



**Buckinghamshire  
Healthcare  
NHS Trust**

# **Buckinghamshire Healthcare NHS Trust**

Net Zero Carbon Roadmap

August 2021

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# INTRODUCTION

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Since the Paris agreement in 2016, the countries of the united nations have been mobilised to act on the amount of carbon emissions that are being released into our atmosphere. The effects of climate change are far reaching and impact the foundations of population health as well as health on a more individual level. This of course will have direct implications for the operations of Buckinghamshire Healthcare NHS Trust (BHT), as well as **the** patients it treats.

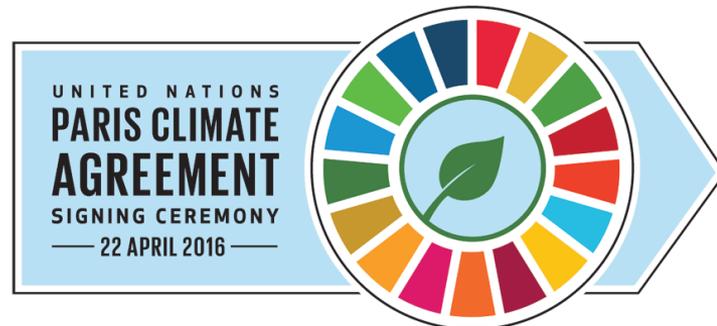
Without change there will be increases in the intensity of heatwaves which increase heat stress and related conditions, and heavier precipitation events with increase in associated water borne diseases.

Following the Paris agreement, the UK government has committed to reducing emissions to Net Zero by 2050, with incremental carbon budgets from today until the final target date. Following on from this, the NHS has subsequently produced its Net Zero Roadmap document - 'Delivering a Net Zero National Health Service' - setting out its plan for reducing emissions over the next 20-25 years.

The NHS's carbon emissions are currently equivalent to 4% of England's total carbon footprint of which the Buckinghamshire Healthcare NHS Trust is a typical contributor. Over the last 10 years, the NHS as a whole has implemented measures to reduce its impact on climate change, which will also lead to benefits in clinical outcomes.

The NHS has committed to net zero emissions for the care they provide (NHS Carbon Footprint) by 2040, and zero emissions across their entire scope of emissions (NHS Carbon Footprint Plus) by 2045.

Following on from the NHS' Net Zero declaration, BHT commissioned AESG to carry out a similar exercise to understand the carbon footprint of the trust, and set out a roadmap to reducing emissions inline with the targets set out within the NHS' overarching net zero roadmap.



## Delivering a 'Net Zero' National Health Service

# SCOPE

In order to establish the carbon footprint of the trust and the road map to net zero, the scope of emissions that will be included needs to be defined. The categories for the different areas of emissions follows the Greenhouse Gas Protocol (GHGP) scopes as detailed below.

The GHGP scopes cover a wider set emissions and support international comparison and transparency. The 25 scopes are prescribed into 1 of the 3 categories outlined as follows:

- **GHGP scope 1:** Direct emissions from owned or directly controlled sources, on site
- **GHGP scope 2:** Indirect emissions from the generation of purchased energy, mostly electricity
- **GHGP scope 3:** All other indirect emissions that occur in producing and transporting goods and services, including the full supply chain.

These targets do not, however, cover the full scope of emissions from the BHT, as there are still some emissions that fall outside these scopes. The image to the right illustrates emissions that have been taken into account in the formulation of the NHS's net zero roadmap which has subsequently informed the BHT scope of emissions. We have included all three of the scopes above, as well as emissions from patient and visitor travel to and from NHS services and medicines used within the home (which would typically not be included as it is out of an organisations control).

The table below outlines the scopes that have been taken into account within the carbon foot printing exercise. These are mostly similar to those within the NHS's net zero roadmap, however, some categories have been altered slightly to suit the context of the secondary care covered by BHT.

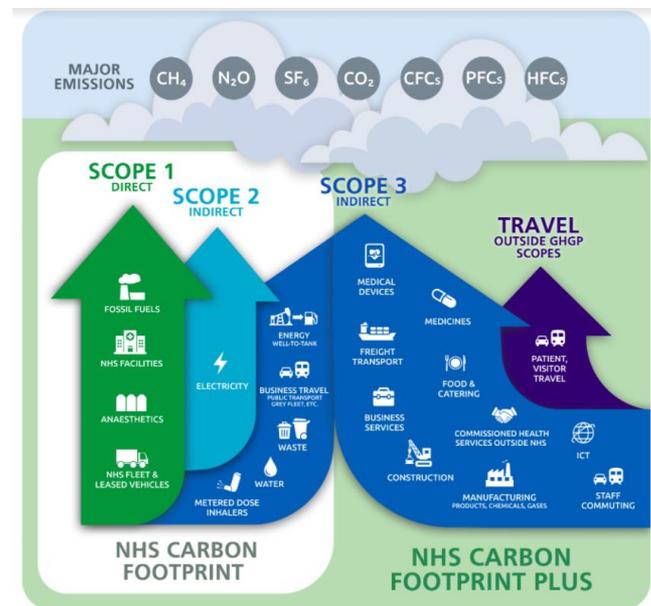


Figure 1: GHGP scopes in the context of the NHS

Table 1: GHGP scopes in the context of the BHT

Scope 1 Cat 1	Scope 1 Cat 2	Scope 1 Cat 3	Scope 1 Cat 4	Scope 2	Scope 3 Cat 1	Scope 3 Cat 2	Scope 3 Cat 3	Scope 3 Cat 4	Scope 3 Cat 5	Scope 3 Cat 6	Scope 3 Cat 7	Scope 3 Cat 8	Scope 3 Cat 9	Scope 3 Cat 10	Scope 3 Cat 11	Scope 3 Cat 12	Scope 3 Cat 13	Scope 3 Cat 14	Scope 3 Cat 15
Natural Gas	Anaesthetics	Staff Business Travel	Medical Gases	Electricity	Medicines	Food & Catering	Water Consumption	Business Services	Non-Medical Equipment	Metered Dose Inhalers	Medical Devices	ICT Equipment	Construction	WTT	Waste	Patient & Visitor Travel	Employee Commuting	Commissioned Health Services outside NHS	Other

# APPROACH

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The approach for developing this Net Zero Carbon Roadmap for Buckinghamshire Healthcare NHS Trust (BHT) followed the approach set out within the NHS's net zero roadmap. A number of processes and inputs have been followed to inform the targets and trajectories for defining the current footprint and outlining the pathway to net zero. A four-step analytical process, described below, was followed to establish these trajectories:

## **Establishing the Carbon Footprint Baseline**

A complete evaluation of the BHT carbon footprint was conducted to calculate the present-day carbon emissions. This was carried out using a two-way approach, combining 'bottom-up' validation (drawing on a range of inputs from BHT, including local travel, buildings and medicines data) with 'top-down' modelling (drawing on financial activity data). This is described in more detail in the subsequent 'Methodology' section of this document.

The information was gathered through a series of workshops and meetings with different parts of the trust to ensure that all the available data was captured and that it was suitably validated.

## **Backcasting and Forecasting**

The data collected was applicable across varying annual periods, with some data such as gas and electricity consumption available for numerous years, and other data only available for a couple of years (medical gases). Therefore, scenarios were modelled to understand the emissions from the BHT over the entire study period, going back to the 1990 baseline (backcasting), as well as forward towards 2040 (forecasting).

Backcasting data was calculated from a variety of sources including nationwide carbon factors as well as NHS specific source contribution data for certain categories. Whereas forecasting data was calculated using population projection data, predicted BHT spend data amongst other sources.

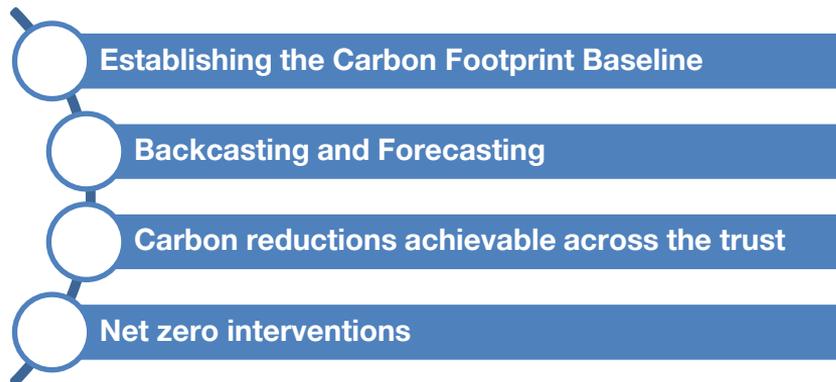
## **Carbon reductions achievable across the trust**

In order to understand the carbon reductions achievable for the various different category areas across the trust, a second series of workshops were held. The workshops were carried out to understand the pragmatic implications of various interventions and to understand the boundary of what was achievable for the trust. Available reductions for each of the key sources of carbon were then estimated, which informed the system-wide targets for net zero.

