of the substantial work required, SCAS needs to reduce its annual emissions down to 10,250 tonnes by then.

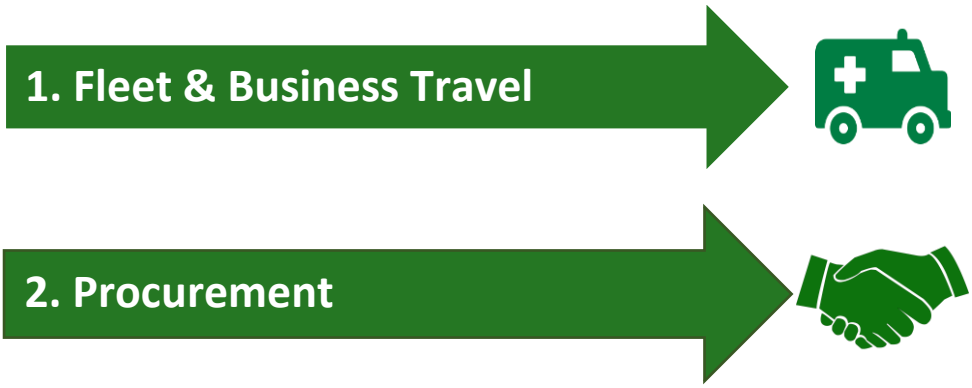
Since 2019/20, total equivalent carbon emissions from SCAS have fallen from 19,570 tonnes to 16,512 tonnes, a drop of 15.6% against the baseline.

To be on track to meet Net Zero targets, directly controlled carbon emissions should have fallen by 19.6% at this point, so SCAS is slightly off target. Emissions have appeared to have stabilised over the last 3 years, so there is the risk of a growing divergence from the target trajectory. This divergence is entirely due to increased fleet emissions.

Financial Year End:	2020 (Baseline)	2024/25 Emissions		2032 (Target)
Target - Against 2019/20 Baseline	19,570	15,737		10,372
Actual Emissions	19,570	16,512		
Target Reduction against 2019/20 Baseline %	n/a	19.6%		47.0%
Actual Reduction against 2019/20 Baseline %	n/a	15.6%		

2.8 Priority Areas for Carbon Reduction

Due to their contribution to emissions, the two key priority areas for carbon reduction are:



Whilst these are the priority areas, they should not detract from general efforts to embed sustainability throughout the Trust. Tackling these priority areas will also complement future efforts to decarbonise the heating systems, by ensuring that upgrades to the electrical supply required by electric vehicle chargers is sufficient to power heat pumps too.

Achieving carbon reduction in these areas will require collaboration across multiple directorates / departments within SCAS.

The following section will explain how the Green Plan sits within the overall organisational vision of the Trust and how it contributes towards putting the Trust on course for a more sustainable model of development.

3. Organisational Vision

David Eltringham, Chief Executive SCAS, June 2023

3.1 Fit for the Future

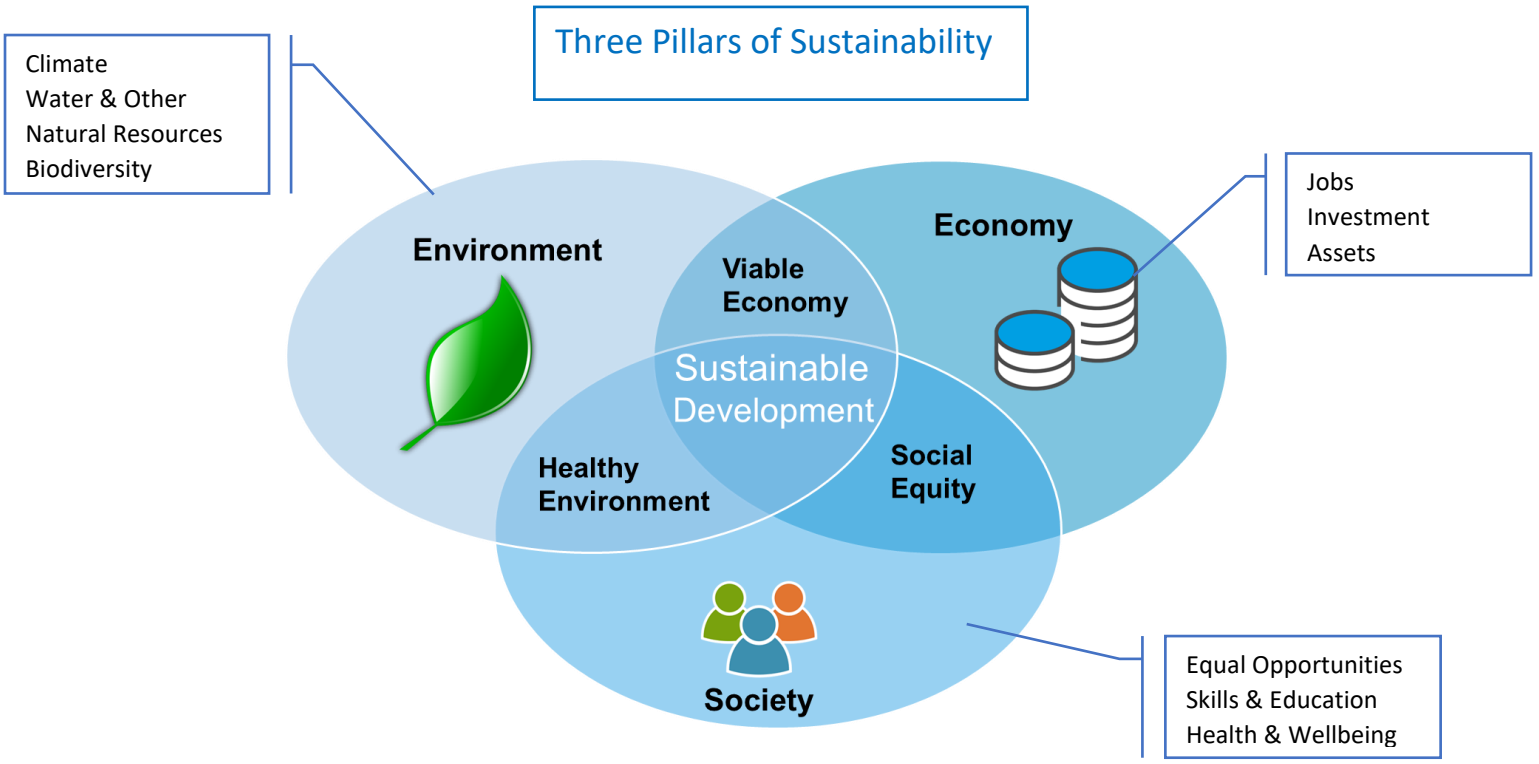
This Green Plan does not exist in isolation, it must align with existing Trust policies and procedures, including the Trust's "Fit for the Future" programme of modernisation and transformation. It is a long-term programme with a range of connected projects running across 2024-2029.

Fit for the Future is part of delivering our long-term strategy and making sure we can provide high quality patient care, achieve performance standards, and support staff wellbeing, whilst running within budget.

The Green Plan aims to meet not only the Trust's environmental performance standards, but also contribute to long term financial sustainability via projects such as investing in solar energy production, reducing energy consumption with smart LED lighting and switching from diesel to electric vehicles which are cheaper to operate and maintain. Green Plan initiatives also contribute to overall greater staff wellbeing.

3.2 Sustainable Model of Development for SCAS

For the Trust to achieve long-term sustainability, the “three pillars” of economic, environmental, and social sustainability need to be considered in impact assessments, as a sustainable model of development can only be achieved when all three are in alignment:



A model of sustainable development is about balance. An economy is only viable long-term if it consumes fewer resources than what the environment can provide. Likewise, an economy without social equity (or “fairness”) is likely to experience significant social tensions which would challenge its long-term future.

To understand how this relates to an ambulance trust, the Economic pillar would include assets such as buildings and the ambulance fleet, the jobs held by the staff and long-term capital investment in energy saving measures such as Solar PV.

A recent project to invest in “smart” LED lighting across the estate is a classic example of sustainable development in practice: the Trust has made a capital investment which delivers long term revenue savings far greater than the original investment, leading to reduced carbon footprint and an improved working

environment for staff. It exemplifies the Economic, Environmental and Social pillars of sustainability.

3.3 Specific improvements which benefit local communities, staff and the overall organisation

3.3.1 Incorporating the Social Value Model

The NHS is an "anchor institution" in the local economy, as a major employer and purchaser of goods and services. Social Value Themes[20] encapsulate the three pillars of economic, environmental and social sustainability. Embedding these in the procurement process will mean that local communities benefit from efforts to reduce inequalities in health, incomes, and educational opportunities, alongside measures to fight climate change.

SCAS is also a supplier of services itself, and participates in competitive tenders to win business, so it too must demonstrate it has incorporated the same Social Value Themes, which will be of direct economic, environmental and social benefit to its employees and, in turn, the organisation.

3.3.2 Regional resilience planning to protect the vulnerable from climate change

Efforts to lower CO_2 emissions, reduce costs and improve public health need to be combined with planning to mitigate the local impacts of climate change. This means adapting to improve the resilience of services and estates while protecting the most vulnerable, through measures such as climate change adaptation assessments, flood risk management and estates planning.

3.3.3 Reducing Air Pollution

The Department of Health and Social Care's advisory Committee on the Medical Effects of Air Pollutants (COMEAP) estimated that long-term exposure to man-made air pollution in the UK has an annual impact on shortening lifespans equivalent to 28,000 to 36,000 deaths.[21] The Royal College of Physicians, along with the Royal College of Paediatrics and Child Health, believes the figure may be even higher, at

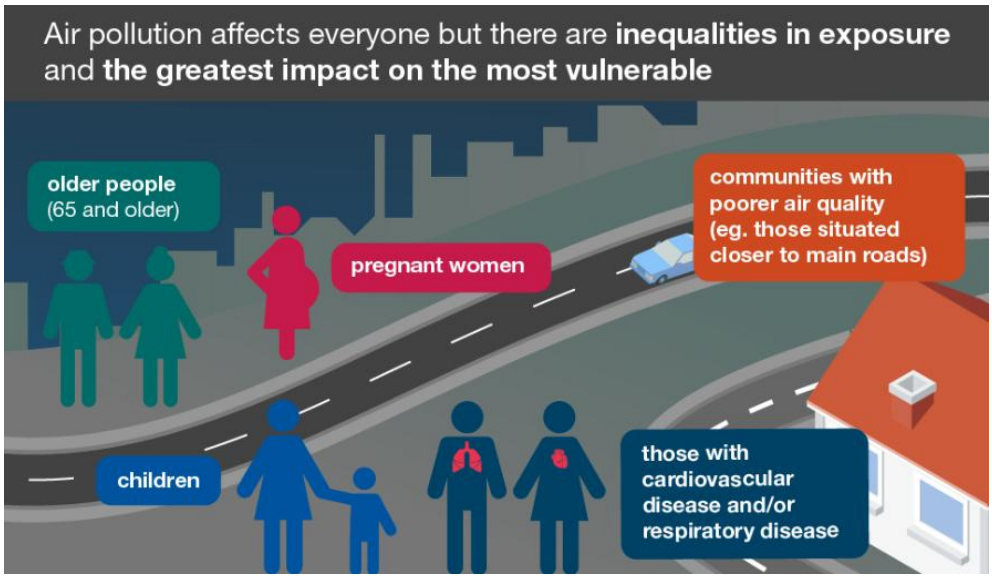
[20] Government Commercial Function (2020), "Guide to Using the Social Value Model", Section 2, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/940827/Guide-to-using-the-Social-Value-Model-Edn-1.1-3-Dec-20.pdf

[21] DEFRA (2019), "Clean Air Strategy 2019", https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf

40,000 deaths [22]. As such, it is the single greatest environmental threat to human health.

Conditions caused or exacerbated by air pollution include asthma, chronic bronchitis, coronary heart disease (CHD), and strokes. These conditions significantly reduce quality of life. They also mean that people are less able to work and need more medical care, resulting in higher social costs and greater burden on the National Health Service.

Air pollution exacerbates health inequalities, with the most vulnerable being disproportionately affected, whilst they often contribute the least to higher pollution.



Source: Health Matters – Air Pollution, Public Health England[23]

Air pollution at SCAS HQ in Bicester is in the 71st percentile of most polluted addresses in the UK, with average PM2.5 levels at 12mcg/m³, significantly above the WHO limit of 5mcg/m³.

This is important, as 19.9% of strokes are attributed to exposure for a year or more to levels of PM2.5 exceeding 10mcg/m³[24] Other areas within the SCAS region have even higher levels of pollution, amongst the highest in the UK.

Diesel engines are a significant source of PM2.5 and other pollutants such as NOx. Taking steps to reduce air pollution from travel and transport, especially by replacing diesel with EV, will mean fewer cases of asthma, COPD, cancer, strokes and heart disease.

Whilst diesel fleets are transitioning to EV, a process that will take several years to complete, interim measures such implementing ACETECH “Eco-run” engine management modules can turn off fleet engines when needed, reducing

[22] Royal College of Physicians and Royal College of Paediatrics & Child Health, 2016, “*Every breath we take: the lifelong impact of air pollution*”, pxii, https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution

[23] https://www.gov.uk/government/publications/health-matters-air-pollution/health-matters-air-pollution

[24] www.addresspollution.org

unnecessary idling[25]. By cutting down on idling, fleets decrease their fuel burn, toxin emission and engine wear and tear. The cost of the technology can be recouped from fuel savings within a year.

Some local authorities are introducing Clean Air Zones to tackle pollution. Within the SCAS region, Portsmouth has introduced a Class B Clean Air Zone, applicable to Buses, coaches, taxis, private hire vehicles and heavy goods vehicles, whilst Oxford has introduced a Zero Emissions Zone.

