



Queen Victoria Hospital  
NHS Foundation Trust



# Technical Appendices to QVH Green Plan



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## Appendix 1

# Carbon Footprint Method Explained

## Our carbon footprint reporting boundary

The NHSE climate change strategy, “Delivering a Net Zero National Health Service”, defines NHS emissions in two groups:

**NHS Carbon Footprint** – Emissions we control directly

**NHS Carbon Footprint Plus** – Emissions we can influence

*The Greenhouse Gas (GHG) Protocol Corporate Accounting and Reporting Standard* **Control Approach** sets out defined scopes for emissions:

**Scope 1:** direct emissions. These occur from sources owned or controlled by the reporting organisation.

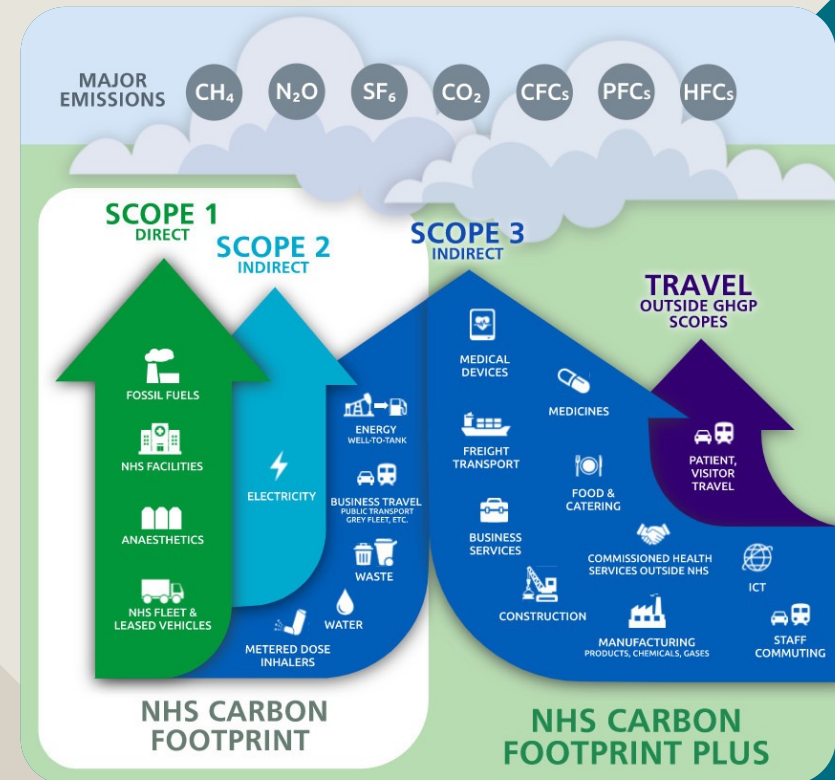
**Scope 2:** (indirect) purchased energy emissions occurring as a result of purchased energy consumed by the reporting organisation, but where the emissions occur from another organisation (mostly electricity).

**Scope 3:** other indirect emissions. All other emissions that occur as a consequence of organisational activity, but which are not reportable in Scope 1 or 2.

The NHSE climate change strategy also commits to net zero for emissions relating to patient and visitor travel which falls outside of these scopes.

The approach adopted by Queen Victoria Hospital NHS Foundation Trust is to report on emissions from the activities over which it exerts operational control. In other words, the accounting boundary is drawn around the clinical services that the Trust is commissioned to deliver, and which are therefore delivered in accordance with Trust policies and procedures.

## Our carbon footprint reporting boundary





## Measuring Our Carbon Footprint

When measuring our carbon footprint, we use a baseline year of 2019/20, in line with national NHS guidance. The data included in our carbon footprint is associated with the main Queen Victoria Hospital site only. We do not yet include emissions from our 'spoke' sites in our footprint but will look to do so in future. We use the following methodology for calculating emissions relating to each source:

### Energy and Water

Energy and water consumption figures are generally calculated from supplier data as follows:

- Invoices and half-hourly meter reads from our utility suppliers provide consumption data.
- Consumption figures are then converted into carbon emissions using UK Government Greenhouse Gas Conversion Factors.

### Medical Gases

The volume of Nitrous Oxide purchased by the trust is provided by the supplier. This is then converted to carbon using UK Government Greenhouse Gas Conversion Factors.

Emissions from fluranes are calculated using the volume and Dr Tom Pierce's RCoA tool.