## **Net zero interventions**

Drawing on the knowledge gained within the workshops carried out as part of the previous exercise as well as the information contained within the NHS's net zero roadmap, an extended set of interventions and carbon reductions were modelled, to set out a series of robust and credible trajectories.

These interventions were split broadly into those that are influenced primarily by the activities of the trust, and those that are influenced by wider national and international initiatives and policies..



# METHODOLOGY

The BHT carbon footprint was quantified for the categories outlined within the scope section of this report. Emissions within scopes 1, 2, and 3, as well as 'out of scope' patient and visitor travel emissions, from 1990 to 2020. The estimates blend:

- Location-generic (top-down) results for categories that can only be measured in economic terms, or that are too complex to model physically. Financial information is combined with environmentally extended input output (EEIO) carbon intensities per unit spend (kgCO<sub>2</sub>e/£).
- Product and location-specific (bottom-up) results for categories that can be measured and described physically. Organisational data collections of activity (units of energy, waste, travel miles, etc) are combined with carbon factors from BEIS.

The table to the right outlines how the data was collated for each of the different categories, the years at which the data was available, as well as how the data was projected back and forward.

**Table 2: Methodology for data collection and projecting for all categories**

Category	Bottom-up or Top-down	Source	Backcast Years	Actual Data	Projection Years	Projection Basis
<b>Scope 1</b>						
<u>Cat 1 – Fossil Fuel Combustion</u>	Bottom-up	Gas consumption	1990-2006	2006-2020	2021-2040	Based on gas consumption trends
<u>Cat 2 – Anesthetics</u>	Bottom-up	Anesthetic consumption	1990-2018	2019-2020	2021-2040	Based on population projections
<u>Cat 3 – Staff Business Travel</u>	Bottom-up	Vehicle fuel consumption	1990-2019	2020	2021-2040	Leased vehicle usage assumed to remain constant
<u>Cat 4 – Medical Gases</u>	Bottom-up	Medical gas consumption	1990-2018	2019-2020	2021-2040	Based on population projections
<b>Scope 2</b>						
<u>Cat 1 – Electricity</u>	Bottom-up	Electricity consumption	1990-2005	2006-2020	2021-2040	Based on energy consumption trends
<b>Scope 3</b>						
<u>Cat 1 – Medicines</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on population projections
<u>Cat 2 – Food &amp; Catering</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend
<u>Cat 3 – Water Consumption</u>	Bottom-up	Water consumption	1990-2006	2007-2020	2021-2040	Based on population projections
<u>Cat 4 – Business Services</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend

# METHODOLOGY

## Bottom-up Projections

For categories that can be measured and described physically (bottom-up), historical trends and known interventions have been used to create independent assumptions for each category of emissions. Both activity (changes in energy use, travel, spend, etc) and carbon intensities are combined to produce a forecast of emissions for each year to 2050.

## Top-down Projections

For categories that can only be measured in economic terms, expenditure has been modelled in line with Office for National Statistics (ONS) and Office for Budget Responsibility (OBR) published projections of health expenditure and the BHT proportion of this in England has been calculated using known expenditure figures.

Category	Bottom-up or Top-down	Source	Backcast Years	Actual Data	Projection Years	Projection Basis
<u>Cat 5 – Manufacturing</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend
<u>Cat 6 – Metered Dose Inhalers</u>	Bottom-up	Inhaler prescription data	1990-2018	2019-2020	2021-2040	Based on population projections
<u>Cat 7 – Medical Devices</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend
<u>Cat 8 – ICT Equipment</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend
<u>Cat 9 – Construction</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend
<u>Cat 10 – WTT</u>	Bottom-up	Fuel and electricity consumption	1990-2006	2006-2020	2021-2040	Based on gas consumption trends
<u>Cat 11 – Waste</u>	Bottom-up	Waste consumption	1990-2006	2015-2020	2021-2040	Based on population predictions
<u>Cat 12 – Patient &amp; Visitor Travel</u>	Data not currently available in required format (km travelled per transport mode) for carbon assessment, % contribution towards carbon footprint has been aligned with overall NHS carbon assessment.					
<u>Cat 13 – Employee Commuting</u>	Bottom-up	Leased vehicle fuel consumption	1990-2019	2020	2021-2040	Leased vehicle usage assumed to remain constant
<u>Cat 14 – Health Services commissioned outside NHS</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend
<u>Cat 15 – Other</u>	Top-down	Total £ Spent	1990-2015	2016-2020	2021-2040	Based on OBR FSR projected healthcare spend

# CARBON FOOTPRINT BASELINE

As outlined within the previous sections, the first step in the development of the Net Zero pathway was to determine the Carbon Footprint Baseline for BHT.

Table 2 to the right shows the proportion of carbon emissions for all of the different categories assessed for BHT. The areas emitting the largest quantities of carbon are in the supply chain, estates and facilities, medical gases, medical devices, and travel. These areas therefore also offer the biggest opportunity – or challenge – for change.

The current carbon footprint of the trust has been calculated at 40,986 tonnes of CO<sub>2</sub> per annum. 2019 was used as the baseline year for the carbon footprinting so that our backcasting and forecasting data was not erroneously influenced by the impacts of COVID in 2020.

The trust needs to reduce CO<sub>2</sub> emissions by **80% by 2032** and to **Zero Carbon by 2040**, through a combination of intervention measures detailed within the subsequent sections of this report, combined with off-setting once all possible action has been taken.

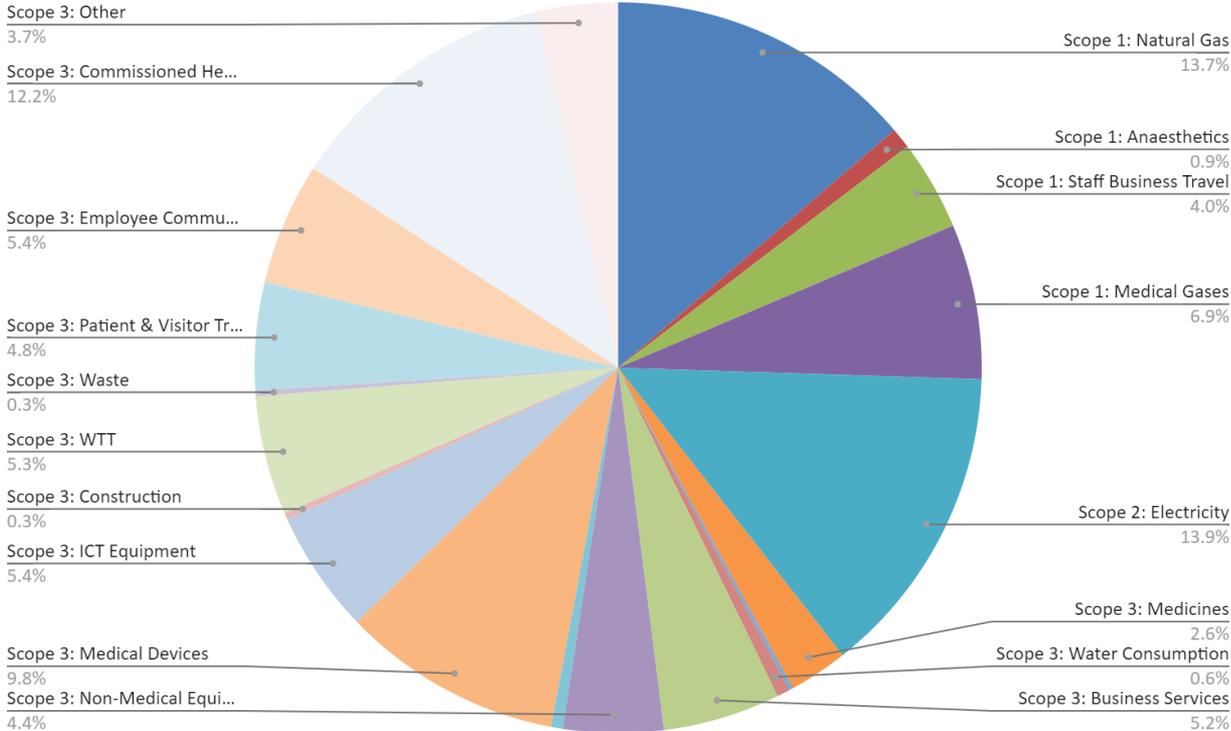
**Table 3: Carbon emissions by category**

	Category	Tonnes CO <sub>2</sub> e	% contribution
Scope 1 Cat 1	Natural Gas	5,627	13.7%
Scope 1 Cat 2	Anaesthetics	374	0.9%
Scope 1 Cat 3*	Staff Business Travel	1,640	4.0%
Scope 1 Cat 4*	Medical Gases	2,809	6.9%
Scope 2	Electricity	5,703	13.9%
Scope 3 Cat 1	Medicines	1,066	2.6%
Scope 3 Cat 2	Food & Catering	79	0.2%
Scope 3 Cat 3	Water Consumption	232	0.6%
Scope 3 Cat 4	Business Services	2,138	5.2%
Scope 3 Cat 5	Non-Medical Equipment	1,822	4.4%
Scope 3 Cat 6	Metered Dose Inhalers	213	0.5%
Scope 3 Cat 7	Medical Devices	4,017	9.8%
Scope 3 Cat 8	ICT Equipment	2,225	5.4%
Scope 3 Cat 9	Construction	122	0.3%
Scope 3 Cat 10	WTT	2,158	5.3%
Scope 3 Cat 11	Waste	107	0.3%
Scope 3 Cat 12	Patient & Visitor Travel	1,950	4.8%
Scope 3 Cat 13	Employee Commuting	2,220	5.4%
Scope 3 Cat 14	Commissioned Health Services outside NHS	4,983	12.2%
Scope 3 Cat 15	Other	1,501	3.7%
<b>TOTAL</b>		<b>40,986</b>	<b>N/A</b>

# CARBON FOOTPRINT BASELINE

Figure 2 to the right provides further illustration of the proportion of carbon emissions for all the different categories assessed for BHT.