The NHS has a duty of care to support Clean Air Zones. As more authorities instigate them, it is likely that the exemptions granted to non-compliant emergency vehicles will be removed, resulting in financial penalties increasing the fleet operating costs. As of 31st October 2023, NHS vehicles operating in London were no longer exempt from ULEZ charges.

The NHS Fleet and Business Travel is a major source of air pollution, locally and nationally. Electrifying the SCAS fleet will have a direct, beneficial impact on the health of local communities and staff.

Some scientists have raised concerns that increased electrification of vehicles may lead to more air pollution from tyre wear, due to EVs being heavier. However, the introduction of solid-state batteries, along with new lighter versions of existing lithium-ion battery technology, will mean that soon (within a year or two) there will be no weight difference. The EU is also introducing the Euro 7 vehicle standard in 2025, which regulates and seeks to reduce tyre and brake dust emissions.

3.3.4 Digital Care

The mainstream provision of digitally-enabled care such as SCAS “Hear & Treat”, which accelerated during the COVID-19 pandemic can reduce transport emissions per patient and has the potential to enhance the patient experience by helping them avoid unnecessary travel, and freeing up ambulance resources for other patients.

Between January and March 2025, over **6,000** patients were treated remotely by “Hear & Treat”, whilst nearly **14,000** were treated at the scene rather than being taken to hospital as “See & Treat” cases[26].

As long as it is clinically appropriate and care is taken to avoid entrenching health inequalities, due to lack of access to digital tools, for example, this is a highly sustainable method of healthcare provision.

4. Green Plan Core Elements & Pathways

Reducing carbon emissions in line with Net Zero targets is the most important element of this Green Plan, the priorities being to electrify the fleet and decarbonise

[25] Eco Friendly Technology For Emergency Vehicles | ACETECH™, https://www.acetech.com/products/eco-friendly-technology-eco-run/
[26] SCAS Qlikview data report

the supply chain. As the vast majority of supply chain emissions are transport-related, decarbonising that will involve similar fleet electrification.

Whilst these remain the focus, other measures can also contribute to direct carbon reduction, such as LED lighting and reducing nitrous oxide use. Broader environmental measures include rainwater harvesting, elimination of single use plastics, and reducing waste sent to landfill, all of which help SCAS move towards a more sustainable model of development.

4.1 Carbon Reduction Plan

For the emissions we **control directly**, this plan sets out a measurable and achievable route to meeting our Net Zero targets. If we use the new 2019/20 baseline, we know that we need to reduce emissions by 47% by 2028-32 to remain on track for Net Zero, according to the formula calculated by NHS England[27].

Baseline Emissions 2019/20 tCO_2e	19,570
Target Emissions for 2032 (47% reduction)	10,372
Actual Emissions in 2024/25	16,512
Emissions Reduction Required to Meet Target:	6,140
Specific carbon reduction measures:	
100% non-ambulance fleet to be electric by 2032	5,780
50% reduction in Nitrous Oxide emissions	498
Introduce HVO to fuel for older legacy vehicles (100k litres per annum)	248
Complete rollout of smart LED	165
10% reduction in business mileage	35
Total potential reductions by 2032	**6,726**

We need to reduce our emissions by 6,140 tonnes CO_2e a year by 2032 to remain on course to hit the target of 10,372 tonnes CO_2e per annum. The above plan shows how this is achievable.

It is completely impossible for SCAS to meet its carbon reduction targets without a programme of fleet electrification. Electrification enables SCAS to achieve Net Zero because the National Grid is rapidly decarbonising: Renewable sources outpaced fossil fuels for generating electricity for the first time in 2020. [28] The UK Government has committed to ambitious targets for the country to have 50 gigawatts (GW) of

[27] NHS England, 2023, "Trust contributions to the NHS Carbon Footprint Plus", cited in Greener NHS Carbon Footprint Plus – Trust Methodology, Greener Analytics Workspace

[28] National Grid, 2021, "*Road to Zero Carbon*" https://www.nationalgrideso.com/future-energy/our-progress-towards-net-zero/road-zero-carbon-report

offshore wind installed by 2030.[29] As of May 2025, the UK has approximately 30.7 GW of offshore wind capacity either operational or under construction, with an additional 7.2 GW having received consent. This totals nearly 38 GW in the pipeline, leaving a gap of 12 GW to meet the 2030 target.

Although there are other measures which contribute towards Net Zero and other sustainability goals, their impact is comparatively, and perhaps surprisingly, small when compared to the switch to an electric fleet.

It is important to remember that the above carbon reductions do not include those arising from the supply chain, which account for 83% of the total emissions. Supply chain emissions are those we do not control directly but which we can influence. Procurement policy is vital to this, ensuring that suppliers are implementing carbon reduction plans which align to the NHS Net Zero targets. Increasingly, suppliers will be required to calculate and report their carbon emissions to SCAS so that progress to reduce them can be measured.

The following section sets out the specific actions and initiatives which will be undertaken across SCAS over the next five years to implement the Carbon Reduction Plan and achieve the broader sustainability goals of the Green Plan.

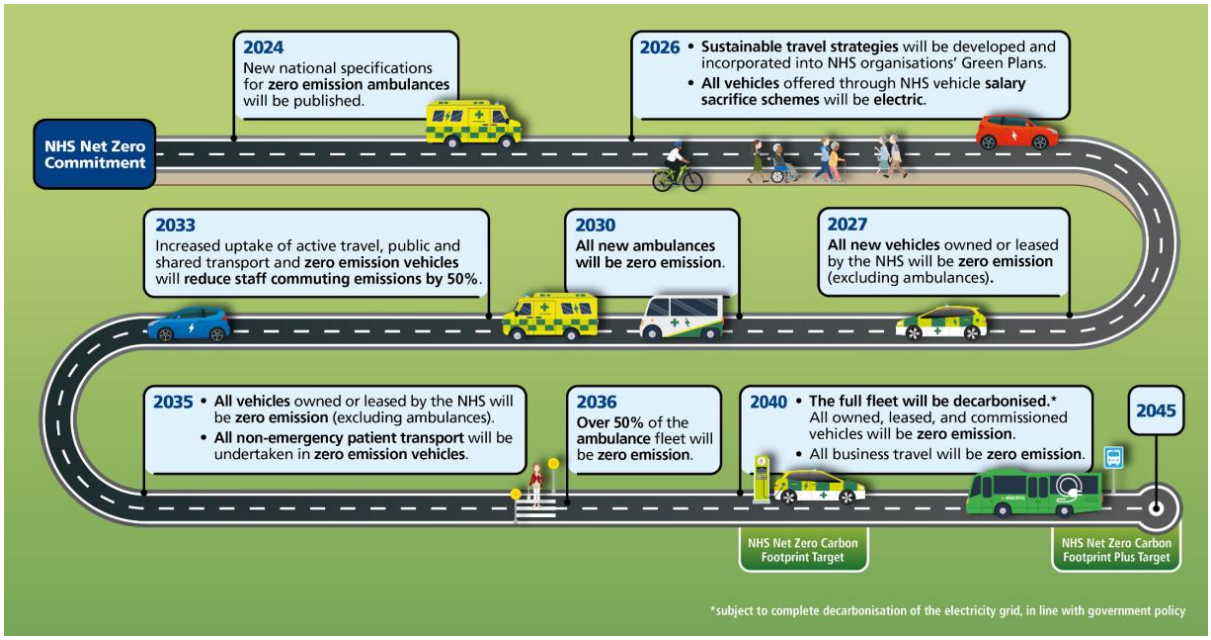
[29] National Grid, 2024, "*Moving towards Net Zero*", https://www.nationalgrid.com/electricity-transmission/who-we-are/riio-t2-performance/enable-ongoing-transition, accessed 27-11-24

4.2 Travel and Transport - Decarbonisation Roadmap

Transport related activities are responsible for the majority of carbon emissions for the Trust, accounting for 80% of **directly controlled** emissions and 74% of overall emissions, including those we **influence** (i.e. the supply chain). Investing in zero-emission vehicles for owned and leased fleets will ultimately eliminate the bulk of SCAS' carbon emissions. This will be a phased process, as older vehicles are retired from use and replaced by new electric vehicles, as mapped out by NHS England:

4.2.1 Roadmap to Net Zero Travel & Transport

The NHS Roadmap to Net Zero Travel & Transport[30] was published in October 2023, which sets out some important milestones:



The NHS will have fully decarbonised its non-ambulance fleet by 2035, with its ambulances following in 2040. Several key steps will mark the transition of NHS travel and transportation:

- By 2026, sustainable travel strategies will be developed and incorporated into trust and integrated care board (ICB) Green Plans.
- From 2027, all new vehicles owned and leased by the NHS will be zero emission vehicles (excluding ambulances).
- From 2030, all new ambulances will be zero emission vehicles.
- By 2033, staff travel emissions will be reduced by 50% through shifts to more sustainable forms of travel and the electrification of personal vehicles.

[30] NHS England (2023), "NHS Net Zero Travel and Transport Strategy",p18

The 2027 deadline has important ramifications for all Trusts, but particularly Ambulance Trusts.

Because Fleet accounts for such a large part of SCAS carbon emissions, the only way we can achieve our carbon reduction target is to aim for all new vehicles owned and leased by SCAS to be zero emission.

SCAS TARGET:

100% ELECTRIC FLEET BY 2028-2032 (excluding DCAs)

Our carbon reduction trajectory, ensuring a 47% reduction from the 2019/20 baseline, must fall between 2028 and 2032 to remain within mandated NHS targets. If we wait until the 2027 deadline for all new vehicles purchased and leased to be zero emission, it only leaves 5 years at most to achieve the target, assuming a replacement rate of 20% per annum. By starting sooner, the replacement rate will be more manageable.

Analysis of fuel card data (and apportioning this to bunker fuel use) indicates that non-ambulance emissions accounted for 5,780 tonnes CO_2 in 2024/25, which represents 34% of the SCAS Carbon Footprint.

The 2024/25 carbon footprint was 16,512 tonnes, with a target of 10,372 tonnes by 2028-32. To hit this target, SCAS needs to reduce its emissions by 6,140 tonnes by 2032.

Eliminating the 5,780 tonnes of emissions from the non-ambulance fleet will fulfil 94% of carbon reductions required to meet our target, assuming the electricity supply is fully decarbonised. In December 2024, the Government committed to achieve this by 2030.

Vehicles purchased by SCAS in the 2024/25 financial year will still be on the books in 2028/29 financial year, due to the 5-year procurement life cycle. Many of these are internal combustion engine, so a 100% electric fleet by 2028 will not be possible. However, the targets allow for the carbon reduction trajectory to fall within a window of 2028-2032. As all new vehicles purchased or leased from 2027 onwards (excluding DCAs) must be zero emission, it is realistic to assume that SCAS can meet its targets, providing sufficient charging infrastructure is in place.

Fleet Composition April 2025:[31] (*excluding* DCAs)

Diesel (excluding DCAs)	514	67%
Electric	36	5%
Hybrid	158	21%
Petrol	56	7%
Total:	764	

[31] Fleet Data Report 01/04/25

4.2.2 Electric Vehicle Options including e-DCAs

Electric Double Crewed Ambulances are at trial stage, with London Ambulance Service putting the world's first fully electric ambulance into service on 1st January 2024.

SCAS is planning to acquire at least 5 eDCAs in late 2025 to begin its own trials. This represents an exciting opportunity for SCAS to be at the forefront of new and emerging technology. The trials will enable vehicle performance data to be gathered across urban, semi-rural and rural locations, which will help inform the operational model and planning for the EV charging infrastructure. A successful trial will see SCAS well placed for the rollout of electric DCAs, increasing the pace of carbon reduction.

Many viable options already exist for replacing the rest of the fleet, such as PTS and rapid response vehicles (RRVs), though the small number of heavier vehicles in the fleet may require alternative technologies, such as hydrogen fuel cell.

SCAS has been conducting successful trials of two fully electric Mental Health Rapid Response Vehicles as part of the ground-breaking national Zero Emission Electric Vehicle (ZEEV) Pathfinder Programme funded by NHS England, with 21 vehicles deployed across the UK.

4.2.3 Addressing Common Concerns with EVs

Carbon Footprint of EV Batteries

It is important to note that adopting EVs will not involve "outsourcing" carbon emissions from SCAS so it becomes someone else's problem. There are now concerted moves to bring EV manufacturing back from China and into Europe, where the embodied carbon in the new generation of batteries could be over 90% less than those made in China due to new low-carbon manufacturing techniques.[32]

When considering the embedded carbon in EVs, it must also be remembered that internal combustion-engined (ICE) vehicles also have a carbon footprint. The only difference is that one has an engine and a fuel tank, the other a motor and a battery. On leaving the factory gate, EVs have an initial higher carbon footprint than ICE vehicles due to the energy-intensive battery pack manufacturing processes. However, this is dwarfed by the operational CO_2 footprint of ICE vehicles burning fossil fuels throughout their lifetime, not to mention the wider environmental impacts associated with air pollution and fossil fuel extraction.

[32]Deger, F. & Schutte, M., 2022, "*Life cycle assessment of the energy consumption and GHG emissions of state-of-the-art automotive battery cell production*", https://www.sciencedirect.com/science/article/pii/S0959652621039731?ref=cra_js_challenge&fr=RR-1

The initial 'carbon deficit' from manufacturing an EV only takes several thousand vehicle-miles to overcome according to research by Argonne National Laboratory in Chicago[33]. Depending on where the battery is made and how 'green' the energy grid is, EV carbon parity with ICE vehicles can be reached in as little as 8,000 miles, according to a European study conducted in 2020[34]. Since then, the pace of innovation has been rapid and battery production has been increasingly shifting from China into Europe, with 10 gigafactories already producing batteries and up to 40 planned to be operational by 2035[35].