### Waste

The weight of waste for each category is calculated from supplier reports. In order to convert waste consumption to carbon impact, we use UK Government factors for general, and recycled waste. Government factors are not available for clinical waste; in place of these we use factors from the National Atmospheric Emissions Inventory.

### Travel

Travel emissions are calculated as follows:

- Trust fleet emissions are calculated from the litres of fuel purchased using fuel cards relating to each trust vehicle. These are converted to carbon impact using UK Government Greenhouse Gas Conversion Factors based on the type of fuel used.
- Business mileage vehicle claims have been converted to carbon impact using UK Government Greenhouse Gas Conversion Factors based on the fuel type and engine size of the vehicle.
- Public Transport business mileage claims have been converted to carbon impact using UK Government Greenhouse Gas Conversion Factors based on mode of transport used. In 19/20 and 20/21 the separate travel modes were not

available and so a proportional split was used against the total claims based on data from subsequent years.

## Measuring Our Carbon Footprint Plus

At Queen Victoria Hospital NHS Foundation Trust, our focus to date has been implementing data collection to support regular measurement of our NHS Carbon Footprint. We are currently undertaking work to allow us to be able to confidently expand this to include emissions sources within our NHS Carbon Footprint Plus.

Greener NHS provide estimated figures for the NHS Carbon Footprint Plus for all NHS trusts through their Green Plan Support Tool data, covering the baseline year of 19/20. This includes data covering the following emission sources

- Medicines and prescribing
- Personal travel (staff commute, patient travel, visitor travel)
- Medical supply chain (clinical consumables, clinical equipment)
- Other supply chain (physical and digital infrastructure, equipment, food and catering, corporate and administrative services and other supplies and services)

- Non-NHS commissioned services (voluntary and independent organisations, personal and continuing care)

NHS England's recently published "Five years of a greener NHS: progress and forward" estimates that 24/25 indirect emissions have seen a small increase since 19/20. As such, we have then used 19/20 figures as an estimate for our 24/25 impact for indirect emissions for both our carbon footprint figures, and our Net Zero NHS Carbon Footprint Plus Roadmap.

More information about the approach to carbon footprinting developed by the Greener NHS team can be found in [www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(20\)30271-0/fulltext](http://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30271-0/fulltext)



## NHS Carbon Footprint emissions by source and per FTE

Using the above methodology, our calculated NHS Carbon Footprint by emission source is set out below. We have set this against the number of Full Time Equivalent (FTE) staff in each year to give an indication of level of service delivery.

Annual carbon emissions (tCO <sub>2</sub> e)						
Source	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Fossil Fuels	1,178	1,213	1,178	1,006	876	1,030
NHS Facilities	0	0	0	0	0	0
Medical Gases	173	162	126	165	131	43
NHS Fleet and Leased vehicles	0	1	4	3	3	4
Purchased Electricity	1,007	926	806	765	687	853
Energy WTT	392	376	501	441	370	451
Business Travel	129	38	11	20	22	28
Waste	27	27	30	71	40	7
Water	17	15	12	11	8	8
NHS Fleet & Leased Vehicles WTT	0	0	1	1	1	1
Business Travel WTT	16	5	3	3	4	4
Metered Dose Inhalers	0	0	0	0	0	0
<b>Total Emissions (NHS Carbon Footprint)</b>	<b>2,938</b>	<b>2,762</b>	<b>2,673</b>	<b>2,486</b>	<b>2,141</b>	<b>2,428</b>
% change against baseline year (tCO <sub>2</sub> e)	0%	-6%	-9%	-15%	-27%	-17%
Year on year % change		-6%	-3%	-7%	-14%	13%
FTE staff	863	897	913	915	935	997
Emissions per FTE	3.4	3.1	2.9	2.7	2.3	2.4
% change against baseline year (tCO <sub>2</sub> e/FTE)	0%	-10%	-14%	-20%	-33%	-29%



## Appendix 2

# Net Zero Carbon Roadmap: our approach

### Target Emissions

The recent “*Delivering a Net Zero National Health Service*” report, sets out two clear targets for the NHS, as follows:

- Net zero carbon by 2040 for the emissions we control directly (NHS Carbon Footprint).
- Net zero carbon by 2045 for the emissions we can influence (NHS Carbon Footprint Plus).

The strategy also sets out interim ambitions to:

- Reach an 80% reduction in NHS Carbon Footprint by 2028 to 2032 (based on 1990 emission levels). This equates to reducing emissions by at least 47% by 2028-2032 based on our 2019/20 baseline.
- Reach an 80% reduction in NHS Carbon Footprint Plus by 2036 to 2039 (based on 1990 emission levels). This equates to reducing emissions by at least 73% by 2036-2039, based on our 2019/20 baseline.