The carbon footprinting exercise was subsequently used to inform and formulate the carbon reductions and net zero interventions sections which are detailed



**Figure 2: Sources of carbon emissions by proportion of the BHT's carbon footprint**

# NET ZERO INTERVENTIONS

## DETERMINING STRATEGIC INTERVENTION AREA

In order to determine the strategic interventions that form the basis of the Net Zero Roadmap, a series of workshops were held to gain knowledge on:

- Opportunities and constraints relating to the achievement of Net Zero, both in terms of pragmatic implications and financial limitations
- Organizational structure, roles and responsibilities and how these will impact the delivery of the roadmap.

Subsequently, an extended set of interventions and carbon reductions were modelled, to set out a series of robust and credible trajectories. These interventions were split broadly into those that are influenced primarily by the activities of the trust, and those that are influenced by wider national and international initiatives and policies.

The carbon footprint assessment undertaken during the initial stage was utilised to understand the key interventions required to deliver net zero. Review of the proportions of emissions attributable to each category of emissions set the basis for the target carbon reduction (as a percentage of the footprint).

Some of the intervention areas will impact multiple carbon emission categories. For example, the digital care pathway redesign area (such as digital wards, improving population health, clinical efficiency) will aim to reduce emissions from travel, hospital energy and the medical equipment.

The intervention areas set out will therefore aim to deliver savings across the entirety of BHT's footprint. The 2 columns to the right outline the intervention areas split into those that are influenced primarily by the activities of the trust, and those that are influenced by wider national and international initiatives and policies.

### NATIONAL INTERVENTIONS



**NATIONAL GRID DECARBONISATION**



**NATIONAL SUPPLY CHAIN DECARBONISATION**



**NATIONAL VEHICLE DECARBONISATION**



**INTERNATIONAL CARBON REDUCTIONS AFFECTING SUPPLY CHAIN**



**ZERO EMISSION VEHICLES VISITING THE TRUST**



**SUPPLIER ALIGNMENT TO NET ZERO COMMITMENTS**



**LOW-CARBON SUBSTITUTIONS AND PRODUCT INNOVATION**



**RESEARCH, INNOVATION AND OFFSETTING**

### BHT INTERVENTIONS



**DIGITAL CARE PATHWAY REDESIGN**



**LOW-CARBON MODELS OF CARE & PREVENTATIVE MEDICINE**



**REDUCTION OF MEDICAL GAS EMISSIONS & SHIFT TO LOW CARBON INHALERS**



**TRAVEL FOR CARE AND BUSINESS; COMMUTING, PATIENTS & VISITORS**



**BUILDING ENERGY & RENEWABLES**



**WATER, WASTE & FOOD**



**SUPPLY CHAIN PROCUREMENT AND MORE EFFICIENT USE OF SUPPLIES**

# NET ZERO INTERVENTIONS

## STRATEGIC INTERVENTION APPROACH

Once each of the intervention areas had been decided, the area(s) of influence for each of these was determined, some of which impacted multiple carbon emission categories.

The areas of influence were then taken into account, along with the outcomes of the BHT staff workshops, in the formulation of the smart aims within each strategic intervention area. The ambition of each of the smart aims was also scoped during the workshops in respect to the pragmatic implications and financial constraints of the various improvement measures.

Each of the smart aims that has been set out is specific, measurable, achievable, verified with the BHT team, realistic and time-bound. The establishment of such aims will enable progress to be tracked and to maintain strong progress against the overall targets. For each of the smart aims, separate objectives have been identified that will assist in the delivery of the targets set out.

Subsequently, an action plan was developed for each of the smart aims, which outlines interim targets between now and 2040, enabling progress to be more easily tracked. This also enables the targets to appear more tangible to BHT staff, requiring immediate consideration and action in some cases. Finally, each of the smart aims contains a Key Performance Indicator.



Figure 3: The process for determining the Intervention Areas and Smart Aims

# NET ZERO INTERVENTIONS

## NATIONAL & BHT STRATEGIC INTERVENTION AREAS - AREAS OF INFLUENCE

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The following two slides outline the intervention areas that are covered within this roadmap. These have been split into those that are influenced primarily by the activities of the trust, and those that are influenced by wider national and international initiatives and policies.

The different intervention areas are listed on the left-hand side of each slide, with the categories of emissions, from Scope 1, 2 & 3, along the top. An icon has been included to indicate where the different intervention areas have an impact upon the emissions within certain carbon categories.

These are then covered within the intervention areas detailed within the subsequent sections of this report.

# NET ZERO INTERVENTIONS

## NATIONAL STRATEGIC INTERVENTION AREAS - AREAS OF INFLUENCE

		SCOPE 1				SCOPE 2	SCOPE 3																
		CAT 1 NATURAL GAS	CAT 2 ANAESTHETICS	CAT 3 LEASED VEHICLES	CAT 4 MEDICAL GASES	ELECTRICITY	CAT 1 MEDICINES	CAT 2 FOOD & CATERING	CAT 3 WATER CONSUMPTION	CAT 4 BUSINESS SERVICES	CAT 5 NON-MEDICAL EQUIPMENT	CAT 6 METERED DOSE INHALERS	CAT 7 MEDICAL DEVICES	CAT 8 ICT EQUIPMENT	CAT 9 CONSTRUCTION	CAT 10 WTT	CAT 11 WASTE	CAT 12 BUSINESS TRAVEL	CAT 13 EMPLOYEE COMMUTING	CAT 14 COMMISSIONED HEALTH SERVICES OUTSOURCING	CAT 15 OTHER		
	National grid decarbonisation																						
	National supply chain decarbonisation																						
	National vehicle decarbonisation																						
	International carbon reductions affection supply chain																						
	Zero emission vehicles visiting the trust																						
	Supplier alignment to net zero commitments																						
	Low-carbon substitutions and product innovation																						
	Research, innovation and offsetting																						

# NET ZERO INTERVENTIONS

## BHT STRATEGIC INTERVENTION AREAS - AREAS OF INFLUENCE

		SCOPE 1				SCOPE 2	SCOPE 3															
		CAT 1 NATURAL GAS	CAT 2 ANAESTHETICS	CAT 3 LEASED VEHICLES	CAT 4 MEDICAL GASES	ELECTRICITY	CAT 1 MEDICINES	CAT 2 FOOD & CATERING	CAT 3 WATER CONSUMPTION	CAT 4 BUSINESS SERVICES	CAT 5 NON-MEDICAL EQUIPMENT	CAT 6 METERED DOSE INHALERS	CAT 7 MEDICAL DEVICES	CAT 8 ICT EQUIPMENT	CAT 9 CONSTRUCTION	CAT 10 WTT	CAT 11 WASTE	CAT 12 BUSINESS TRAVEL	CAT 13 EMPLOYEE COMMUTING	CAT 14 COMMISSIONED HEALTH SERVICES OUTSOURCING	CAT 15 OTHER	
	Digital care pathway redesign																					
	Low-carbon models of care & preventative medicine																					
	Reduction of medical gas emissions & shift to low carbon inhalers																					
	Travel for care and business; commuting, patients & visitors																					
	Building energy & renewables																					
	Water, Waste & Food																					
	Supply chain procurement and more efficient use of supplies																					

# NET ZERO INTERVENTIONS

## SMART AIMS & ACTION PLANS

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The following pages set out the details for the intervention areas BHT can influence and the action plans for each of the smart aims.

Each section follows the format shown on the right, beginning with an overview highlighting the categories of emissions impacted within this intervention area and the proportion of emissions that these contribute towards. A number of examples are then included to provide a link between the interventions and the tangible measures within the trust.

A section is then included on the policy and strategy that will aid with the delivery and achievement of the targets within the smart aims. These are a combination of specific strategies as well as overarching initiatives.

This is followed by a table that details each of the smart aims, the objectives that will further assist with the delivery of these aims, the KPIs that are contained within each of the smart aims and the responsible person/role within BHT responsible for the monitoring and delivery of the specific target.