Swedish battery giant Northvolt is currently producing EV battery cells with a carbon footprint of 33 kg CO_2e / kWh, two thirds less than the industry average, with plans to reduce this to 10kg CO_2e / kWh by 2030.[36] A 68kWh EV battery would have 680kg embodied carbon. This is equivalent to the emissions from burning 270 litres of diesel, or driving 2,488 miles in an average car.[37]

Battery Innovation

Innovations in battery design, such as solid-state technology, herald a transformation in weight, range and charging times, whilst eliminating the already low risk of fires posed by current lithium-ion batteries and significantly increasing the number of charging cycles a battery can withstand, therefore extending its lifecycle (and the life of the vehicle, which is of particular relevance to high mileage operators)

Many major manufacturers have now begun pilot production of solid-state batteries, including Nissan, Toyota, Samsung, SK, CATL, BYD and Prologium, with most planning to commence mass production in 2027[38].

Toyota has recently announced that it will be producing its first solid state battery-powered vehicles in 2027, with an anticipated range of 745 miles and 10-minute charging time[39].

Prologium has pioneered the development of mass-produced Lithium Ceramic Batteries, which it unveiled at the Paris Motor Show in 2024, promising fast charging from 5% to 60% in just 5 minutes and 80% in 8.5 minutes. Their new technology

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[33] When do electric vehicles become cleaner than gasoline cars? | Reuters, https://www.reuters.com/business/autos-transportation/when-do-electric-vehicles-become-cleaner-than-gasoline-cars-2021-06-29/

[34] Transport & Environment, 2020, How clean are electric cars?, https://www.transportenvironment.org/uploads/files/TEs-EV-life-cycle-analysis-LCA.pdf, accessed 04-11-24

[35] CATL plans Europe's biggest battery gigafactory, 2022, https://cen.acs.org/business/inorganic-chemicals/CATL-plans-Europes-biggest-battery/100/i29, accessed 04-11-24

[36] Northvolt, 2023, Sustainability and Annual Report 2023, https://www.datocms-assets.com/38709/1719998824-northvolt_sustainability_and_annual_report_2023.pdf, accessed 04-11-24

[37] Department for Energy Security & Net Zero, 2024, *UK Government GHG Conversion Factors for Company Reporting*.

[38] PV Magazine, 2024, "Solid-State batteries enter pilot production", https://www.ess-news.com/2024/10/31/solid-state-batteries-enter-pilot-production-costs-expected-to-drastically-drop/ , accessed 05-11-24

[39] Toyota Reveals the Future of Cars with Next-Generation Battery and Hydrogen Technologies (toyotatimes.jp), https://toyotatimes.jp/en/report/technical_workshop_2023/001_1.html#anchorTitles

increases energy density while maintaining fast-charging capability without degrading the battery.[40]

As the new generation of solid-state batteries evolves they are anticipated to have a higher energy density existing lithium-ion batteries, making them lighter and smaller. This has very positive implications for the development of electric ambulances, helping to address vehicle weight concerns.

EV Battery Recycling

It is a complete myth that EV batteries go into landfill at the end of their life, certainly within Europe:

The UK Waste Batteries and Accumulators Regulations 2009 made it illegal to send automotive batteries to landfill or dispose of by incineration.

The UK maintains regulatory alignment with the EU, which adopted Regulation (EU) 2023/1542 on 12 July 2023. Building on earlier legislation, this introduced comprehensive measures covering the entire lifecycle of batteries, including sustainability, safety, labelling and waste management[41].

The Regulation explicitly prohibits the disposal of industrial and automotive batteries in landfills or via incineration and promotes a circular economy by requiring that materials from end-of-life batteries be reclaimed and reused.

An emerging sustainable practice is to repurpose EV battery cells into battery energy storage systems (BESS). Even when they have degraded beyond the minimum performance requirements for a car, EV batteries typically retain a substantial portion of their storage capacity (up to 70-80%). This can significantly extend the useful life of batteries, before they are eventually recycled and the raw materials extracted to manufacture new batteries, supporting a more circular economy.

In October 2024, Mercedes-Benz opened Europe's first battery recycling plant with an integrated mechanical-hydrometallurgical process making it the first car manufacturer worldwide to close the battery recycling loop with its own in-house facility[42].

The facility has an expected materials recovery rate of more than 96 percent and net carbon-neutral operation, and is expected to generate enough recycled materials to produce more than 50,000 new battery modules per year.

Environmental Impact of Lithium Extraction

Lithium extraction has received increasing scrutiny and criticism for its environmental impact; the main method involves evaporation of brine containing lithium salt, in

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[40] Prologium, 2024, Prologium Debuts World's First 100% Silicon Composite Anode, https://prologium.com/prologium-2024-paris-motor-show-pressrelease/, accessed 04-11-24

[41] Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC

[42] Mercedes-Benz, 2024, "Mercedes-Benz opens own recycling factory to close the battery loop", https://media.mercedes-benz.com/article/fe521181-3b57-4915-a51a-b5f6f352c574, article accessed 04-11-24.

purpose-built lakes exposed to sunlight. There are concerns about high water consumption and impact on water tables in areas prone to drought, particularly in the 'Lithium Triangle' in South America, though this can be addressed by new direct extraction techniques[43]. Unlike fossil fuels, lithium only needs to be mined once as it can be recycled continuously, and its impact on the environment is minimal compared to the colossal damage associated with oil, coal and gas extraction, not to mention their CO_2 and particulate emissions when combusted.

The EU and UK are also in the process of diversifying the supply of rare earth elements away from dependency on China, to ensure a more economically, environmentally, and socially sustainable battery supply chain. This includes the new rare earth processing facility being constructed in the Humber Freeport, the first of its kind in Europe, with support from the UK Automotive Transformation Fund. It is expected to open in 2025/26. The ores will be sourced from a newly developed state-of-the-art mine in Longonjo, Angola, as part of an independent and sustainable supply chain to ensure a cost-effective, transparent and ultra-low embedded carbon range of rare earth products.[44] This also addresses concerns over the provenance of metals and associated workforce conditions.

Manufacturers are also experimenting with other materials for the cathode, such as sodium and iron, to move away from dependence on critical minerals such as cobalt.

The Grid Can't Cope with EVs…

The National Energy System Operator (NESO) is responsible for managing demand for electricity, making sure power is available when it's needed, second by second.

Most EV drivers charge their vehicles overnight at home using trickle chargers, when commercial demand on the grid is lowest.

Through smart charging, EVs can help to balance the system, helping consumers use green power when it's plentiful (and often cheaper) and avoid times when there's more load on the network. Vehicle-to-grid technology could even send that power back to the grid when needed. The UK Government has introduced Electric Vehicle Smart Charge Points Regulations to ensure that EV charge points include this smart functionality.

It's also important to bear in mind that a significant amount of electricity is used to refine oil for petrol and diesel. It is estimated that refining 1 gallon of petrol would use around 4.5kWh of electricity – so, as we start to fewer petrol or diesel cars, some of that electricity capacity could become available for charging[45].

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[43] Schlumberger, 2024, SLB achieves breakthrough results in sustainable lithium production, https://investorcenter.slb.com/news-releases/news-release-details/slb-achieves-breakthrough-results-sustainable-lithium-production, accessed 05-11-24

[44] Mining Weekly, 2023, "Pensana close to finalising $550m financing for Saltend, Longonjo", https://www.miningweekly.com/article/pensana-close-to-finalising-550m-financing-for-saltend-longonjo-2023-04-03

[45] National Grid, 2024, "Busting the Myths and Misconceptions about Electric Vehicles", https://www.nationalgrid.com/stories/journey-to-net-zero/electric-vehicles-myths-misconceptions

The International Energy Agency reports that electricity consumption per capita in the United Kingdom has actually fallen by 32% since 2000[46]. However, the transition to electrified heating and transport systems will add significant demands to the grid.

The UK Government has committed to ambitious targets for the country to increase offshore wind from 30 GigaWatts (GW) installed capacity in 2025 to 50 GW by 2030[47].

4.2.4 The Role of Hydrogen

According to the Government's current Hydrogen Strategy, "Hydrogen is likely to be fundamental to achieving net zero in transport, potentially complementing electrification across modes of transport such as buses, trains and heavy goods vehicles (HGVs). It is also likely to provide solutions for sectors that will not be able to fully decarbonise otherwise, including aviation and shipping"[48].

The Government's Transport Decarbonisation Plan 2021 mapped out a realistic pathway to net-zero by 2050. The Government expects battery electrification to remain the dominant zero emission technology for passenger cars and vans. By contrast, "Hydrogen is likely to be most effective in transport in areas that batteries cannot reach, where energy density requirements or duty cycles, weight and volume restrictions and refuelling times make it the most suitable green energy source".[49]

The focus of hydrogen is on heavier modes of transport which require the energy density, rapid refuelling times and longer ranges afforded by hydrogen fuel cells. However, where possible, electrification is the better option due to its lower cost and higher "well to wheel" energy efficiency.

Electricity is always the starting point in any hydrogen manufacturing process, either through electrolysis of water using renewable electricity (green hydrogen) or steam reformation of methane (blue hydrogen). It then needs to be compressed and transported. Due to inefficiencies, heat losses and escape of gas at each stage, the resulting hydrogen will always cost more than electricity per unit of energy. Further costs are incurred if methane is used to make hydrogen, as the resulting CO_2 emissions will need to be captured and stored, otherwise it would continue to contribute to global warming in the same way as simply burning the methane.

There is already a comprehensive electrical distribution network in place, with EV chargers being installed at an exponential rate. According to ZapMap, at the end of

[46] IEA, 2024, Electricity consumption per capita, https://www.iea.org/countries/united-kingdom/electricity, accessed 21-11-24
[47] National Grid, 2024, Enable the ongoing transition to the energy system, https://www.nationalgrid.com/electricity-transmission/who-we-are/riio-t2-performance/enable-ongoing-transition, accessed 21-11-24
[48] HM Government, 2021, "UK Hydrogen Strategy", https://assets.publishing.service.gov.uk/media/64c7e8bad8b1a70011b05e38/UK-Hydrogen-Strategy_web.pdf, accessed 05-11-24
[49] Department for Transport (2021), "*Decarbonising Transport – A Better Greener Britain*", p71

April 2025, there were 79,654 electric vehicle charging points across the UK, across 39,427 charging locations [50]. In addition to this, homeowners can install their own private charge points. The Government estimates there are 1.2 million EVs in the UK, the majority of which will have home charging available.

By contrast, as of November 2024 only seven publicly accessible hydrogen refuelling stations existed across the entire UK[51]. No hydrogen distribution network currently exists. It is envisaged that a few tens of kilometres will exist to support industrial clusters by 2030, but that potential national level distribution will not be available until 2050, according to the Hydrogen Strategy. The majority of the UK's existing hydrogen production is fossil-fuel based, though there are plans for half of production to be green by 2030.[52]

All these factors mean that hydrogen does not form part of the current NHS Net Zero Travel & Transport Strategy.

However, SCAS is planning to participate in research trials to ascertain the potential for hydrogen fuel cell range-extenders in predominantly rural areas where range is a serious problem, or for some of its heavier specialist vehicles.

4.2.5 Alternative Fuels - HVO

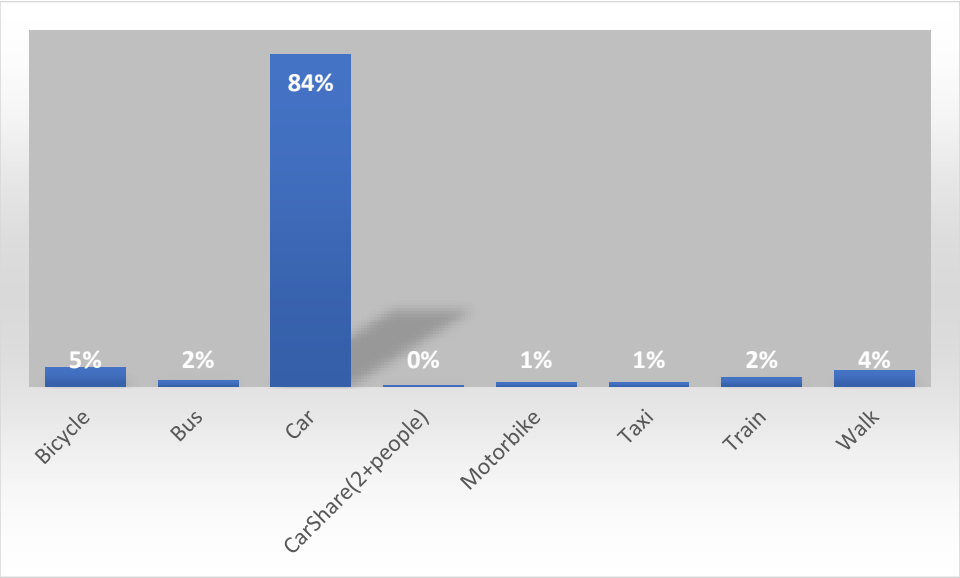
Hydrotreated Vegetable Oil (HVO) as a drop-in diesel alternative can serve as a "transitional" fuel to reduce carbon emissions whilst the fleet is electrifying, particularly useful if there are delays introducing electric DCAs or older vehicles are still in active use. It has a 90% lower net carbon footprint than diesel. Every 100,000 litres of HVO used to replace diesel directly saves 248 tonnes of CO_2. The Trust currently uses 4.16 million litres of diesel per annum. However, using HVO relies on manufacturers' consent to preserve vehicle warranties, which may not be forthcoming. However, HVO could still be effective in older and more polluting vehicles that have exceeded their warranty period.

Several local authorities, such as Horsham District Council, have successfully switched their entire fleets over to HVO as an interim measure.