Our Net Zero Carbon Roadmap for direct emissions uses an interim target of 47% reduction by 2030/31.

### Reductions due to external factors

Some carbon savings are expected from external factors outside of organisational control, for example expected grid decarbonisation and transition to EVs. To account for these within the Net Zero Roadmap, we have calculated the impact of these factors from 2024 to our interim target. This is based on the following assumptions:

- **Grid decarbonisation:** Expected electricity grid decarbonisation calculated from expected emissions factors set out in the HM Treasury 2022 Green Book guidance. These are aligned to published emission factors to give the estimated impact of grid decarbonisation to 2030.
- **Natural gas:** Assumed 5% reduction in natural gas emissions by 2040 based on assumptions around new tech/Hydrogen.

- **Water:** Assumed 5% reduction in water emissions by 2040 based on assumptions around new tech and grid decarbonisation.
- **EV transition:** From 2030, new petrol and diesel cars will no longer be available for sale in the UK. For this Roadmap, we have assumed 1% reduction per year for business travel emissions based on current trends of the uptake of Electric Vehicles.



## Delivery Plan projects

The estimated additional carbon savings as a result of confirmed and potential projects are calculated to 2030. In most cases these are a direct carbon reduction per year (often phased in its implementation in line with the project timeline). Note the following caveats:

- For projects that involve transition from gas to electricity there may be an expected increase in electricity but overall, these will have a net reduction in emissions.
- For any project with electricity savings, the expected impact is calculated in line with expected grid decarbonisation savings using the same methodology as detailed in the External Factors section.

## NHS Carbon Footprint Plus Roadmap

Our NHS Carbon Footprint Plus Roadmap sets out our trajectory to 2045 from the 19/20 baseline year using NHS England data as set out in Appendix 1.

The roadmap used an interim target of 73% reduction by 2038/39 which gives an almost straight line reduction trajectory to 2045/46.

The ‘estimated emissions’ shown are estimates based on 19/20, and on NHS England’s recently published “Five years of a greener NHS: progress and forward” report. The chart in figure 6 indicates the estimated proportion reductions required in each of the key areas calculated.

More information about the approach to carbon footprinting developed by the Greener NHS team can be found in:

[www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(20\)30271-0/fulltext](http://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30271-0/fulltext)







## Appendix 3 Targets

A summary of the Green Plan targets from across our workstreams is provided below. These – alongside more detailed KPIs – are or will be measured and reported on through our Sustainability Programme Board.




Targets will also be developed over time, for example where targets run only to halfway through the plan period (e.g. climate resilience workstream), or where we don't yet have enough information to set targets (e.g. NHS Carbon Footprint Plus). This will ensure we are able to keep track of progress over time effectively.

Core Green Plan aim	Measure	Target	Target Date	Unit
Net Zero Carbon Footprint Targets	NHS CF (direct) emissions	47% reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
	NHS CF+ (indirect) emissions	42% reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
Climate resilience	NHS Climate Change Risk Assessment completed	Yes	2027/28	Y/N
Environment Act. Focus on: air pollution and biodiversity	<b>Air pollution</b>			
	Emissions from fleet and business travel	47% reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
	<b>Biodiversity</b>			
	Number of biodiversity interventions per year	1	Each year to 2030/31	#



Workstream	Measure	Target	Target Date	Unit
<b>Sustainable Clinical Practice</b> 	Emissions from Nitrous Oxide	Reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
	% of outpatient appointments delivered remotely	25%	2030/31	%
	% of priority single use items with clearly defined processes to switch to reusable alternatives	100%	2026/27	%
<b>Circular Economy</b> 	Emissions from waste	47% reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
	% of requirements of the Net Zero Supplier Roadmap met	100%	Each year to 2030/31	%
	% of NHSCF+ priority supply chain categories with smart targets	100%	2027/28	%
<b>Places</b> 	Emissions from estate	47% reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
	kWh of electricity generated on site from renewable sources	50% increase on 24/25 level	2030/31	kWh
	Number of biodiversity interventions per year	1	Each year to 2030/31	#
<b>Journeys</b> 	Emissions from fleet and business travel	47% reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
	Emissions from staff commute	39% reduction on 2019/20 baseline	2030/31	tCO <sub>2</sub> e
	Percentage of trust operational fleet which are EVs	100%	2030/31	%