Within each intervention area, all of the smart aims are directly influenced by the trust, however, within some of the subsequent graphs for each section, the impact of wider national initiatives has been included. These have also been included within the overarching graphs in Figures 11 and 12 to show the carbon savings from BHT initiatives as well as the expected savings from the wider nationwide initiatives.

\*A graph has not been included for the Low carbon models of care & preventative medicine intervention area because it was not possible to accurately quantify the reductions in carbon achievable.

### Overview

### Policy & Strategy

### Smart Aims & Objectives

### Action Plan

# NET ZERO INTERVENTIONS

## DIGITAL CARE PATHWAY REDESIGN

### OVERVIEW

Digitilisation has a significant opportunity to assist with the drive towards net zero within the trust, and enhance patient experience. Digitally enabled care models and channels for patients will significantly reduce travel and journeys, whilst the support of front-line digitisation of clinical records, workflow and communications will help to deliver a more efficient healthcare service.

It is therefore important to consider that a rapid growth in data demand and digital equipment has the potential to add to carbon emissions unless the impact of carbon is integrated into every decision-making process. As the trust shifts to a cloud-based data system, the possibilities for utilising data in smart and efficient ways.

### POLICY & STRATEGY

#### Digitalisation Strategy & Maturity Framework

Develop a strategy and framework that develops the action plan for digitilisation that will help with carbon reductions as well as clinical outcomes.

#### Training and low carbon initiatives

Develop a strategy for the training / education of staff on the capabilities of technology in assisting clinical outcomes as well as reducing carbon emissions.

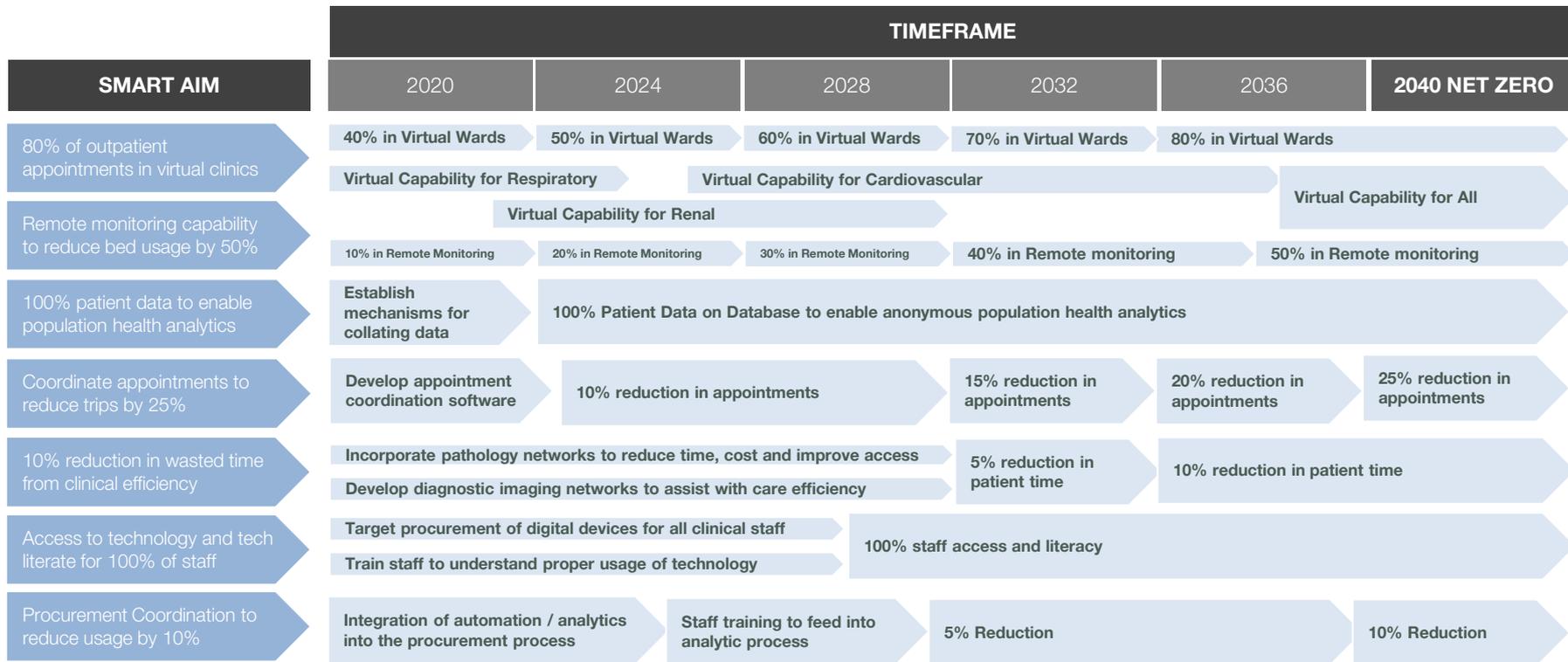
#### Digital Leadership

Appointment of leaders across the trust with informatics leadership representation on the board. In line with the successful NHS Digital Academy programme.

SMART AIMS	OBJECTIVES	KPIs	RESPONSIBILITY
80% of outpatient appointments delivered in virtual clinics	<ul style="list-style-type: none"><li>- Increase digital capacity to enable increase in virtual wards.</li><li>- Facilitate staff training to maximise awareness and effectiveness of virtual wards</li></ul>	<b>80% Virtual Wards</b>	Head of Outpatients
Remote monitoring capability to reduce bed usage by 50%	<ul style="list-style-type: none"><li>- Increase digital capacity and clinical remote equipment to enable remote monitoring</li><li>- Facilitate staff confidence in the use of remote monitoring for a variety of scenarios.</li></ul>	<b>50% Reduced occupancy</b>	Planned care
100% patient data to enable population health analytics	<ul style="list-style-type: none"><li>- Enable use of de-personalised data extracted from trust records</li><li>- Enable the trust staff to use predictive prevention to reduce hospital admissions</li></ul>	<b>100% of Data centralised</b>	Digital transformation
Coordinate appointments to reduce trips by 25%	<ul style="list-style-type: none"><li>- Digitalise trust data to display patient records under one system</li><li>- Coordinate trust systems to automatically issue appointments in time efficient manner.</li></ul>	<b>25% of Reduction in trips</b>	Head of Outpatients
10% reduction in non productive time from clinical efficiency	<ul style="list-style-type: none"><li>- Incorporate pathology networks to reduce time, cost and improve access</li><li>- Develop diagnostic imaging networks to assist with care efficiency</li></ul>	<b>10% reduction in patient bedtime</b>	Urgent & emergency care
Access to technology and tech literate for 100% of staff	<ul style="list-style-type: none"><li>- All staff to be given access to mobile digital services</li><li>- Training program upskills all clinical staff in the use of technology</li></ul>	<b>100% of staff using technology</b>	Digital transformation
Procurement Coordination to reduce usage by 10%	<ul style="list-style-type: none"><li>- Integration of technology into the procurement process</li><li>- Enable the trust staff to feed into the software to identify inefficiencies</li></ul>	<b>Procurement reduces consumption by 10%</b>	Head of procurement