[50] ZapMap, 2024, "How Many Charging Points are there in the UK?", https://www.zap-map.com/ev-stats/how-many-charging-points, accessed 05-11-24
[51] Driving Electric, 2024, "Where can I buy hydrogen and where is my nearest hydrogen filling station?", https://www.drivingelectric.com/hydrogen/1363/where-can-i-buy-hydrogen-and-where-is-my-nearest-hydrogen-filling-station, accessed 05-11-24
[52] HM Government, 2021, Hydrogen Strategy, https://assets.publishing.service.gov.uk/media/64c7e8bad8b1a70011b05e38/UK-Hydrogen-Strategy_web.pdf, accessed 05-11-24

4.2.6 Modal Shift and Active Travel

A Travel Survey conducted in May 2023 indicated that 84% of staff commuting is by car:



There was considerable reluctance to change commuting habits, with over a third of respondents stating that nothing would persuade them to use public transport, whilst most sought improvements in fares, reliability and frequency of service before they would consider it.

There was a very positive response to switching to electric vehicles with two thirds stating they would definitely like to use or would consider using electric.

9% of respondents already cycle or walk to work, but only 25% of staff live within 5 miles of their usual place of work, so it is unlikely that this figure can be improved on by much. Many respondents cited issues such as childcare commitments, road safety, personal safety during antisocial work hours, carrying equipment, and distance as reasons why they could not consider cycling or walking to work.

Switching to electric vehicles will achieve the greatest reduction of carbon emissions from staff travel, though the Trust must encourage and facilitate alternatives for active travel as far as possible, to give staff more choice. If someone can walk or cycle for only one or two days a week, this will improve their health, save them money and help to reduce their carbon footprint.

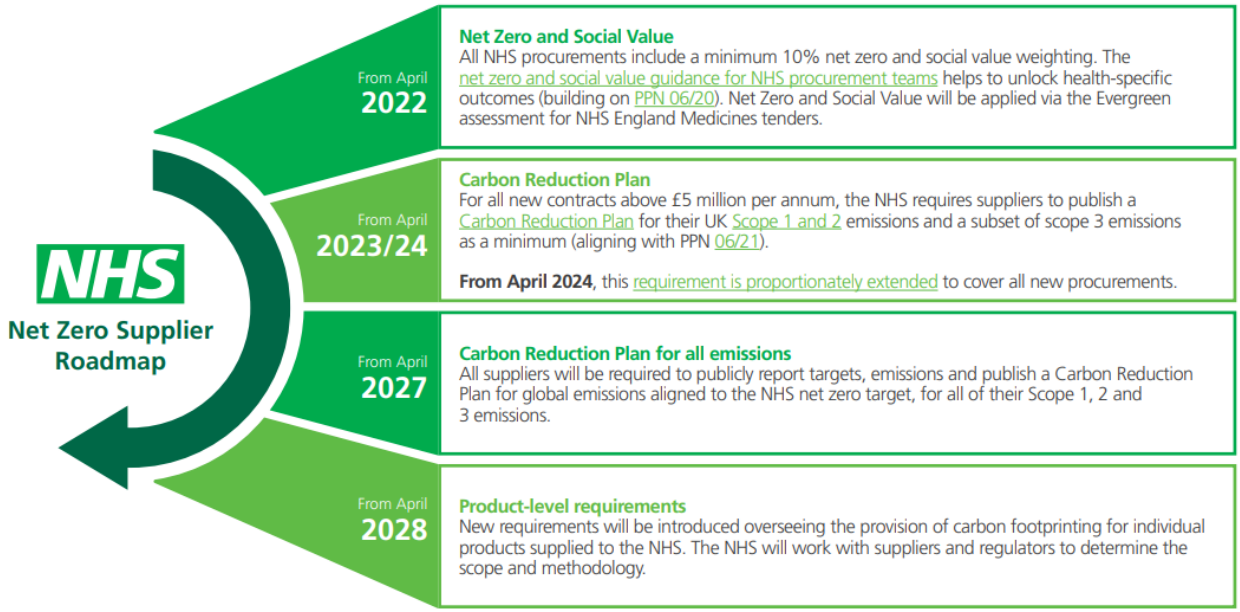
4.2.7 Reducing Business & Staff Travel Emissions

Teams meetings can reduce unnecessary business travel, as long as this does not conflict with other SCAS policies for managers to be more visible in workplaces. The Travel Survey revealed that there is some scope to reduce business travel, with 16% of respondents stating they could possibly reduce the number of meetings they attend in person.

4.3 Supply Chain and Procurement

To help suppliers align with our net zero ambition between now and 2030, NHS England Public Board has approved a roadmap setting out the evolution of Government procurement policy towards Net Zero procurement:

4.3.1 Net Zero Supplier Roadmap



From April 2022: All NHS procurements include a minimum 10% net zero and social value weighting.

From April 2023: for all new contracts above £5 million per annum, the NHS requires suppliers to publish a Carbon Reduction Plan for their UK Scope 1 and 2 emissions and a subset of Scope 3 emissions as a minimum (aligning the NHS with Procurement Policy Note PPN06/21 – Taking Account of Carbon Reduction Plans in the Procurement of Major Government Contracts). The Carbon reduction plan and net zero commitment requirements for the procurement of NHS goods, services and works guidance outlines what is required from suppliers and how it should be implemented.

From April 2024: The NHS has proportionately extended the Carbon Reduction Plan requirements to cover all new procurements.

From April 2027: All suppliers will be required to publicly report targets, emissions and publish a Carbon Reduction Plan for global emissions aligned to the NHS net zero target, for all of their Scope 1, 2 and 3 emissions.

From April 2028: New requirements will be introduced overseeing the provision of carbon footprinting for individual products supplied to the NHS. The NHS will work with suppliers and regulators to determine the scope and methodology.

From 2030: Suppliers will only be able to qualify for NHS contracts if they can demonstrate their progress through published progress reports and continued carbon emissions reporting.[53]

4.3.2 Applying Net Zero & Social Value to Procurement of NHS Goods and Services

NHS England's stated policy objective is to meet its Net Zero carbon targets while achieving its wider Social Value priorities. In 2022, it clarified this further:

"The principal aim of procurement undertaken by NHS organisations is to deliver essential goods and services and improve patient outcomes, while increasing value from every pound spent in the NHS. NHS procurement also has an essential role to play in the delivery of the NHS commitment to reach net zero by 2045, as more than 60% of NHS carbon emissions occur in the supply chain. Social value, when incorporated effectively, will help reduce health inequalities, drive better environmental performance, and deliver even more value from procured products and services."[54]

From April 2022, all NHS procurements must include a **minimum 10% net zero and social value weighting**.

[53] NHS England 2021, "*Net Zero Supplier Roadmap*", https://www.england.nhs.uk/greenernhs/get-involved/suppliers/, accessed 28-11-24

[54] NHS England 2022, "*Applying net zero and social value in the procurement of NHS goods and services*", https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2022/03/B1030-applying-net-zero-and-social-value-nhs-goods-and-services.pdf

There are five Social Value Themes, of which Fighting Climate Change is compulsory in all contracts:

Social Value Model Theme	NHS Priority Areas
1. Fighting Climate Change (**must** be included in all procurement)	• Reduce emissions • Reduce air pollution • Promote circular economy principles • Reduce consumption and waste
2. Wellbeing	• Support physical & mental health
3. Equal Opportunity	• Support a diverse workforce • Equity by design • Eliminate modern slavery
4. Tackling Economic Inequality	• Employment as an economic and health intervention • Living wages
5. COVID-19 Recovery	• Supports individuals affected by COVID-19

4.3.3 NHS supplier Carbon Reduction Plan and Net Zero Commitment

This sets out the supplier requirements for a Carbon Reduction Plan and Net Zero Commitment for the procurement of NHS goods, services and works[55].

From 2023, for all new contracts above £5 million per annum, the NHS required suppliers to publish a Carbon Reduction Plan for their UK Scope 1 and 2 emissions and a subset of Scope 3 emissions as a minimum. This aligned the NHS with Procurement Policy Note PPN06/21 – Taking Account of Carbon Reduction Plans in the Procurement of Major Government Contracts.

From April 2024: The NHS has proportionately extended the Carbon Reduction Plan and Net Zero Commitment requirements to cover all new procurements:

[55] NHS England 2024, "*Carbon reduction plan and net zero commitment requirements for the procurement of NHS goods, services and works*", https://www.england.nhs.uk/long-read/carbon-reduction-plan-requirements-for-the-procurement-of-nhs-goods-services-and-works/, accessed 28-11-24

Policy Application	Procurements in Scope	Implementation Date	Procurement Stage	Demonstration of Commitment
Carbon Reduction Plan (CRP) requirement	Contracts ≥ £5m per annum (exc. VAT)	1 April 2023	Pass/fail check in Standard Selection Questionnaire	URL provided as part of the Selection Questionnaire
	New frameworks where it is anticipated that the individual value of any contract to be awarded under the agreement is £5m per annum (exc. VAT) or more			
	All new frameworks operated by in-scope organisations, irrespective of the value of the contract	1 April 2024		
Net Zero Commitment requirement	Contracts below £5m per annum and above £10k (exc. VAT)	1 April 2024 – for contracts above the relevant Public Contracts Regulations (PCR) threshold	Pass/fail check in Standard Selection Questionnaire	URL of the commitment shared upon contract award
		1 April 2026 – for contracts below the relevant PCR threshold	Condition of Award	

A **Carbon Reduction Plan (CRP)** identifies a supplier's current carbon footprint and their plan to achieve net zero emissions by 2050 or earlier for their UK operations.

The supplier will be expected to provide their baseline and current emissions for the sources included in scope 1 and 2 of the GHG Protocol and, at a minimum, the five GHG Protocol scope 3 categories of:

- upstream transportation and distribution
- waste generated in operations
- business travel
- employee commuting; and
- downstream transportation and distribution.

Suppliers will also need to identify environmental management measures in effect, including any certification scheme (e.g. ISO14001), and specific carbon reduction measures adopted.

A **Net Zero Commitment** is a publicly stated commitment to achieve net zero by 2050 or earlier, and a confirmation that the supplier is taking steps to reduce their

GHG emissions over time. It does not involve the detail required of a CRP and applies to lower value contracts.

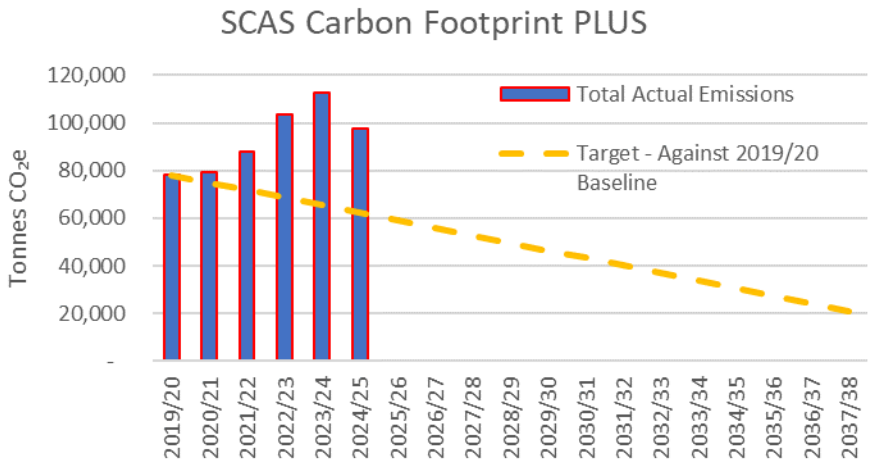
A 'Net Zero Commitment' is required for all new procurements above the relevant threshold up to the value of £5M per annum, where it is deemed that CRP requirements not to be proportionate and relevant to the nature of the framework.

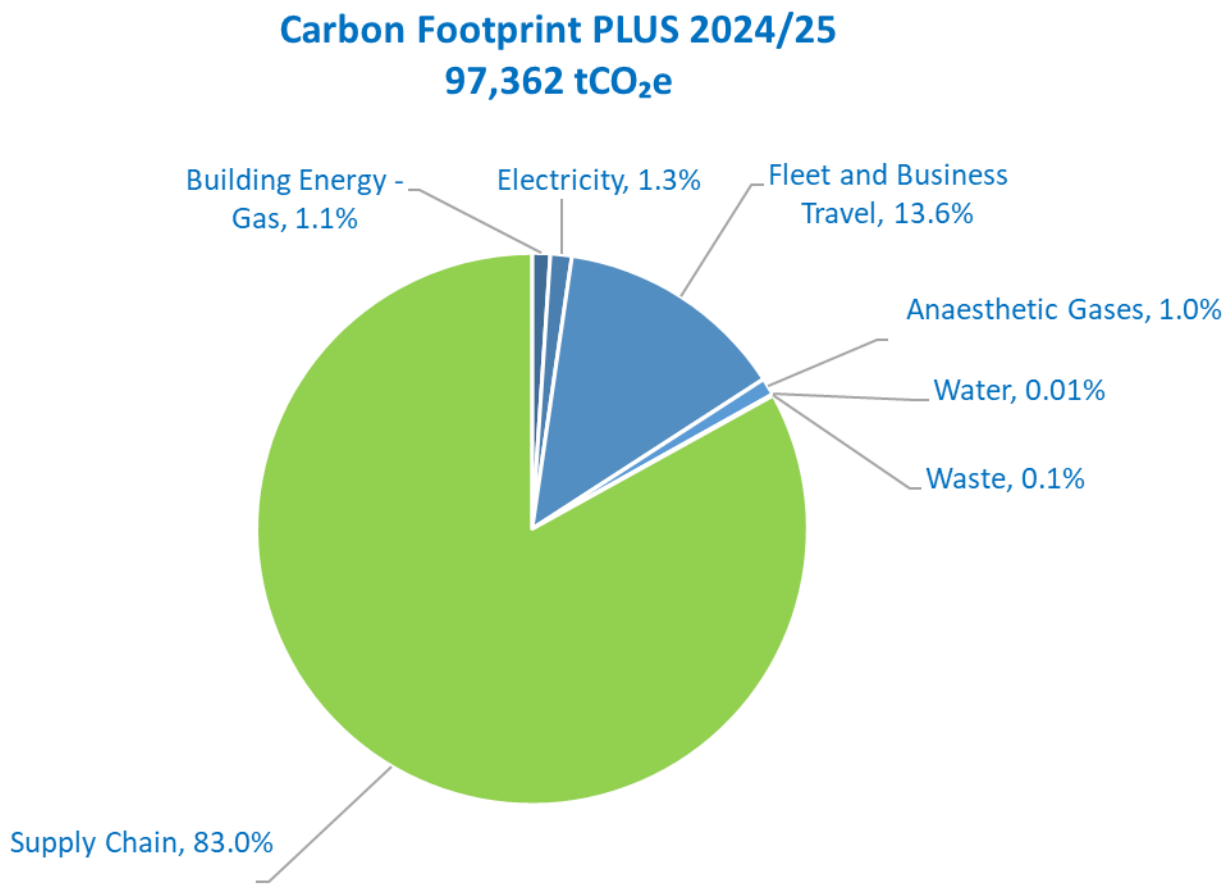
To comply with the NHS Net Zero Commitment requirements, a supplier can state:

> "*[Supplier name]* is committed to achieving Net Zero emissions by 20XX for emissions scopes X, X and X. The commitment was made on DD/MM/YY by the *[approving board/equivalent management body]*"

4.3.4 Decarbonising the SCAS Supply Chain

Emissions from SCAS supply chain are included in the Carbon Footprint PLUS, which includes all the emissions we control directly (our Carbon Footprint) ***plus*** all the emissions we influence via the goods and services we purchase. Unfortunately, since 2019/20 these emissions have risen significantly (though appear to have peaked in 2024/25):





The supply chain accounts for 83% of SCAS' total Carbon Footprint **PLUS** emissions.