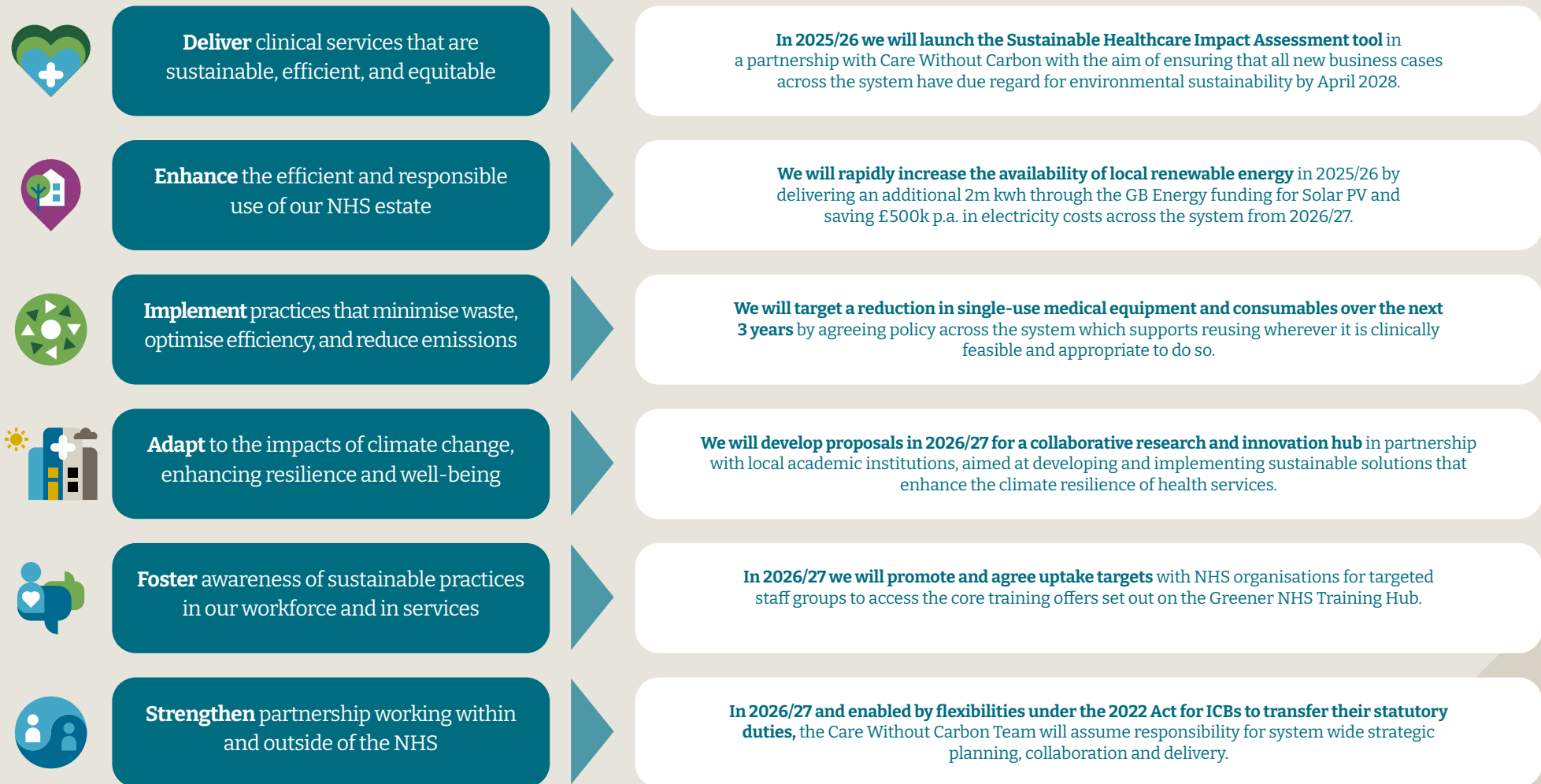
Workstream	Measure	Target	Target Date	Unit
<b>Culture</b> 	% of staff responding to staff survey who indicate an understanding of sustainable healthcare	10% increase	2030/31	%
	CWC Envoy network or similar established?	Yes	2027/28	Y/N
	% of top 5 priority teams who have had team member attend specialised training (cumulative)	100%	2027/28	%
<b>Partnerships and Collaboration</b> 	Report annually on delivery of Green Plan requirements	Yes	Each year to 2030/31	Y/N
	SMART target developed demonstrating approach to integrating sustainability into Trust decision-making in line with Health and Social Care Act requirements	Yes	2026/27	Y/N
	% of workstreams having learning from Green Plan projects shared outside of QVH within the last two years	100%	2027/28	%
<b>Climate Resilience</b> 	NHS Climate Change Risk Assessment completed	Yes	2026/27	Y/N
	Climate Resilience Plan developed	Yes	2027/28	Y/N