# NET ZERO INTERVENTIONS

## DIGITAL CARE PATHWAY REDESIGN – ACTION PLAN



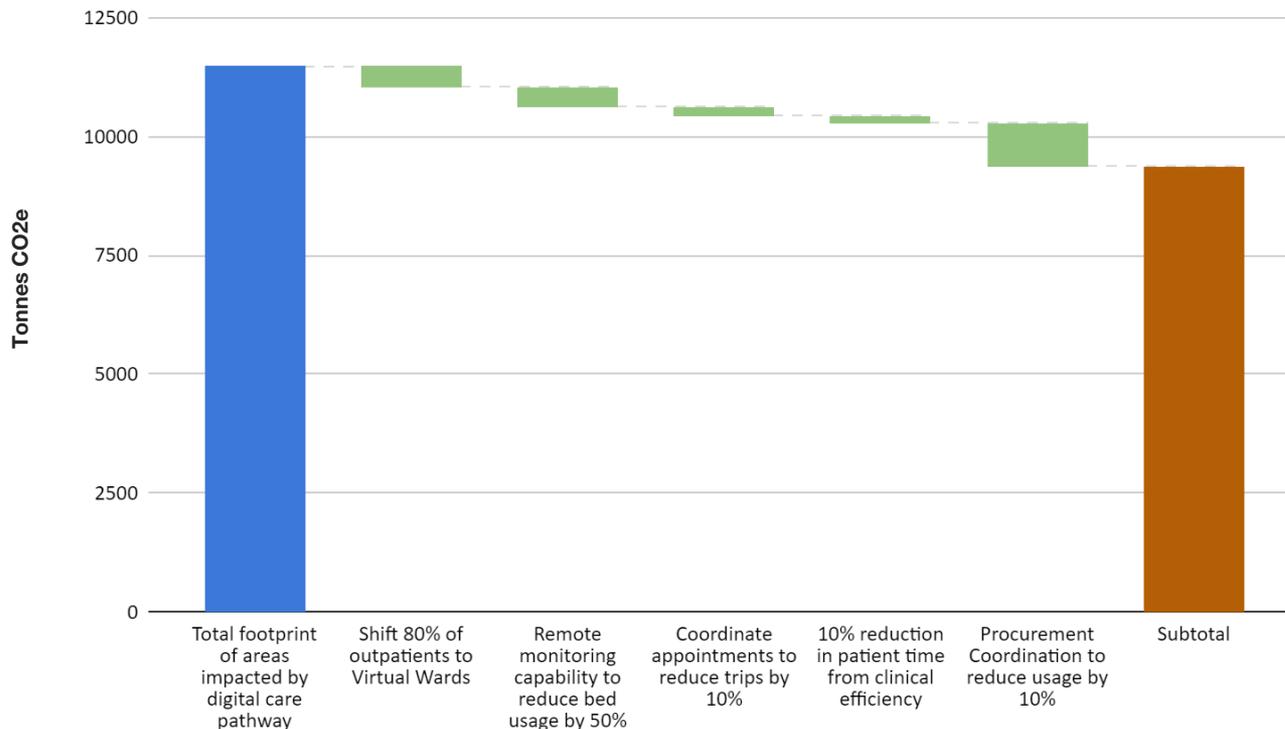
# NET ZERO INTERVENTIONS

## DIGITAL CARE PATHWAY REDESIGN

The graph to the right illustrates the impact of the various smart aims upon the areas within the remit of the digital care pathway. Some of the smart aims have not been included within the analysis as they are too complex to quantify.

As shown within the graph, all of the smart aims provide a small but not insignificant reduction in the carbon footprint for this intervention area.

**Figure 4: Illustrating the impact of the smart aims upon the categories impacted by the digital care pathway.**



# NET ZERO INTERVENTIONS

## LOW CARBON MODELS OF CARE & PREVENTATIVE MEDICINE

### OVERVIEW

The NHS Long Term Plan sets out a commitment to deliver a new service model for the 21st century. Implementing lower carbon models of care is essential if Buckinghamshire Healthcare NHS trust is to reach net zero emissions by 2040. The new models of care built around the patient must have due consideration to energy and carbon output to ensure that all opportunities for carbon reduction are implemented.

Implementing more sustainable models of care includes care closer to home and in community settings, empowering people to have more control over their health; digitally enabling primary and outpatient care; and increasing the focus on population health. Optimising the location of care ensures that patients interact with the service in the most efficient place, which may be closer to, or even in, their home to enhance patient experience.

### POLICY & STRATEGY

#### Low Carbon Care Strategy

Develop a low carbon care strategy that will help with carbon reductions through efficient practices and preventative medicine.

#### Training and low carbon initiatives

Develop a strategy for the training / education of staff on the implementation of low carbon care and preventative medicine.

#### Low Carbon & Preventative Medicine Leadership

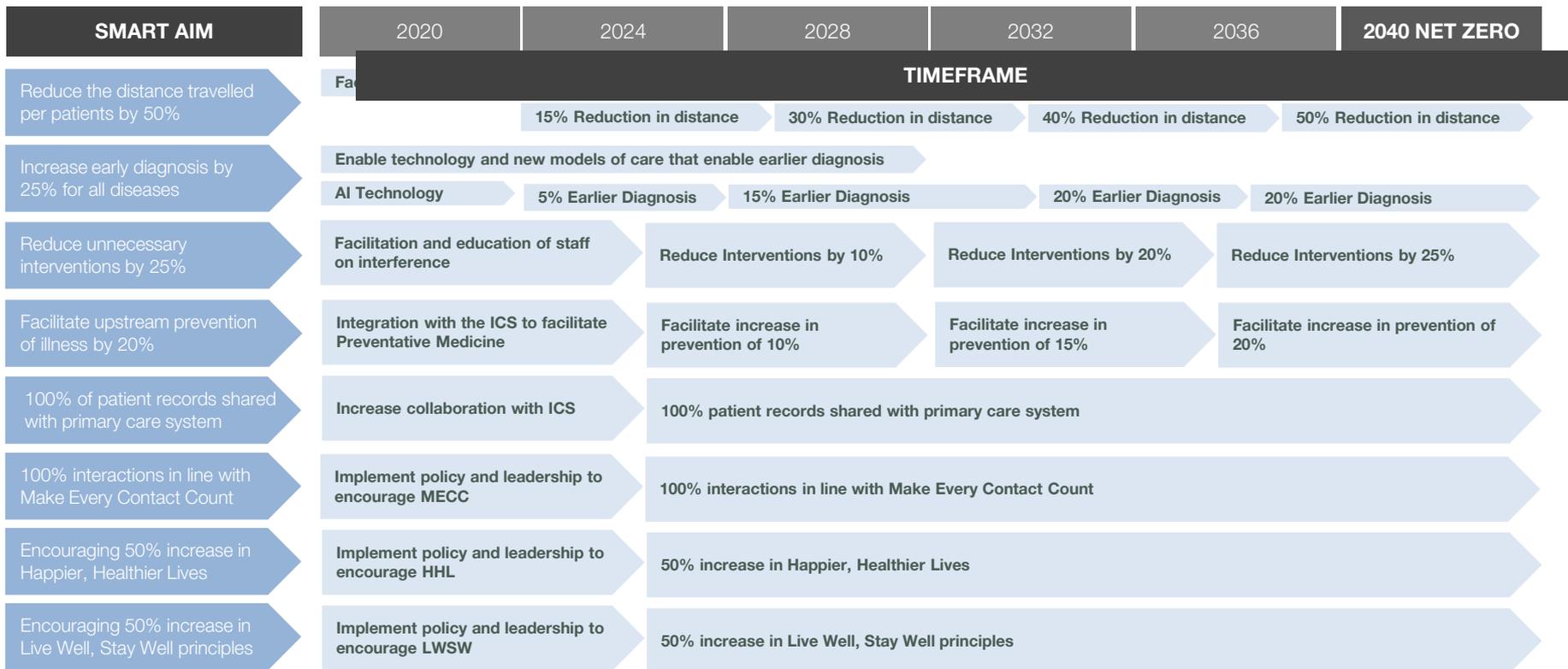
Appointment of leaders across the trust with carbon literacy training including representation on the board.

### SMART AIMS

	OBJECTIVES	KPIs	RESPONSIBILITY
Reduce the distance travelled per patient by 50%	<ul style="list-style-type: none"> <li>- Facilitate Integrated Care Partnerships with community and primary care</li> <li>- Integration and develop community team to enable staff to visit patients at home</li> </ul>	<b>50% Distance Reduction</b>	Community care
Increase early diagnosis by 25% for all diseases	<ul style="list-style-type: none"> <li>- Increase proactive assessment of patients.</li> <li>- Enable technology and new models of care that enable earlier diagnosis</li> </ul>	<b>25% Increase in early diagnosis</b>	Diagnostics
Reduce unnecessary interventions by 25%	<ul style="list-style-type: none"> <li>- Facilitate long term approach to understanding the benefits of healthy lifestyles</li> <li>- Educate staff in prevention and rehabilitation methodology</li> </ul>	<b>25% Reduction in interventions</b>	Urgent & emergency care
Facilitate upstream prevention of illness by 20%	<ul style="list-style-type: none"> <li>- Education of staff in the opportunities for prevention.</li> <li>- Integration with the community, outpatient and primary care teams</li> </ul>	<b>20% prevention in illness</b>	Community care / Diagnostics
All patient records shared with primary care system	<ul style="list-style-type: none"> <li>- Increased collaboration with the ICS, in particular the primary care team</li> <li>- Upgrade digital record technology to facilitate this process</li> </ul>	<b>100% records with primary care</b>	Medical records
All interactions in line with Make Every Contact Count	<ul style="list-style-type: none"> <li>- Train staff in line with MECC principles</li> <li>- Implement processes to enable MECC principles to be recommended and tracked</li> </ul>	<b>100% interactions with MECC</b>	Chief Nurse / Medical Director
Encouraging 50% increase in Happier, Healthier Lives	<ul style="list-style-type: none"> <li>- Train staff in line with Happier, Healthier Lives principles</li> <li>- Implement processes to enable HHL principles to be recommended and tracked</li> </ul>	<b>50% increase in HHL</b>	Improving the health of community Group
Encouraging 50% increase in Live Well, Stay Well principles	<ul style="list-style-type: none"> <li>- Train staff in line with Live Well, Stay Well principles</li> <li>- Implement processes to enable LWSW principles to be recommended and tracked</li> </ul>	<b>50% increase in LWSW</b>	

# NET ZERO INTERVENTIONS

## LOW CARBON MODELS OF CARE & PREVENTATIVE MEDICINE – ACTION PLAN



# NET ZERO INTERVENTIONS

## REDUCTION OF MEDICAL GAS EMISSIONS & SHIFT TO LOW CARBON INHALERS

### OVERVIEW

Medicines account for 11% of emissions within the trust. Where possible reductions / re-use can occur, without compromising patient safety, there is need to focus on specific areas – anaesthetic gases (1% of emissions), medical gases (6.9% of emissions) and inhalers (0.5% of emissions) – where emissions occur at the ‘point of use’. The remaining emissions are primarily found in the manufacturing and freight inherent in the supply chain.