At first glance, it seems that Fleet & Business Travel is a low proportion of emissions, but we also know from the analysis undertaken by CO_2Analysis / GreenInsight that **74%** of the Carbon Footprint PLUS is related to transport activities and that **all** of the increase in emissions since 2019/20 is attributable to transport.

This is a really encouraging insight for SCAS, as we know that transport emissions can be eliminated through fleet electrification.

NHS organisations can use their individual or collective purchasing power and decisions to reduce the carbon embedded in their supply chains. Ambulance trusts will be able to influence transport service providers via contractual obligations to transition to zero emission fleets, which will transform the trajectory of the SCAS Carbon Footprint PLUS and put us back on track to meet our Net Zero target of 2045.

Whilst the overwhelming focus for SCAS will be on reducing transport-related emissions, carbon emissions also arise from less obvious activities, such as medical supplies and data processing and storage. Data centres and data transmission accounted for 3% of global electricity demand and 1% of global greenhouse gas emissions in 2022. To put this into context, the entire aviation industry accounts for

1.9% of total global emissions [56]. Sending a single email can add 26g to the carbon footprint[57], which may come as a surprise to many.

Along with other suppliers, data centre service providers will need to demonstrate that they are implementing their own carbon reduction plans and report their progress back to SCAS.

The procurement contract tender process offers opportunities to:

- Reduce the use of clinical and non-clinical single-use plastic items
- Use lower carbon alternative supplies, such as recycled paper or products with a lower environmental impact
- Reduce or eliminate waste going to landfill

4.4 Estates

(With reference to the August 2021 Estates Net Zero Delivery Plan[58]):

4.4.1 Installing the EV Charging Infrastructure

42 new EV charge points were installed in the 2024/25 financial year, bringing the total available to 93, the majority being 22kW output. This has largely exhausted the available electrical supply capacity across the SCAS estate and any further additions to the EV charging infrastructure will require DNO supply capacity upgrades such as new substations and high / low voltage cabling.

To support electrification of the fleet, it is essential to establish the number and capacity of chargers required. At the end of 2024/25 financial year, the total fleet comprised 1,154 vehicles[59]. Modelling must consider future requirements (e.g., changes to PTS contracts, and the Fit for the Future modernisation programme), daily operational requirements and the specification for electric Double Crewed Ambulances.

The charging requirements will be data driven and informed by the Emergency Vehicle Recharging Infrastructure Tool (EVRIT) developed by NHS England in conjunction with Cenex. This model estimates electrical demand for a fully electric ambulance fleet by calculating most of its outputs on a per-vehicle basis, then multiplying by the maximum number of vehicles onsite, using data supplied by Fleet.

The model has produced estimates of the peak demand and **minimum** infrastructure needed.

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[56] IEA (2022), Data Centres and Data Transmission Networks, IEA, Paris https://www.iea.org/reports/data-centres-and-data-transmission-networks, License: CC BY 4.0

[57] Mike Berners-Lee (2020) "*How Bad are Bananas? The carbon footprint of everything*", cited in OVO Energy, *The Carbon Footprint of the Internet*, https://www.ovoenergy.com/blog/green/the-carbon-footprint-of-the-internet

[58] NHS England (2021), "Estates Net Zero Carbon Delivery Plan", PAR1059.

[59] Fleet Data Report 01/04/25

Opportunistic Charging Model

The model assumes that sites with EV chargers are supporting an opportunistic charging strategy, where ambulances top up their battery during every eligible visit to an NHS site, rather than relying on a long recharge period (e.g. overnight charging). The underlying assumption of the model is that ambulances arriving at one site have access to opportunistic charging at any other hospital or ambulance station they visit, so charging infrastructure requirements at hospitals are also included in this model. SCAS will need to liaise with hospitals to ensure that adequate infrastructure is provided, as they are essential for the viability of this EV charging model.

Previous analysis work by Cenex on historic ambulance journeys has suggested that supplying every ambulance with ultra-rapid chargers is not always required to support fleet charging. A more efficient approach may be to deploy managed charging hubs across an estate: providing enough sockets to ensure every vehicle could be plugged in at peak times, whilst prioritising charging of low state of charge (SoC) vehicles, linked with more intelligent dispatch information accounting for each vehicle's battery and charging status. On this basis, 22kW chargers may be adequate in most cases.

Installation Costs

Installation costs are approximations only, to provide an estimate at 2024 prices from blended costs across a number of suppliers. It is important to note that these **do not include any grid upgrade costs**, which may double the costs shown. Actual costs will be site specific and also dependent on hardware and software specifications.

The estimated costs include:

- A distributed energy system where the power required at site is a distributed from a central power unit across multiple DC (direct current) charging sockets
- Hardware: DC power modules with the capability to dynamically load manage each charging socket, Charging sockets costs
- Installation: Typical costs for installation and groundworks associated with the hardware
- Chargepoint management: Software costs for enabling dynamic management and performance of each charging socket
- Maintenance: Annual equipment maintenance cost

*The estimated costs produced by EVRIT do **not** include VAT

	SCAS Resource Centre	Existing Installed Charging Capacity (Nov 24) kW	Recommended Minimum Site Charging Capacity kW (EVRIT)	Estimated Installed Infrastructure Net Cost £ (EVRIT)
1	*Abingdon Fleet Services OX14 4SD (part of SCFS)	0	434	£166,000
2	Adderbury RC OX17 3FG	33	355	£215,000
3	Alton RC	0	311	£188,000
4	Andover RC SP10 3RJ	0	311	£188,000
5	Basingstoke RC RG24 9LY	40	355	£215,000
6	Bracknell RC RG12 7AE	33	355	£215,000
7	Cosham Northarbour RC PO6 3TJ	0	761	£484,000
8	Didcot RC OX11 8RY	11	355	£215,000
9	High Wycombe RC HP11 2JQ	0	398	£229,000
10	Hightown RC SO19 0SA	33	355	£215,000
11	Hythe RC SO45 5GU	0	159	£100,000
12	Kidlington RC OX5 1RF	33	355	£215,000
13	Lymington	0	214	£131,000
14	Milton Keynes Blue Light Hub	7	355	£215,000
15	Newbury RC RG14 1LD	22	355	£215,000
16	Nursling RC SO16 0YU	0	553	£345,000
17	Oxford City RC OX3 7LH	22	355	£215,000
18	Petersfield RC GU31 4AN	0	159	£100,000
19	Reading RC RG1 7DA	0	311	£188,000
20	Ringwood RC BH24 3EU	0	159	£100,000
21	Southampton LPU SO16 0BT	7	Not included for EVRIT as not frontline	

22	Stoke Mandeville RC HP21 8BD	0	398	£229,000
23	Wexham Park RC SL3 6LT	22	398	£229,000
24	Whitchurch RC RG28 7BB	0	159	£100,000
25	Winchester & Eastleigh RC/HART SO50 4ET	40	311	£188,000
			Total SCAS Estate:	**£4,900,000**
1	**HOSPITALS:**			
2	John Radcliffe		214	£131,000
3	Horton		159	£100,000
4	Luton & Dunstable		478	£287,000
5	Stoke Mandeville		214	£131,000
6	Wexham Park		159	£100,000
7	Bedford MK		214	£131,000
8	Basingstoke & NH		214	£131,000
9	Royal Hampshire		214	£131,000
10	Portsmouth		355	£215,000
11	Royal Berkshire		214	£131,000
12	Southampton General		214	£131,000
			Total Hospitals:	**£1,619,000**
			Total Cost	**£6,519,000**

*Abingdon Fleet Services is part of South Central Fleet Services Ltd. and was not included in the EVRIT model, but an estimate has been prepared based on the maximum charging capacity available for the site.

Total estimated EV infrastructure cost: £6,519,000 +VAT = £7,822,800

Total recommended charging capacity: 10,881kW

Average estimated cost to install: £719 / kW

This is lower than the average installed cost to date (£1,085/kW), which may reflect economies of scale, though allowance should be made for future inflation over a multi-year project, as the EVRIT model provides assumptions based on current prices only. To date, SCAS has installed only 3% of the minimum recommended capacity to support a fully electric fleet.

Additional Costs – DNO supply upgrades

The EVRIT model advises that grid upgrade costs "may double the costs shown". Therefore, SCAS should make provision for a **minimum** total EV infrastructure budget of **£15,645,600** at 2024 prices, as well as a sum for contingency and supply chain inflation. With 10% contingency and 10% inflation over 5 years, this amounts to **£18,774,720.**

4.4.2 Open Charge Point Protocol and Back Office Software

The success of the EV programme depends on having an effective back-office function to collect data, manage physical access to charging points and maintain financial controls. Ensuring that all charging equipment meets with Open Charge Point Protocol (OCPP) standards as approved by the Open Charge Alliance will future proof the EV charging infrastructure, allowing a range of equipment to communicate seamlessly with OCPP compliant software or online portals. This will be implemented by Estates as part of the installation commissioning process but managed by Fleet Services on an operational basis (with input from Finance).

For Estates to deliver a successful EV charging infrastructure programme, it is vital that Fleet Services share information on vehicle numbers, locations and movements, along with the desired ratio of vehicles to chargers, so that operational need is matched with provision as far as practicable within the constraints of the estate portfolio. Estates also needs to be advised of operational requirements when planning the future configuration of the portfolio in the **SCAS Fit for the Future Modernisation Programme**.

4.4.3 EV Charging Policy

As EVs are increasingly adopted by staff, access to chargers will become of increasing concern. EVs offer huge opportunities to reduce the emissions associated with business travel and commuting. Whilst frontline operations will be prioritised, the need to provide access for some staff vehicles on a carefully managed basis will grow. This requires adoption of a SCAS policy governing access to charge points, including charging rates for personal vehicles, requiring input from all affected departments, such as Estates, Operations, HR and Finance.

4.4.4 Managing Fire Risk

The estate must also consider the different type of fire risk posed by electric vehicles compared to internal combustion engine vehicles. Whilst the incidence of fire is much lower for EVs, the severity of the blaze is often worse and harder to extinguish. Professional advice from fire safety experts will be required to manage this different type of risk appropriately, particularly at locations where vehicles are being charged inside buildings.

To determine the risk of EV fires, researchers on behalf of the US car insurance market have examined data from the National Transportation Safety Board (NTSB), Bureau of Transportation Statistics (BTS), and government recall data from Recalls.gov.[60] The data included all the causes of fire, such as collisions, electrical failures, oil or fuel leaks, poor maintenance, vehicle battery damage, and smoking cigarettes. They concluded that the fire risk from 100% electric vehicles was far lower than other vehicle types:

Fuel Type	Fires per 100k sales	%
Hybrid	3,474.5	3.47%
Petrol	1,529.9	1.53%
100% Electric	25.1	0.025%

Tesla have also released their own data from vehicle telemetry, which shows that from 2012 – 2021, there has been approximately one Tesla vehicle fire for every 210 million miles travelled. By comparison, data from the National Fire Protection Association (NFPA) and U.S. Department of Transportation shows that in the United States there is a vehicle fire for every 19 million miles travelled.[61] This implies over a 90% reduction in fire risk per mile travelled by Teslas.