## Appendix 4

# Together to Zero: NHS Sussex green plan refresh

## Key objectives and priorities for the next 3 years





## Appendix 5

# How we will prioritise our efforts

The landscape for sustainable healthcare is complex and evolving, with critical pressures on resource across the NHS. Delivery of our Green Plan is dependent on effective use of our limited resource; as such prioritisation of our work to the most material areas of impact is key. We have taken the following approach to the development of this Green Plan.

### A data driven approach

In order to ensure effective delivery, we have taken a data-lead approach to our Green Plan programme. We use our annual carbon footprint and workstream level data to understand our impacts, identify hotspot areas, set clear targets for change and measure the impact of our work over time.

This has been our approach to development of our Net Zero Roadmap and Delivery Plans for our NHS Carbon Footprint and NHS Carbon Footprint Plus. It has also determined our approach to delivery, for example identifying and prioritising high impact clinical services such as operating theatres for workstream support on reusables projects.

In this way we can use data to focus our efforts on the highest impact areas and ensure change is improvement.

### Guided by our stakeholders

As set out in this Green Plan, stakeholder engagement has also been key to developing this Green Plan and will also support our more detailed delivery planning.

We gathered qualitative data from staff 1-2-1s, staff survey data and wider stakeholder engagement to identify the key challenges to and opportunities for delivery.

We used this information to corroborate key areas of focus, develop our core objectives and support additions or nuances to workstreams. We will also use this data to support more detailed delivery planning as we develop our detailed action plans for 26/27 and beyond.

### National legislation, guidance, best practice and experience

In addition to trust level data and insight, we have also sought learning from elsewhere to develop our Green Plan programme. This includes:

- The core aims of this Green Plan are aligned with the legal requirements of the Health and Social Care Act 2022.
- Our Green Plan refresh is also in line with the recently published NHSE Green Plan refresh guidance as well as their original Delivering a Net Zero NHS strategy. This provides us with a good grounding in terms of materiality and prioritisation.

- Legal and regulatory requirements set out earlier in this Green Plan.
- NHSE or specialist guidance (e.g. NHS Travel and Transport Strategy).
- Best practice examples (for example learning from Circular Economy Healthcare Alliance, Centre for Sustainable Healthcare or other leading NHS trusts).
- Our learning at CWC from working across a number of Trusts in Sussex and Surrey, which brings a depth of knowledge and experience to the programme.



## **Taking a CI approach – aligned around legal requirements**

The core aims of this Green Plan are aligned with the legal requirements of the Health and Social Care Act 2022.

We've used learning from our data, stakeholder engagement and review of guidance and best practice to develop an overarching driver diagram based around these core aims and to identify our key objectives.

More detailed driver diagrams have then been developed for each of our core areas of work (our workstreams). These have helped us to produce our workstream level plans – including key commitments, targets and priority project areas.

Following development of this Green Plan, detailed action plans will be developed and delivered through our Green Plan Group.

## **Next steps: ongoing review and risk**

Climate change is evolving at pace – as is our knowledge and understanding around how to mitigate and adapt within the healthcare sector. In addition our context within the NHS evolves each year, providing new challenges around resource and capacity to deliver.

In light of this, our Green Plan programme will be reviewed and re-prioritised each year to reflect the most recent context, and with priorities confirmed through the Green Plan Group.

This prioritisation will also support the development of our approach to climate change risk assessment and reporting at QVH. As set out in the Partnerships and Collaboration workstream, a key action for 26/27 is to review our approach to and requirements for climate risk reporting and integrate into Trust risk reporting structure accordingly.