Interventions considered include optimising prescribing, substituting high carbon products for low-carbon alternatives, and improvements in production and waste processes.

### POLICY & STRATEGY

#### Gas Re-use Strategy

Develop a strategy for the containment and cleaning of used medical gas to maximise the efficiency of recovering gases for re-use

#### Training in low carbon medical gas initiatives

Develop a strategy for the training / education of staff on the impact of anaesthetic / medical gases upon the environment.

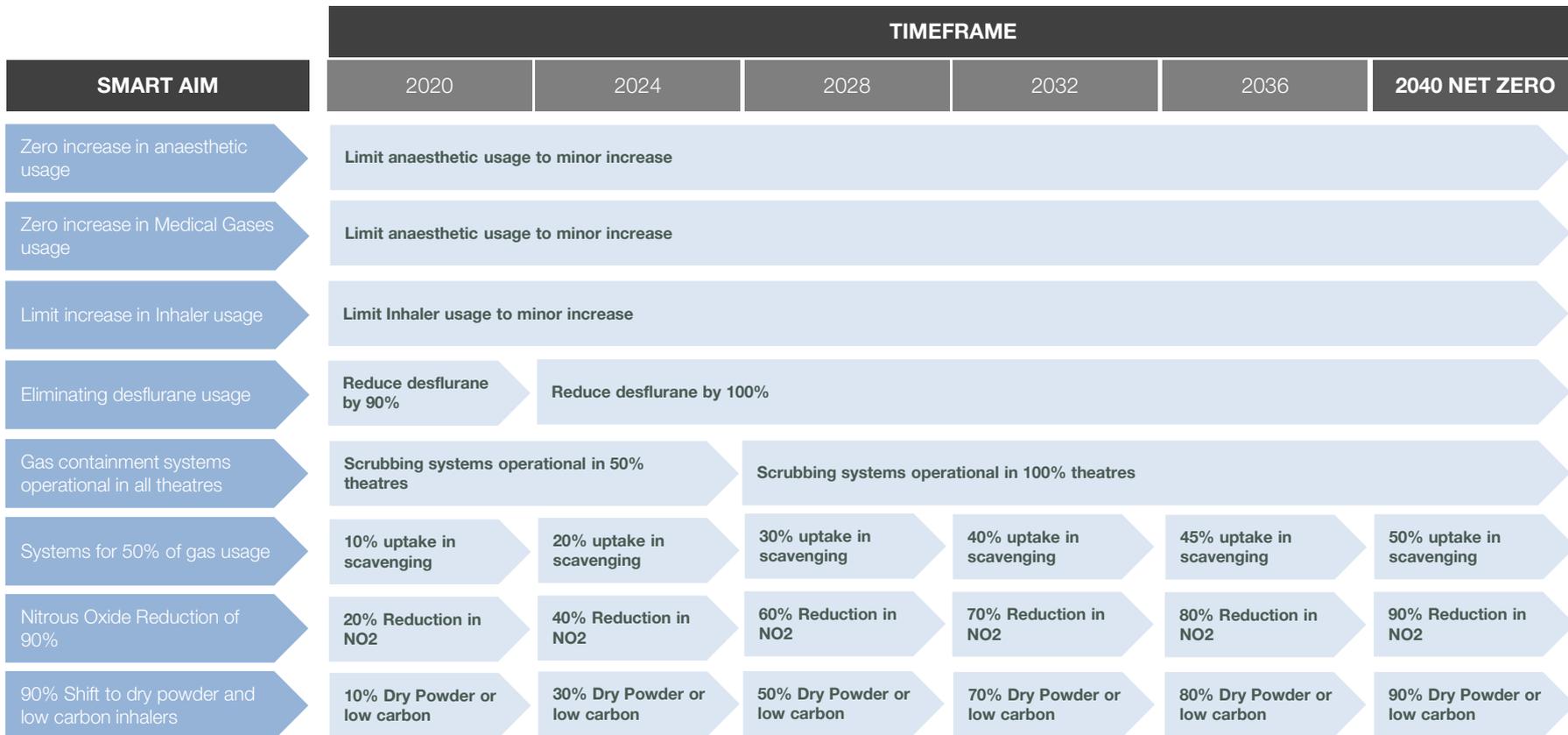
#### Nitrous Oxide Initiatives

Develop a strategy for minimising the use of nitrous oxide within the trust and moving towards nitrous oxide free areas.

SMART AIMS	OBJECTIVES	KPIs	RESPONSIBILITY
Proportionate reduced increase in anaesthetic usage	<ul style="list-style-type: none"> <li>- Identify instances of high consumption and target more efficient usage</li> <li>- Track monthly usage to ascertain consumption against average data</li> </ul>	<b>No increase in usage</b>	Medical Gas committee
Proportionate reduced increase in Medical Gases usage	<ul style="list-style-type: none"> <li>- Identify instances of high consumption and target more efficient usage</li> <li>- Track monthly usage to ascertain consumption against average data</li> </ul>	<b>No increase in usage</b>	Medical Gas committee
Limit increase in Inhaler usage	<ul style="list-style-type: none"> <li>- Identify instances of high consumption and target more efficient usage</li> <li>- Track monthly usage to ascertain consumption against average data</li> </ul>	<b>Limit increase in usage</b>	Chief Pharmacist
Eliminating desflurane usage	<ul style="list-style-type: none"> <li>- Identify leadership figures within each trust to drive the change</li> <li>- Educate staff in the use of sevoflurane and other alternatives anaesthetics</li> </ul>	<b>Zero desflurane use</b>	Medical Gas committee
Gas containment operational in all theatres	<ul style="list-style-type: none"> <li>- Identify the barriers to the maintenance and upkeep of scrubbing systems</li> <li>- Remediate building fabric to enable the delivery of scrubbing systems</li> </ul>	<b>100% operational scrubbing systems</b>	
Systems for 50% of gas re-use	<ul style="list-style-type: none"> <li>- Identify the areas where scavenging systems can be incorporated</li> <li>- Upskill staff in the use of scavenging systems and the importance of their use</li> </ul>	<b>Scavenging on 50% of usage</b>	
Nitrous Oxide Reduction of 90%	<ul style="list-style-type: none"> <li>- Identify areas that can go nitrous oxide free</li> <li>- Leadership and training on the impact of NO2 and reducing the impact</li> </ul>	<b>90% Reduction in NO2</b>	
90% Shift to dry powder and low carbon inhalers	<ul style="list-style-type: none"> <li>- All other initiatives</li> <li>- Upskill staff in the use of dry powder inhalers and the importance of their use</li> </ul>	<b>90% shift to DPI</b>	Chief Pharmacist