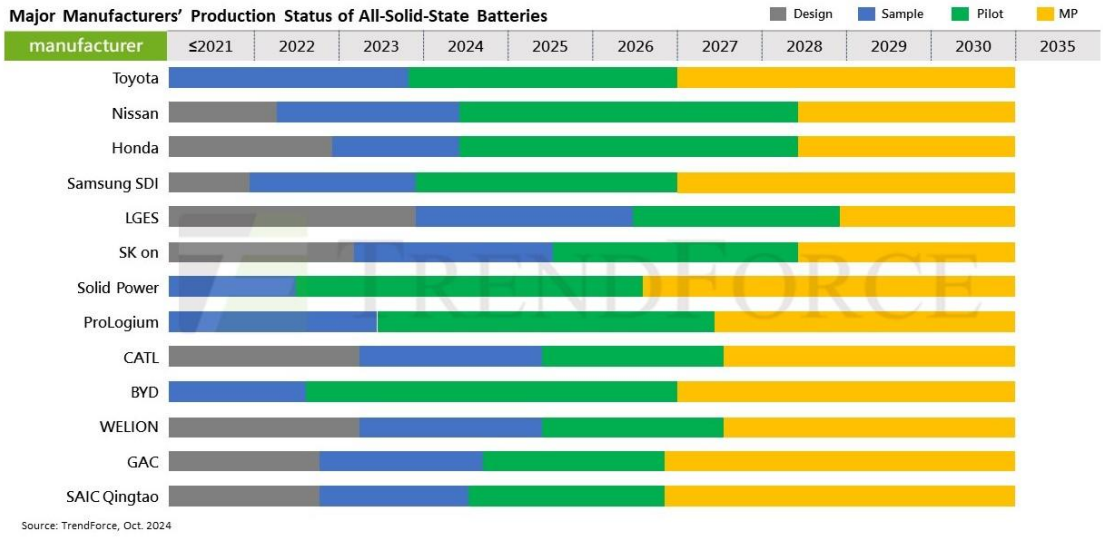
The new generation of solid-state batteries being developed will ultimately eliminate the fire risk from flammable electrolyte, with French company Bolloré already testing prototypes and new Spanish gigafactory firm Basqevolt due to commence production in 2027[62]. Global production data shows many major manufacturers in pilot production phase and planning mass production from 2027 onwards[63]:

[60] AutoinsuranceEZ, 2023, "*Gas vs. Electric Car Fires [2023 Findings]*", https://www.autoinsuranceez.com/gas-vs-electric-car-fires/

[61] Tesla, 2023, "*Vehicle Safety Report*", https://www.tesla.com/VehicleSafetyReport

[62] European Battery Alliance, 2023, "Solid-state batteries on the rise in Europe", https://www.eba250.com/solid-state-batteries-on-the-rise-in-europe/

[63] Trendforce, 2024," Solid-State Batteries Enter Pilot Production", https://www.trendforce.com/presscenter/news/20241031-12346.html, accessed 28-11-24



4.4.5 Solar PV and Battery Energy Storage Systems

Investing in on-site generation using solar PV will offset some of the cost of increased electricity demand from EVs and heat pumps. Every kWp of solar PV installed saves a UK average of 164kg CO_2 per annum[64], equivalent to £182 savings[65]. However, the more southerly location of SCAS achieves a higher solar yield, so each megawatt peak (MWp) installed could save up to 191 tonnes CO_2 per annum and £212,000 annual benefit, assuming SCAS can use all the generated electricity.

In practice, electricity generation from solar PV will not always match consumption patterns; in the summer months, more electricity will be generated than is being used on site, so the excess will be exported into the grid. Although the grid pays for the electricity, it is at a far lower rate per unit (typically 6p/kWh) than what SCAS pays to buy back the electricity later in the day (23p/kWh).

Investing in a battery energy storage system will minimise the amount being exported and ensure that SCAS derives maximum benefit from the solar PV.

Winchester & Eastleigh Resource Centre (WERC) has become the first SCAS site to be equipped. A 277kWp solar PV system was installed in April 2025, along with a 345kWh battery system, yielding projected annual savings of £41k per annum. This assumes some electricity would still be exported at 6p/kWh based on existing consumption patterns. However, the increased future needs of EV charging will ensure that no electricity is exported, and the total savings will increase by an extra £16k to give potential annual savings of £57k.

[64] https://pvfitcalculator.energysavingtrust.org.uk/

[65] Assumes rate of £0.23/kWh and specific annual yield of 923kWh/kWp installed and that all energy generated is used on site.

345kWh Battery System at Winchester & Eastleigh Resource Centre, using Lithium Iron Phosphate chemistry:

277kWp Solar PV system at Winchester & Eastleigh Resource Centre:

Investing in solar PV with battery energy storage represents excellent value for money, allowing SCAS to realise significant annual savings whilst contributing to the decarbonisation of the Trust.

Installation costs for Solar PV range from £660/kWp to £1,000/kWp, depending on the scale of the installation and complexity. Smaller sites will incur higher costs, whereas larger sites will benefit from economies of scale.

If SCAS aims to install 2MWp of solar PV at a mid-range cost of £830/kWp, it should budget £1.66million + VAT= **£1.992million**. This will provide coverage of a roof area equivalent to 8x that of WERC.

Installing 8x the battery capacity (2.76MWh) will cost an estimated **£1.44million** inc. VAT.

SCAS should prioritise larger sites initially to keep costs down and optimise yields, with the savings used to fund the installation of solar in smaller sites later on. SCAS has been successful in securing £1.2million GB Energy funding to install Solar PV in 4 Resource Centres. Centres with EV charging represent excellent candidate sites due to their higher electrical demand.

As the rollout of EVs continues, there will be a transfer in cost from fossil fuels to electricity, some of which can be offset directly by Solar PV. The call centres are operating 24/7, so onsite generation and storage can also mitigate some of these running costs, even if the solar PV is located at other sites.

In addition to optimising the performance of Solar PV, investing in battery storage systems will also provide resilience and reduce pressure on the grid during peak demand periods.

4.4.6 LED lighting and “Daylight Harvesting”

In efforts to make every kWh count, investing in no-regrets energy saving measures, such as LED lighting offer excellent financial returns whilst minimising the carbon footprint of lighting. Approximately 70% of the estate is now fitted with LEDs. Prior to the installation of LEDs, it is estimated that 35% of the electricity consumption was lighting[66], contributing about 2-3% to the overall direct carbon footprint. Completing this programme should save up to 1% of the carbon footprint, around 165 tonnes CO_2e per annum.

Lighting and Lighting Control

[66] https://www.nextsystems.co.uk/blog/electrical/why-use-led-lighting-in-your-office/#:~:text=On%20average%2C%20for%20many%20UK%20businesses%2C%20lighting%20takes,as%20much%20as%2035%25%20of%20their%20electricity%20consumption.

A sustainability feasibility study conducted for the Winchester & Eastleigh Resource Centre noted that existing LED lighting had been installed as a replacement when existing lighting units expire. Although well-intended, this *ad hoc* approach has led to a mismatch of various lighting throughout the building. It was also observed that many areas still retained fluorescent lighting.

The report recommended "wholesale replacement would provide better lighting conditions throughout and tailor the new lighting system for the current use of the areas, with better lighting in training areas and workshop. Replacing the LEDs would allow for better control, including the integration of daylight sensors and Passive Infra-Red (PIR) controls, and would yield significant operational savings if done as part of a coordinated project rather than through incremental maintenance. Newer LED models are also more efficient, further reducing energy consumption. Existing LEDs that have been recently installed could be reused in key areas, avoiding waste. The installation of sun pipes in the main office area could be considered as they would enhance lighting levels whilst reducing energy consumption."

An analysis of energy consumption of the existing lighting revealed that considerable energy savings could be achieved by installing a new LED system which would respond to natural daylight levels and room occupancy:

Winchester & Eastleigh RC	Total Annual Running Cost (inc. maintenance)	Total Annual Emissions tCO_2e
Existing lighting system	£45,219	43.8
New "Daylight Harvesting" smart LED system	£13,192	8.2

Estimated annual savings from upgrading the LED lighting of £32,027 mean that the new system could pay for itself within 2 years, based on a cost of £56k, and reduces carbon emissions from lighting by 81% at current grid carbon intensity.

If similar smart lighting systems were installed across the Trust, the cumulative financial and carbon savings would be significant, especially with a 10-year system warranty. Larger buildings in the Trust include 23 resource centres, 2 data centres, and 2 head offices/EOCs. Assuming a similar average cost, an investment of **£1.8 million** should pay for itself in 2-3 years and contribute towards Net Zero targets by reducing lighting emissions significantly.

A £494k grant from the National Energy Efficiency Fund was obtained in January 2025 to fit smart LED lighting across the estate, commencing with Winchester & Eastleigh and Cosham sites.

4.4.7 Waste Management

Improving waste management offers considerable potential annual savings and reductions in carbon emissions for SCAS, particularly if we fully adopt the

recommendations of Health & Technical Memorandum (HTM) 07-01, Safe and Sustainable Management of Healthcare Waste.

This aims to implement the NHS Clinical Waste Strategy, which aims to eliminate avoidable waste and support efforts to prevent "offensive" waste being incorrectly classified and segregated as "infectious" waste in order to improve the effectiveness of waste management systems and reduce costs.

The following targets are set out:

- 20% of waste segregated to be sent to incineration, with only 4% of that being hazardous/clinical incineration
- 20% of waste segregated to be sent to alternative treatment
- 60% of waste segregated to be classified as offensive waste[67]

Currently, SCAS does not segregate any of its waste as "offensive", with the result that all waste is either sent to high temperature incineration or alternative treatment. This is expensive and produces a high carbon footprint. Offensive waste can be disposed of by sending to Energy from Waste (EfW) facilities where it can be burnt to generate electricity. HTM07 recommends that EfW should be the most commonly used option for offensive waste and non-recyclable domestic waste because it provides an opportunity to recover energy and resources. [68]

SCAS needs to update its Waste Policy to reflect the recommendations for Ambulance Trusts as outlined in HTM07.

4.4.8 Additional Sustainability Measures

In addition to supporting the priority of Fleet electrification, Estates has a vital function to play in meeting sustainable objectives by:

- Preparing buildings for electricity-led heating by upgrading building fabric (insulation, ventilation, double glazing etc.)
- Switching to non-fossil fuel heating: Investing in heat pumps
- Reducing water consumption and cost by installing rainwater harvesting in buildings with high usage, particularly resource centres with ambulance washing facilities: Cosham, Nursling RC, Portsmouth PTS, Bracknell RC and Ringwood RC use a combined 7,409m³ of water per annum. If 50% of this could be saved through rainwater harvesting, 3,705m³ of water would be preserved, enhancing water resource sustainability. The carbon saving would be 1.56 tonnes CO_2e.

[67] NHS England (2022), "Health Technical Memorandum 07-01: Safe and sustainable management of healthcare waste", https://www.england.nhs.uk/wp-content/uploads/2021/05/B2159iii-health-technical-memorandum-07-01.pdf, p10
[68] Ibid., p27

- Building design and refurbishments: “Replace like with unlike” and ensure compliance with the Net Zero Building Standard 2023[69], which mandates achieving BREEAM Excellent for all new buildings and BREEAM Very Good for refurbishments, as a **minimum**.[70]
- Incorporating Green clauses into lease agreements, per the NHS Memorandum of Understanding Documents PAR1594(iii and iv)[71]
- Using HVO fuel for back-up power generators: sustainable, 90% less carbon, no fuel polishing costs, and 10-year shelf life.
- Preparing the estate for severe weather / creating a climate change adaptation plan, especially in light of increased flooding events.
- Committing to active travel, especially providing the infrastructure for cycling. This extends beyond bike racks and includes facilities for showering and secure locker storage.
- Assessing opportunities for tree planting

4.5 Workforce and System Leadership

- Create Net Zero Committee with regular meetings to monitor and deliver the Green Plan
- Named Board level SRO for Sustainability
- Increase staff awareness of Sustainability – access sustainability training via ***“Building a Net Zero NHS”*** eLearning module” on ESR
- Regular communication via Staff Matters / Yammer / Viva Engage
- Regular Travel Surveys
- Create network of “Green Champions” to identify and promote sustainability micro-initiatives, e.g. ensuring waste goes into the correct recycling bins, lights are turned off, windows are closed to save heat
- Implement an ISO14001-compliant Environmental Management System

4.5 Digital Transformation

Care Pathways

The direct alignments between the digital transformation agenda and a Net Zero NHS are clear. The SCAS policy of Hear & Treat, as outlined in the Improvement Programme (01/10/22)[72] to deliver some care remotely saw over 14% of 66,200 calls

[69] NHS England (2023), “Net Zero Building Standard 2023”, https://www.england.nhs.uk/wp-content/uploads/2023/02/B1697-NHS-Net-Zero-Building-Standards-Feb-2023.pdf
[70] Ibid., p132
[71] NHS England (2022), “Green Lease - Provisions for inclusion in Lease of Part of Commercial Premises”, PAR1594-iv, https://www.england.nhs.uk/wp-content/uploads/2022/06/B1594-iv-model-form-green-lease-clauses-template.pdf
[72] SCAS Improvement Programme Briefing, 01/10/22, p12

dealt with remotely during January – March 2025. This represented over 9,000 saved vehicle journeys and freed up those resources to be allocated to other urgent cases.

JANUARY – MARCH 2025
66,200 calls
43,000 incidents
14% Hear & Treat 32% See & Treat 50% treated and taken to A&E 4% treated and taken to other services

Datacentre & Platforms

To ensure its data centre and network are sustainable, the Trust should consider moving to third-party data centres that are green and effective. Partnering with providers who prioritise renewable energy sources, such as solar or wind power, can significantly reduce carbon emissions. These third-party data centres often employ advanced cooling technologies, such as liquid cooling or free cooling, to minimise energy consumption.

Selecting data centres with certifications such as LEED or ISO 14001 ensures adherence to high environmental standards. These facilities are designed to optimise energy efficiency and reduce waste, contributing to a lower environmental footprint. By leveraging the expertise and infrastructure of green data centres, the trust can benefit from state-of-the-art energy management systems that monitor and optimise energy usage in real-time. Third-party green data centres often have robust recycling programmes for electronic waste, ensuring responsible disposal and repurposing of outdated equipment. This not only reduces waste but also supports a circular economy. Collaborating with green data centre providers would allow the Trust to focus on its core mission while ensuring its IT operations are environmentally sustainable and resilient.