**In order to achieve our Green Plan aims**

**We need to ensure**

**Which requires work in these areas**

Reduce our emissions to **Net Zero by 2040/45**

**Reduce direct emissions to net zero by 2040** (interim target of 47% by 2030/31)

**Reduce indirect emissions to net zero by 2045** (interim target of 73% by 2036-39)

 **Sustainable Clinical Practice**

 **Circular Economy**

 **Places**

 **Journeys**

Address the **targets within the Environment Act 2021**

**Improve** biodiversity, air quality, reduce waste, conserve clean water

**Adapt our services and buildings** to the impacts of climate change

**Identify key impacts**, assess risk to patients and service delivery and develop mitigations.

 **Climate resilience**

**'Have regard to'** legal duty (our enablers)

**Staff awareness of climate change** and capacity/skills to integrate into day-to-day work

**Integration of sustainability** into decision making

**Assurance of Green Plan delivery and maximising impact** of the programme through partnerships



 **Culture**

 **Partnerships and Collaboration**



## Appendix 6

# NHSE Green Plan Targets

	2025	2026	2027	2028	2029	2030
<b>Journeys</b> 		<b>Sustainable Travel Strategies</b> Sustainable travel strategies will be developed and incorporated into NHS organisations' Green Plans. <b>Salary Sacrifice Schemes</b> All vehicles offered through NHS vehicles salary sacrifice schemes will be electric.	<b>Electric Vehicles</b> All new vehicles owned or leased by the NHS will be zero emission (excluding ambulances).			<b>Staff Commute</b> Reduce emissions by 39% by 2030/31 in line with Net Zero Travel & Transport Strategy target to reduce by 50% by 2033.
<b>Circular Economy</b> 		<b>Waste</b> NHS trusts and NHS foundation trusts to eliminate waste sent to landfill.	<b>Net Zero Supplier Roadmap</b> All suppliers required to publicly report targets, emissions and publish a Carbon Reduction Plan for global emissions.	<b>Net Zero Supplier Roadmap</b> New requirements will be introduced overseeing the provision of carbon footprinting for individual products supplied to the NHS.		<b>Net Zero Supplier Roadmap</b> Suppliers should only qualify for NHS contracts if they can demonstrate progress through published progress reports and continued carbon reporting.
<b>Places</b> 		<b>Water Efficiency</b> NHS trusts to review options to install leak detection systems.		<b>Fossil Fuel Heating</b> Remove coal and oil-led primary heating systems. <b>Energy Efficiency</b> NHS trusts and primary care to review options to install energy metering at all sites (floor level). <b>Drainage</b> NHS trusts to carry out sustainable urban drainage system assessments		
<b>Climate Adaption</b> 	<b>Emergency Planning</b> NHS trusts must have specific plans for flooding and overheating.					



Reach net zero carbon footprint by 2040, reducing emissions by at least 47% against 2019/20 emissions by 2030-31  
 Reach net zero carbon footprint plus by 2045, reducing emissions by at least 73% against 2019/20 emissions by 2036-39

## The following acronyms are used throughout the report

**CDC** – Community Diagnostic Centre

**CF** – Carbon Footprint

**CF+** – Carbon Footprint Plus

**CI** – Continuous Improvement

**CWC** – Care Without Carbon

**E&F** – Estates and Facilities

**EPR** – Electronic Patient Record

**EPRR** – Emergency Preparedness, Resilience and Response

**EV** – Electric Vehicle

**FTE** – Full Time Equivalent

**GP** – General Practice

**GPOG** – Green Plan Oversight Group

**H&SC** – Health and Social Care

**HEARTH** – National Hub on Net Zero, Health and Extreme Heat

**ICB** – Integrated Care Board

**ICS** – Integrated Care System

**KPI** – Key Performance Indicator

**kWh** – Kilowatt Hour

**LCSF** – Public Sector Low Carbon Skills Fund

**NHSCF** – NHS Carbon Footprint

**NHSCF+** – NHS Carbon Footprint Plus

**NHSE** – NHS England

**NZ** – Net Zero

**NZC** – Net Zero Carbon

**PDR** – Personal Development Review

**PSDS** – Public Sector Decarbonisation Scheme

**QIA** – Quality Impact Assessment

**QVH** – Queen Victoria Hospital NHS Foundation Trust

**SHIA** – Sustainable Healthcare Assessment Tool

**SMART targets** – Specific, Measurable, Achievable, Relevant, and Time-bound targets

**tCO<sub>2</sub>e** – Tonnes of Carbon Dioxide equivalent emissions

**WTT** – Well to Tank



## Find out more

### Contact us

**Simon Marshall**

Chief Financial Officer

[simon.marshall14@nhs.net](mailto:simon.marshall14@nhs.net)

See the QVH website at:

[www.qvh.nhs.uk](http://www.qvh.nhs.uk)

For more information on

Care Without Carbon visit:

[www.carewithoutcarbon.org](http://www.carewithoutcarbon.org)