# NET ZERO INTERVENTIONS

## REDUCTION OF MEDICAL GAS EMISSIONS & SHIFT TO LOW CARBON INHALERS – ACTION PLAN

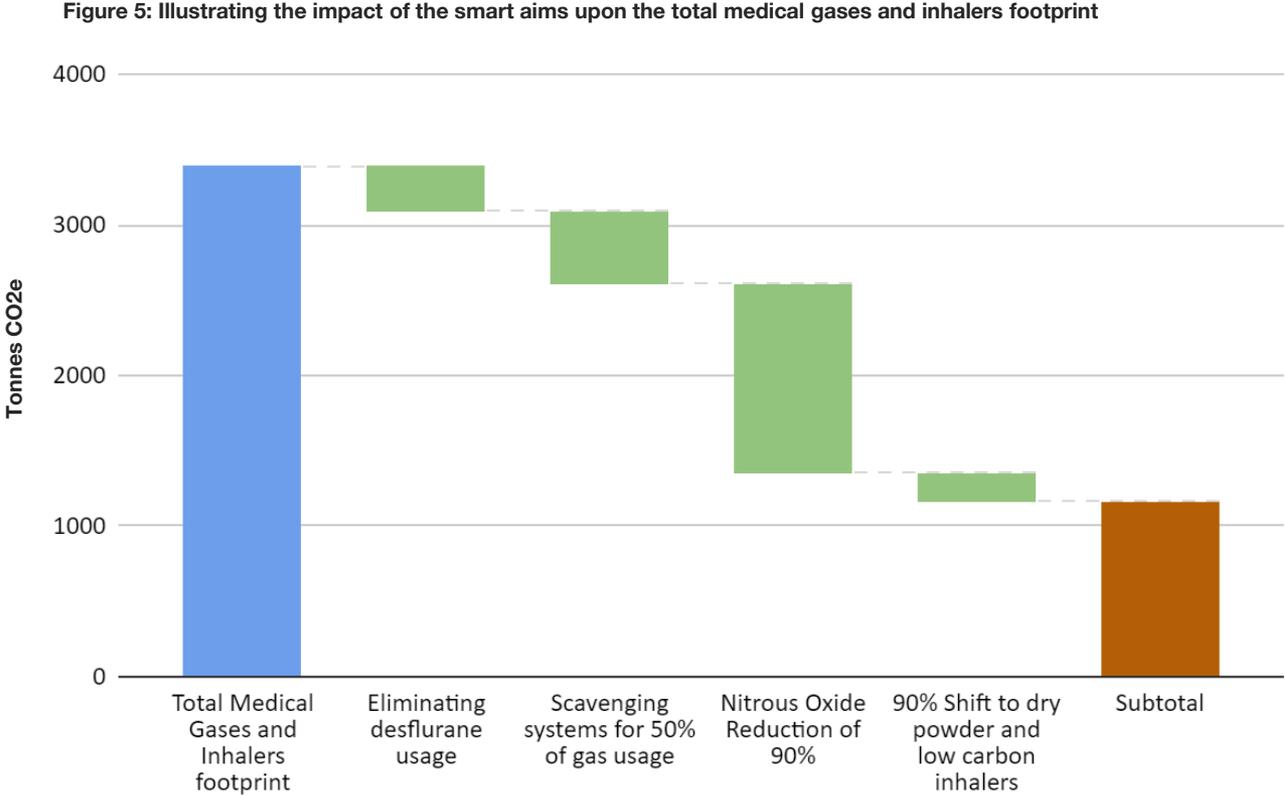


# NET ZERO INTERVENTIONS

## REDUCTION OF MEDICAL GAS EMISSIONS & SHIFT TO LOW CARBON INHALERS

The graph to the right illustrates the impact of the various smart aims upon the total medical gases and inhalers footprint. Some of the smart aims have not been included within the analysis as they are too complex to quantify.

As shown within the graph, all of the smart aims provide a significant reduction in carbon emissions, in particular, reducing the use of nitrous oxide in the trust.



# NET ZERO INTERVENTIONS

## TRAVEL FOR CARE AND BUSINESS; COMMUTING, PATIENTS & VISITORS

### OVERVIEW

Approximately 3.5% (9.5 billion miles) of all road travel in England relates to patients, visitors, staff and suppliers to the NHS. Within BHT, travel incorporates ~14.2% of the trust's emissions; this includes approximately 4% for business travel and fleet transport, 4.8% for patient & visitor travel, 5.4% for staff commutes.

The action plan for interventions that will enable the transition to net zero carbon includes: switching the fleet to zero-emission vehicles, reducing unnecessary journeys and enabling healthier, active forms of travel such as cycling and walking. The forecasted increase in vehicle use will be limited and offset, in part, by rapidly evolving vehicle efficiency standards.

### POLICY & STRATEGY

#### Transport Data Collection

Develop a plan for carrying out surveys to collect data for patient transport and staff commuting, building upon car park survey data.

#### Training for low carbon travel initiatives

Develop a strategy for the training / education of staff on the impact of transport and the means of reducing carbon.

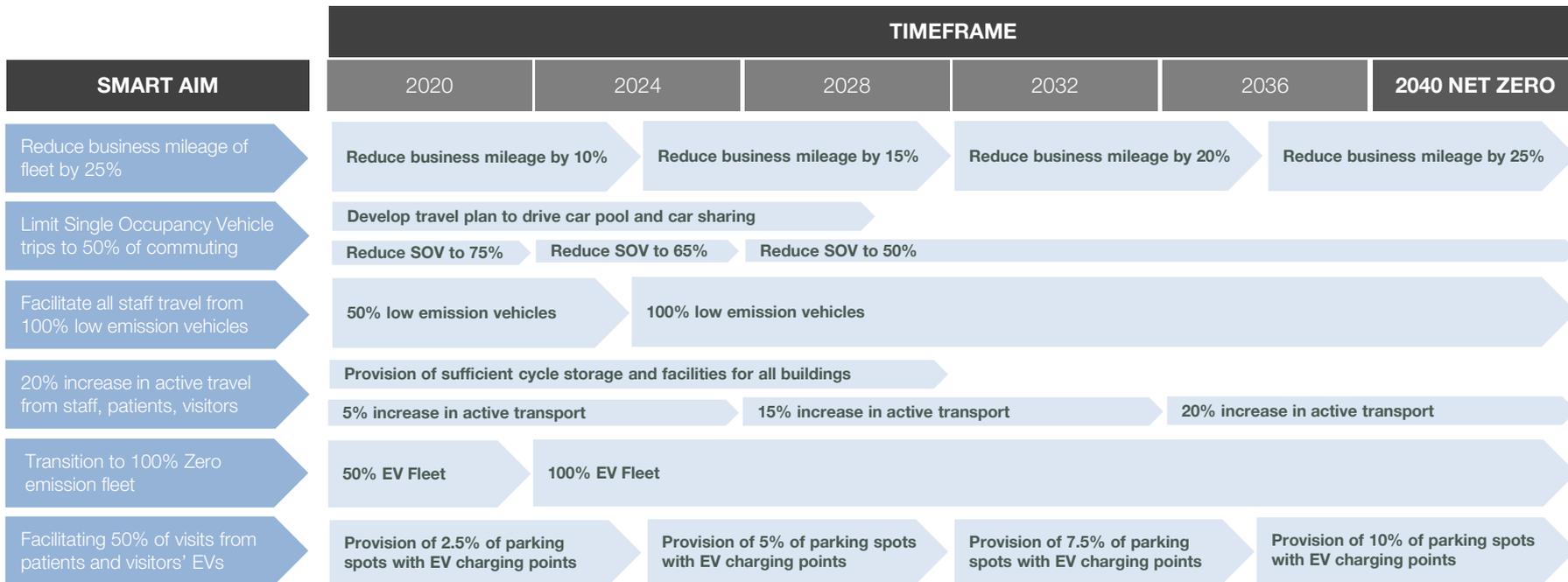
#### Workplace Travel Strategy & Plan

Develop a transport strategy & Plan that sets out the means of reducing emissions from car usage and sustainable means of transport

SMART AIMS	OBJECTIVES	KPIs	RESPONSIBILITY
Reduce business mileage of fleet / community vehicles by 25%	<ul style="list-style-type: none"> <li>- Development of workplace travel plan with a travel hierarchy</li> <li>- Identification of regular routes that can be consolidated</li> </ul>	<b>25% Distance Reduction</b>	Property Services / Community transformation
Limit Single Occupancy Vehicle trips to 50% of commuting	<ul style="list-style-type: none"> <li>- Increase awareness of the impact of SOV trips</li> <li>- Facilitate carpool and car sharing.</li> </ul>	<b>50% maximum SOV trips</b>	Property Services
Facilitate all staff travel from 100% low emission vehicles	<ul style="list-style-type: none"> <li>- Set out a plan for transitioning current leased cars to LEV</li> <li>- Educate staff on the impact of travel emissions and ways to reduce emissions</li> </ul>	<b>100% LEV</b>	Head of estate development
20% increase in active travel from staff, patients, visitors	<ul style="list-style-type: none"> <li>- Promote the travel hierarchy to incentivise active transport</li> <li>- Provision of storage for cycles as well as showers, lockers, changing rooms etc</li> </ul>	<b>20% increase in active travel</b>	Property Services
Transition to 100% Zero emission fleet	<ul style="list-style-type: none"> <li>- Transition the vehicles that are owned by the trust to EVs</li> <li>- Provision of high-speed charging points around the trust to enable the EV fleet</li> </ul>	<b>100% Zero emission fleet</b>	Head of estate development
Facilitating 50% of visits from patients and visitors' EVs	<ul style="list-style-type: none"> <li>- Provision of EV charging points in the car parks of hospitals / community centres</li> <li>- Incentivise EV travel with free parking and other financial measures</li> </ul>	<b>Facilitate 50% visits from EVs</b>	