SCAS IT is currently developing a long-term datacentre strategy to ensure we have modern, efficient and effective datacentres and sustainability is a primary requirement. The current high-level thinking is as below:

- Strategic Development 2025-2026
- Short-Term Consolidation and Optimisation – 2026-2028
- Long-Term Strategic Migration – 2028 onwards

IT Application Management Strategy

SCAS IT is currently developing our IT Application Management Strategy and this will incorporate the reduction of the number of used applications and a continued focused on IT Asset management optimisation. Where applicable we will look at cloud-based products which are sustainable by design.

IT Innovation Sustainability Themes

IT sustainability innovation within SCAS is still in an early-adoption stage but could potentially play a crucial role in driving Net Zero and sustainability goals. At the present time we are still identifying key initiatives and themes. This is a work in progress during 2025/26 with a key focus on utilising Artificial Intelligence (AI) to drive optimisation and efficiencies across all areas of IT and wider business units.

Building Management Systems

Digital transformation offers huge potential for the management of the Trust estate. As more equipment, such as “smart” LED lighting and Solar PV, is installed, the need for integrated building management systems to monitor and control these systems is required. Such systems capitalise on the “internet of things” emerging technology and can yield huge efficiencies in energy use and maintenance.

4.7 Medicines

The NHS Standard Contract identifies inhalers and anaesthetic gases as two key areas requiring early action.

6.7% of the Carbon Footprint for SCAS is attributable to nitrous oxide (N_2O)*. It is the second largest source of direct emissions after the vehicle fleet (NB Supply Chain / Procurement is the largest source when indirect emissions are factored in)

Research into capturing N_2O at point of use or installing portable devices to remove it from the air in enclosed spaces such as ambulances, is now urgently required.

Nitrous Oxide is identified as a hazard to NHS staff, so efforts to remove/capture it will have wider health benefits, whilst other efforts to reduce its use or prevent waste will save money.

Opportunities to use lower carbon alternatives (Penthrox) should also be considered and implemented where medically and practically feasible, and this is likely to be decided at a national level.

Tackling Nitrous Oxide emissions within ambulances depends on technological advances and changes in medical practice, which will be kept under review, but it forms an essential component of reducing the Trust’s direct emissions and achieving Net Zero.

(*Nitrous Oxide (N_2O) must be distinguished from NOx, the various nitrogen oxides found in exhaust fumes from internal combustion engines.)

4.8 Adaptation Planning

SCAS plans to mitigate the risks or effects of climate change and severe weather conditions on its business and functions, particularly the impact of flooding or

heatwaves on the organisation’s infrastructure, patients, and staff. Repeated flooding has already affected one of sites, and higher rainfall is being predicted as a result of climate change.

5. Affordability & Funding the Green Plan

Meeting mandatory Net Zero targets will require significant investment across the NHS. Some aspects have been provisioned for, but others will have to be funded from existing budgets.

5.1 Electric Vehicle Acquisition

NHS England created a £60 million 3-year budget for new ambulance acquisition, with £6.5 million allocated to SCAS from 2022 to 2025. Of this, 10% was to be ring-fenced for zero emissions ambulances.

Non-DCA electric vehicle acquisitions must be funded from existing budgets. Fortunately, as the NHS Net Zero Travel & Transport Strategy points out, electric vehicles are already cheaper than petrol and diesel vehicles over their lifetime due to lower energy and maintenance costs and are expected to reach full purchase price parity in 2027.[73]

5.2 EV Charging Infrastructure

Initial data provided by NHS England based on field testing and research suggests that average emergency response EVs are 21% cheaper to own over their lifecycle[74]. It is these savings that will recoup the cost of infrastructure upgrades and installation of EV charging equipment. The annual direct operational savings to the NHS are calculated to be £59 million. The wider benefits of the transition to net zero NHS travel and transport are estimated to be over £270 million a year[75].

Following their recent success with trialling electric RRVs, Northwest Ambulance Service has decided to purchase 7 fully electric fleet support vehicles this year, with anticipated fuel savings *per vehicle* of £3,500 per annum and 20% reduced maintenance costs. Initial data from the two electric Mental Health RRVs being trialled by SCAS under the ZEEV Pathfinder Scheme suggest similar savings.

5.3 Grid Connection & Upgrade Costs

Upgrades to the grid and electrical infrastructure to meet the requirements of the NHS Travel & Transport Strategy are estimated to cost just over £100 million across the UK. However, reforms implemented by Ofgem from April 2023 are expected to significantly change current connection costs, by reducing or removing the customer contribution to costs for new connections by 'socialising' them across the network.

[73] NHS England, 2023, "Net Zero Travel & Transport Strategy",p19
[74] Ibid.
[75] Ibid.

Some of the capital investment associated with increasing electrical capacity at NHS sites is therefore expected to be met within the broader decarbonisation of the national electricity grid[76]. However, there will still be significant network upgrading and connection costs. The EVRIT model advises Trusts to budget the same amount to cover Distribution Network Operator costs as they are allocating to their own EV infrastructure budgets. Ofgem rules also allow for Independent Distribution Network Operators (iDNOs) to acquire newly installed network upgrades for which SCAS can receive an "Asset Adoption Value", recouping a considerable proportion of the upgrade cost.

5.4 Procurement / Scope 3 Emissions Analysis

Using specialist software to analyse embedded CO_2 emissions in the goods and services purchased by the Trust offers the possibility of generating financial savings, by using AI to identify duplicated orders, overcharging by suppliers, inefficient stock control and the prevalence of expensive single-use items rather than re-usable alternatives. NHS Supply Chain and Northern Care Alliance have both reported £multimillion savings from deploying such technology, whilst also building an accurate picture of their carbon footprint plus, rather than relying on applying carbon intensity factors to general spending.

5.5 External Funding / Grants

The Public Sector Decarbonisation Scheme (PSDS) represented the largest grant funding opportunity, though eligibility criteria precluded SCAS from applying, as the emphasis has been on heating decarbonisation projects more suited for hospitals, rather than transport decarbonisation. The PSDS programme has now ended. Preparing grant applications also requires upfront investment in consulting fees, design work and heat decarbonisation planning.

SCAS has successfully applied for £492k funding for smart LEDs from the National Energy Efficiency Fund (NEEF) and £1.2 million for Solar PV installations from GB Energy in 2025. Other applications are being prepared for EV charging infrastructure.

Commercial funding opportunities are also available, particularly for Solar PV, where third party organisations install equipment and sell the electricity back to SCAS for a set period of time in lieu of capital investment by SCAS. Hire purchase and specialist loan schemes also exist, though finance costs will increase the payback period. Such opportunities would have to be considered within the context of the SCAS Fit for the Future Modernisation Programme and alterations to the estates portfolio.

[76] Ibid, p20

5.6 Estimated 5 yr Capital Budget for Estates Sustainability Improvement

Description	Value (including VAT)					Total £000
	25/26** £000	26/27 £000	27/28 £000	28/29 £000	29/30 £000	
Electric Vehicle Charging Infrastructure - 10,881kW (EVRIT Model)*	2,000	5,000	6,000	3,000	3,000	19,000
Solar PV - 2MW	700	700	600			2,000
Battery Energy Storage Systems - 2.76MWh	500	500	500			1,500
Smart LED / "Daylight Harvesting" systems	900	900				1,800
Surveys inc. heat decarbonisation plans	225	225				450
Total:	4,325	7,325	7,100	3,000	3,000	**24,750**

***10% contingency and 10% inflation has been allowed only for the EV charging infrastructure due to its timescale, risks of unknowns and magnitude.**

Although this budget represents a significant upfront investment for SCAS, it will result in financial benefits which will ultimately see a return on the investment, leading to net overall savings for the Trust.

**The internal capital budget for sustainability is zero for 2025/26. Any sustainability work being undertaken by the Trust in 2025/26 will be funded by external grants. Applications and expressions of interest for Solar PV, LED lighting and EV charging infrastructure have been submitted to NEEF, GB Energy and OZEV. No applications have been submitted to PSDS (Public Sector Decarbonisation Scheme) due to lack of seed capital to fund the surveys and preparation of heat decarbonisation plans which are essential components of any bid.

The available electrical supply capacity across the SCAS estate has now been exhausted for most sites and any further additions to the EV charging infrastructure will require DNO supply capacity upgrades such as new substations and cabling.

The long timescales and associated cost of DNO upgrade work pose a considerable corporate risk to SCAS, which could affect the future rollout of electric vehicles.

To facilitate the arrival of at least 5 eDCAs (and possibly an additional 10), it is proposed that, for Year 1 (2025/26), SCAS focuses on developing two proof-of-concept all electric resource centres, one in the North (Kidlington) and one in the South (Basingstoke), and postpone all other DNO upgrade work until the next financial year when capital budgets may become available. Stoke Mandeville is also included as a priority site, as none of the newly installed EV chargers can be switched on or the new grant-funded solar PV system connected to the grid without a DNO upgrade.

Year 1 2025/26 Detail:

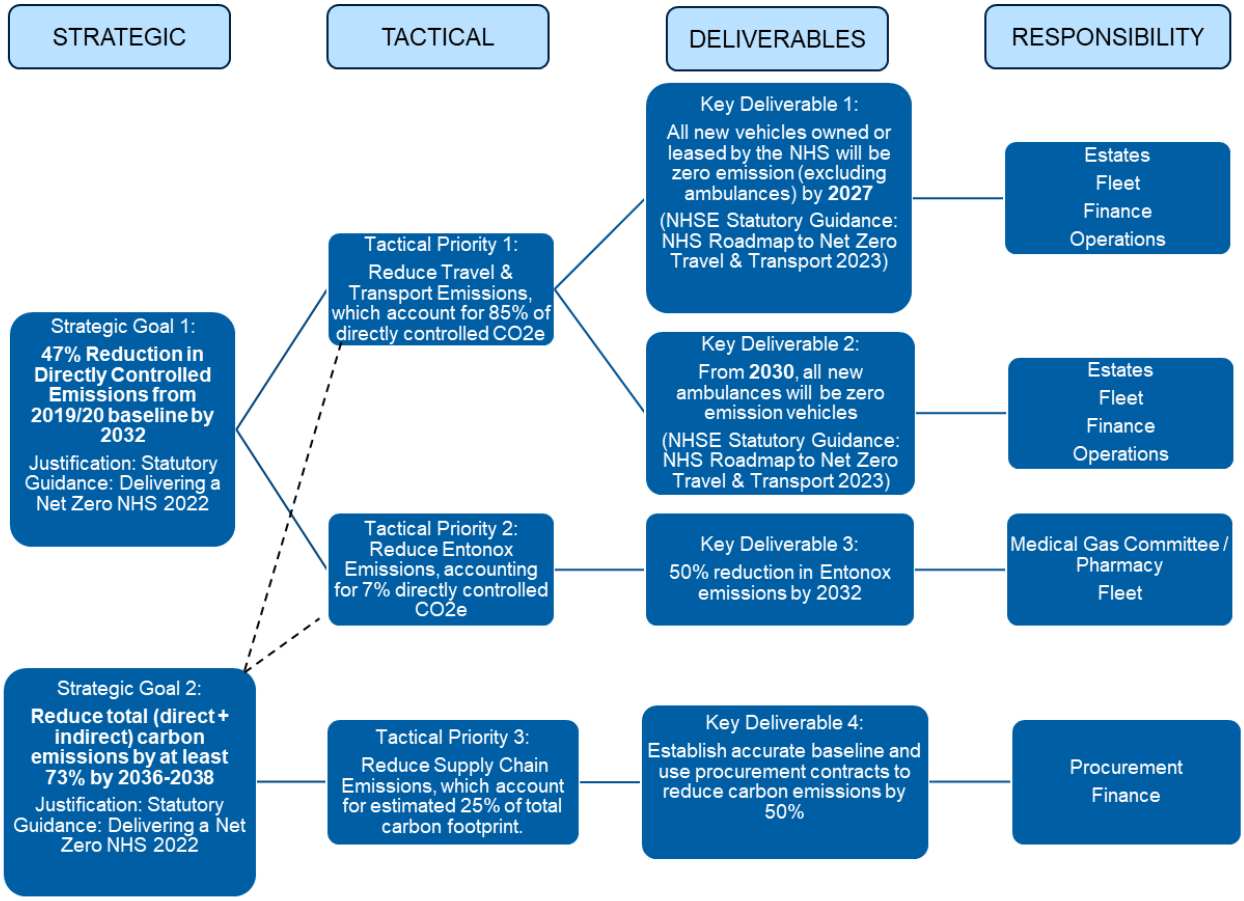
Description	Cost	Funded?
Electric Vehicle Charging Infrastructure, including DNO upgrade works: Kidlington RC Basingstoke RC Stoke Mandeville RC	 £326k (quoted) £355k (quoted) £405k (quoted)	 Unfunded at 13/05/25 Unfunded at 13/05/25 Unfunded at 13/05/25 Grant applications submitted to OZEV, decision pending
Solar PV – 4 Resource Centres	£1.2million	GB Energy Grant
Smart LED	£494k	NEEF Grant

Total cost of sustainability works 2025/26:	£2.780 million
External funding obtained at 13/05/25:	£1.694 million
Funding gap:	£1.086 million

6. Delivering the Green Plan

6.1 Strategy, Tactics and Deliverables:

This high-level implementation plan identifies the most important tactics and deliverables required to meet strategic carbon reduction goals:



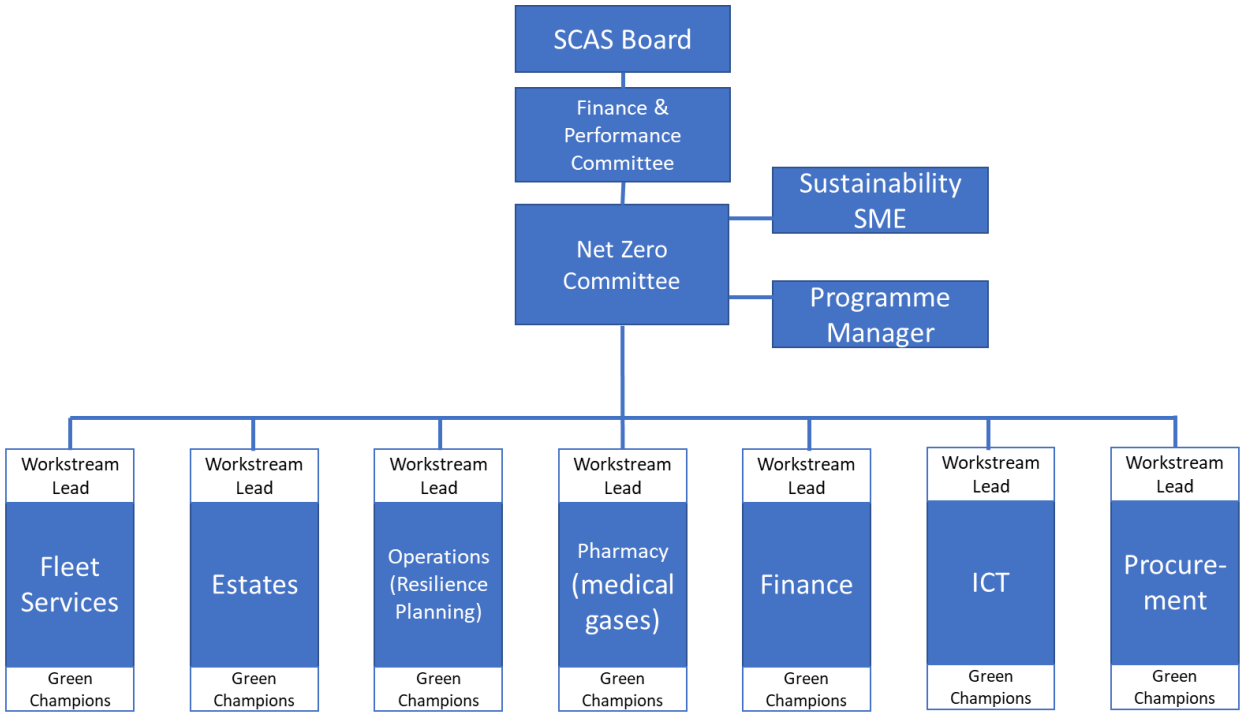
6.2 Actions and Responsibilities

The key deliverables have been broken down into granular actions that have been incorporated into a “Green Action Plan” formal delivery programme. Once specific actions have been identified, the necessary agreement and commitment has (or will be) sought from appropriate stakeholders, so that those who are accountable and responsible for specific workstreams are clearly defined. Progress reviews at regular intervals via the Net Zero Committee will keep the programme on track, whilst keeping the Board informed.

Some actions will have a far greater impact on reducing carbon emissions, and it is important to prioritise these to meet key deliverables. Other actions may have a lower impact on reducing carbon emissions but will still have a high impact on wider sustainability and may be useful as “quick wins” to demonstrate the Trust’s visible commitment to sustainability. The actions have been identified as essential in delivering the core components of the Green Plan, especially the Carbon Reduction Plan. Please see **Appendix** for list of actions.

6.3 Green Plan Governance Structure

Delivering the Green Plan will involve multiple workstreams across multiple departments; each workstream will have a lead whose work will be coordinated by the Programme Manager. The following structure is not exhaustive, as other departments e.g. Communications, Business Intelligence will also have vital roles in supporting the delivery of the Green Plan:



7. Green Plan Key Success Factors

7.1 Board Support – The Green Plan requires top-down support, with a Senior Responsible Officer assuming executive responsibility for its implementation.

7.2 Set up Green Plan delivery as a programme of transformation within the wider **SCAS Fit for the Future Modernisation Programme**, with clear lines of accountability and agreed roles and responsibilities.

7.3 Clearly defined objectives, prioritising those that have the biggest impact or bring the most value.

7.4 Develop an effective marketing strategy to communicate the Green Plan to all stakeholders, engaging the staff at all levels of the organisation.

7.5 Foster SCAS staff buy-in from the bottom up using “Green Champions”. As this is a process of transformation across the organisation, each directorate will require champions to help drive change, not just from an education perspective but encouraging ideas and input from staff. This will take all users in SCAS along the journey, providing them with ample and regular communications and opportunities to propose micro-initiatives.

7.6 Identify “Quick Wins” – initiatives such as installing bike racks and rainwater harvesting tanks may have a relatively small carbon impact, but are highly visible commitments to sustainability, helping with stakeholder buy-in.

7.7 Sustainability Impact Assessments - Where decisions require impact assessments, managers should consider whether a sustainable impact assessment is applicable. This will help embed sustainability in the decision-making process.

7.8 Apply principles of Deming Cycle (Plan Do Check Act), with an Annual Review of the Green Plan, checking its progress, implementing key learnings, and updating the Green Plan accordingly.

7.9 Collaborative working between departments: Creating a more sustainable Trust requires cooperation and information sharing across multiple departments. As fleet electrification is the most important activity to achieve Net Zero, it is vital that fleet managers communicate vehicle procurement plans with the Estates department so that the necessary charging infrastructure is installed in the most suitable locations, to the correct specification. Because the rollout of EV charging equipment will occur in stages, as budgets allow, optimising the locations is essential. If upgrades to the electrical supply are required, it can take many months to plan and install.

7.10 Effective back-office function: The success of the electric vehicle programme relies on installing and managing an effective back-office function for vehicle charging, such as the Allstar fuel card system. Similarly, bunkered fuel requires greater back-office supervision, especially with its importance for financial sustainability as a cheaper alternative to forecourt fuel, and later as environmentally sustainable alternative fuels such as HVO are used.

7.11 Effective contract management: Making procurement more sustainable affects stakeholders across all departments within the Trust, collaborative working and evaluation of the Social Value themes in contract tenders are essential for a successful outcome.

7.12 Accurate reporting against sustainability objectives requires obtaining information from many sources within SCAS, including Finance, HR, Business Intelligence, ICT, Fleet, Procurement. This emphasises the need for a carefully managed programme to deliver the Green Plan.

Annexe A1 – Carbon Factors

Emissions Category	Activity	Activity Unit	Scope 1	Scope 2	Scope 3	Notes & Detailed list of all Department of Energy Security & Net Zero Factors
Energy Use	Electricity (including green electricity)	kWh		0.207074289	0.067785	Electricity generated - Electricity: UK T&D UK electricity - Electricity: UK WTT Electricity generated - Electricity: UK WTT T&D UK electricity - Electricity: UK
Energy Use	Natural Gas	kWh	0.182928926		0.03021	Natural gas - kWh (Gross CV) WTT Natural gas - kWh (Gross CV)
Water	Water Supply	Cubic metres			0.176685	Water supply
Water	Water Treatment	Cubic metres			0.201318	Water treatment
Travel & Transport	Diesel	Litre	2.512063885		0.61101	Liquid fuels – Diesel (average biofuel blend) WTT - liquid fuels – Diesel (average biofuel blend)
Travel & Transport	Petrol	Litre	2.097473128		0.58094	Liquid fuels – Petrol (average biofuel blend) WTT - liquid fuels – Petrol (average biofuel blend)

Travel & Transport	Battery EV	kWh		0.207074289	0.067785	Electricity generated - Electricity: UK T&D UK electricity - Electricity: UK WTT Electricity generated - Electricity: UK WTT T&D UK electricity - Electricity: UK
Anaesthetic Gases	Nitrous Oxide	Kg	265			Factor does not include supply chain emissions associated with gas manufacture. Uses GWP100 factor for N_2O = 265, consistent with IPCC AR5 report

Annexe A2 Green Action Plan – High Level Summary of Strategic Goals

NB Details of granular activity and progress of deliverables contained within separate document, “SCAS Green Action Plan”.

Strategic Goal 1 – Reduce direct carbon emissions by 47% from 2019/20 baseline by 2032
Justification: Statutory Target Mandated by NHS England “Delivering a Net Zero NHS”
Tactical Priority 1: Reduce Travel & Transport Emissions
KEY DELIVERABLE 1: **All new vehicles owned or leased by the NHS will be zero emission (excluding ambulances) by 2027.** **(NHSE Statutory Guidance: NHS Roadmap to Net Zero Travel & Transport 2023)**

Based on a lifecycle of 5 years per vehicle, this should ensure that entire non-ambulance fleet is converted to zero emission vehicles by 2032. The **SCAS Carbon Reduction Plan** calculates this will keep SCAS on course to meet statutory NHS emission reduction targets, reducing CO2 emissions by 5,533 tCO2e as part of an overall target reduction of 6,143 tCO2e.
Strategic Goal 1 – Reduce direct carbon emissions by 47% from 2019/20 baseline by 2032
Justification: Statutory Target Mandated by NHS England "Delivering a Net Zero NHS"
Tactical Priority 1: Reduce Travel & Transport Emissions
KEY DELIVERABLE 2: **From 2030, all new ambulances will be zero emission vehicles** **(NHSE Statutory Guidance: NHS Roadmap to Net Zero Travel & Transport 2023)**

Strategic Goal 1 – Reduce direct carbon emissions by 47% from 2019/20 baseline by 2032
Justification: Statutory Target Mandated by NHS England "Delivering a Net Zero NHS"
Tactical Priority 2: Reduce Entonox Emissions (which account for 7% of directly controlled CO_2 equivalent emissions)
KEY DELIVERABLE 3 : **50% reduction in Entonox emissions by 2032** (Entonox / Nitrous Oxide is 298 times more potent than CO2 as a greenhouse gas, accounting for 7% of SCAS carbon footprint)

Strategic Goal 2 – Reduce total (direct + indirect) carbon emissions by at least 73% by 2036-2038 to reach Net Zero NHS Carbon Footprint Plus by 2045
Justification: Statutory Target Mandated by NHS England "Delivering a Net Zero NHS"
Tactical Priority 3: Reduce Supply Chain Emissions
KEY DELIVERABLE 4: **Establish accurate baseline and use procurement contracts to reduce supply chain carbon emissions by 50% by 2038**

Annexe A3 Other Actions to Support Sustainable Goals

Other Actions to Support Sustainable Goals:

3	High Carbon Reduction Impact	3
2	Medium Carbon Reduction Impact	2
1	Low Carbon Reduction Impact	1

Action	Detail	Owner / Responsibility	Carbon Reduction impact	Target Completion Date *
Fleet Electrification	Install 495 chargepoints per EVRIT model; acquire electric vehicles	Sustainability / Fleet / Estates	**3**	2030 for estate work
LED Lighting	100% of buildings to be fitted with LED lighting	Estates	**2**	Dec 2025
Solar PV Survey	Survey portfolio and identify suitable sites	Estates	**2**	Dec 2024
Solar PV installations	Install on all suitable buildings within portfolio	Estates	**2**	2028
Battery Energy Storage Systems	Installed in conjunction with Solar PV to optimise the performance of Solar PV	Estates	**2**	2028

Rainwater Harvesting - survey	Conduct survey to identify sites with high water consumption e.g. Resource Centres. Low carbon impact, but an “easy win” and a highly visible commitment to sustainability.	Estates	**1**	July 2024
Sustainability Survey	Understand staff awareness of sustainability	Head of Sustainability	**1**	July 2024
Travel survey	Understand staff travel patterns, calculate carbon emissions from commuting, identify areas to introduce active travel measures.	Head of Sustainability	**1**	2023 -2028 annually
Active / Green Travel Plan	Identify measures arising from Travel Survey and implement	Head of Sustainability	**2**	2026
Heat Decarbonisation Plans	Site surveys, heat loss modelling, mechanical & electrical designs for replacing gas heating systems with electric	Estates	**2**	2025
Heat Pump Installations	As identified in Heat Decarbonisation Plans	Estates	**2**	2028
Make “Building A Net Zero NHS” e-learning module	Develop staff awareness of sustainability	Education	**2**	December 2023 - ongoing

available to all staff				
Reduction in Business Mileage	Linked to Financial Sustainability; encourage more home working and Teams meetings where feasible; requires direct mandate from Board to implement	Head of Sustainability with support from HR, Finance	**2**	Ongoing
Climate change adaptation plan	Identify impact of climate change on all departments and design measures to mitigate it	Multiple	**1**	2026
Flood risk assessment / resilience planning	Identify areas at increased risk flood risk due to climate change, formulate strategies to mitigate	Multiple departments	**1**	2026
Bike rack installations	Supporting Active Travel, reducing personal car use for commuting. Install in sites where Travel Survey identifies high demand	Estates	**1**	Dec 2025
Waste policy – update policy, zero to landfill target & eliminate single use plastics	Ensure that waste policy reflects latest sustainability goals and legislation, and that this is communicated to Suppliers	Estates / Head of Sustainability / Procurement	**1**	March 2025

Network of Green-Champions”	Encouraging more sustainable activities at a personal / micro level, promoting positive messages about sustainability	Head of Sustainability	**1**	December 2024
Green clauses incorporated into leases	Ensuring that leases allow for green upgrades / adaptations to buildings	Estates	**2**	2023 - in progress
EMS to ISO14001	Design and implement an Environmental Management System to ISO14001 standards to support Green Plan governance and facilitate SCAS legislative compliance	Head of Sustainability	**1**	December 2025
Communicate the Green Plan across SCAS	Create and implement a communications strategy to publish the Green Plan via different media including intranet, public posters and presentations and seminars	Communications / Head of Sustainability	**1**	2024 ongoing
Develop Sustainability Impact Assessment template	Create a template that managers can use and apply to decision making process, to ensure that sustainability is embedded throughout all areas of the Trust.	Head of Sustainability	**1**	March 2025