# NET ZERO INTERVENTIONS

## TRAVEL FOR CARE AND BUSINESS; COMMUTING, PATIENTS & VISITORS – ACTION PLAN



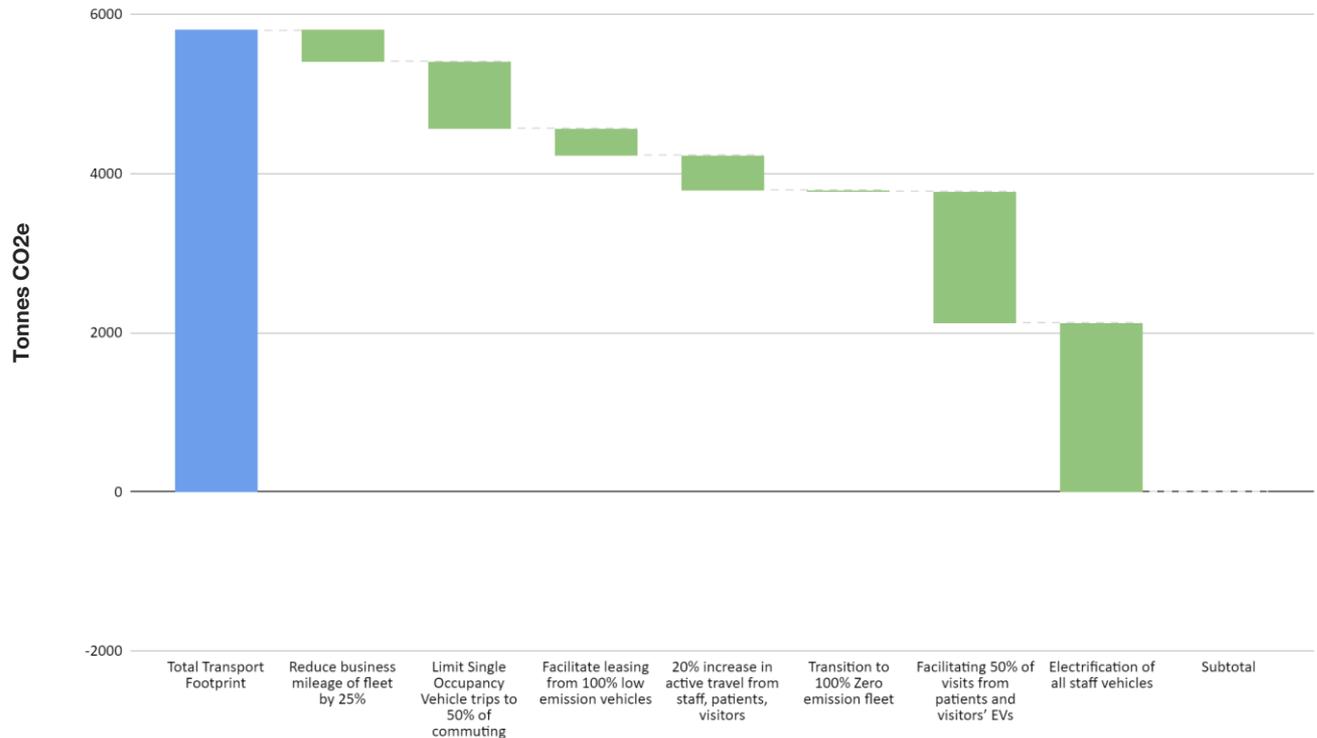
# NET ZERO INTERVENTIONS

## TRAVEL FOR CARE AND BUSINESS; COMMUTING, PATIENTS & VISITORS

The graph to the right illustrates the impact of the various smart aims upon the total transport footprint. This graph also includes the impact of the nationwide initiatives to switch to 100% electric vehicles for patients, visitors and staff.

As shown within the graph, all of the smart aims provide a significant reduction in carbon emissions, in particular, the facilitation of electric vehicle uptake.

**Figure 6: Illustrating the impact of the smart aims upon the total transport footprint**



# NET ZERO INTERVENTIONS

## BUILDING ENERGY & RENEWABLES

### OVERVIEW

The three main hospitals, community buildings and other supporting facilities – generate 27.6% (32.9% including embodied carbon from Well to Tank) of the total carbon emissions profile. This represents a significant proportion of the trust's emissions and therefore this is a crucial category to target.

There are a number of opportunities for emissions reductions in the BHT estate, with significant opportunities in the energy efficiency of the buildings, the installation of efficient building services and other medical / non-medical equipment, and new sources of renewable energy generation.

### POLICY & STRATEGY

#### Estates Energy & Carbon Strategy

Develop a plan for improving the energy efficiency of the estate over the next 20 years. This should take into account planning around contracts / plant lifecycle.

#### Training and low carbon initiatives

Develop a strategy for the training / education of staff on reducing energy consumption and carbon emissions within the buildings

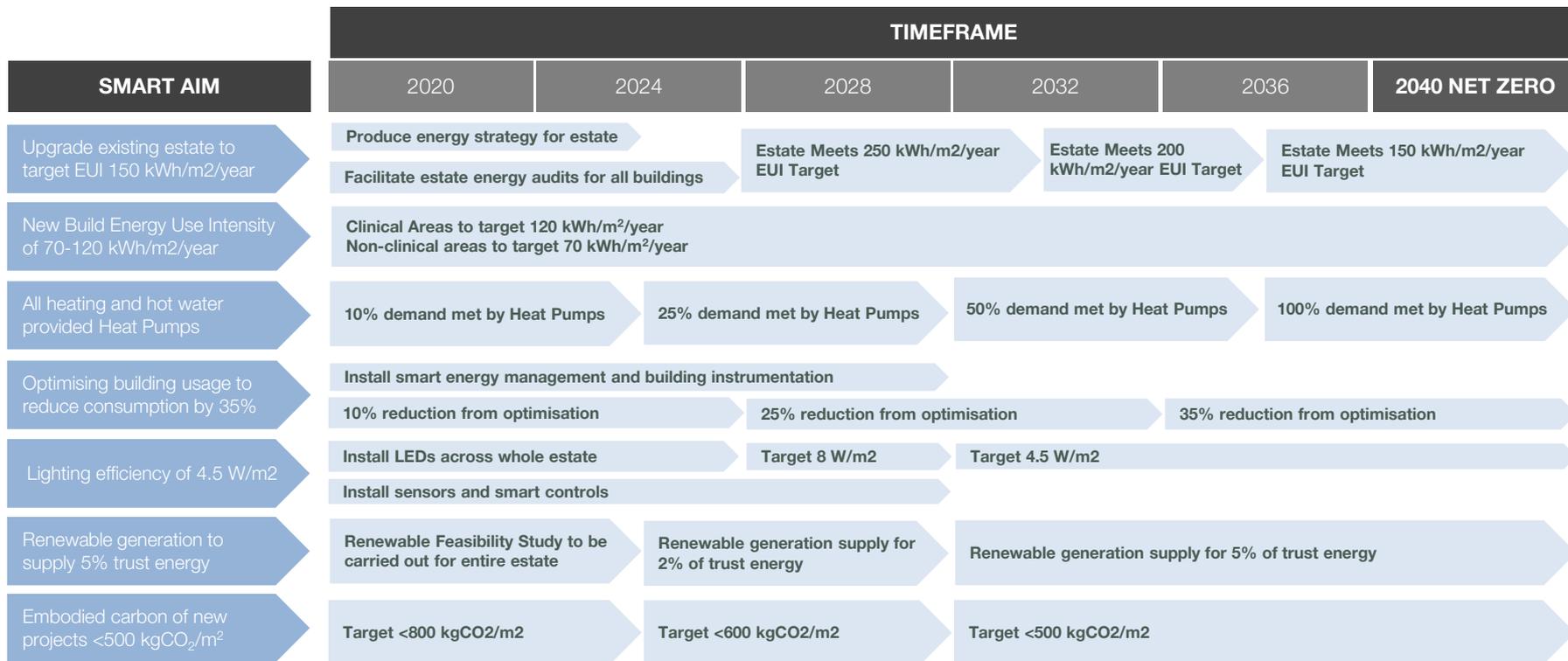
#### PFI Partner Integration

Develop an integration strategy to ensure that the PFI owned estate is aligned with the trust's zero carbon aspirations.

SMART AIMS	OBJECTIVES	KPIs	RESPONSIBILITY
Upgrade existing estate to target EUI 150 kWh/m <sup>2</sup> /year	<ul style="list-style-type: none"><li>- Retrofit existing buildings where possible to provide better insulation windows</li><li>- Temporarily replace poor performing building services / fittings etc</li></ul>	150 kWh/m <sup>2</sup> /year	Head of estate development
New Build Energy Use Intensity of 70-120 kWh/m <sup>2</sup> /year	<ul style="list-style-type: none"><li>- Ensure that a 'fabric first' approach is followed to minimise energy demand</li><li>- Ensure building services are highly efficient and designed for performance</li></ul>	70-120 kWh/m <sup>2</sup> /year	
All heating and hot water provided Heat Pumps	<ul style="list-style-type: none"><li>- Identify areas to locate heat pump plant on roofs / around the buildings</li><li>- Enable heat pumps to be installed for space heating and hot water</li></ul>	100% Heating/DHW by Heat Pumps	
Optimising building usage to reduce consumption by 35%	<ul style="list-style-type: none"><li>- Install smart energy management and building instrumentation</li><li>- Implement training programs across FM team to upskill on energy saving</li></ul>	35% Reduction in consumption	
Lighting efficiency of 4.5 W/m <sup>2</sup>	<ul style="list-style-type: none"><li>- Install LED light fittings across all buildings</li><li>- Install presence detection and daylight sensors across all buildings</li></ul>	Lighting efficiency 4.5 W/m <sup>2</sup>	
Renewable generation to supply 5% trust energy	<ul style="list-style-type: none"><li>- Identify opportunities for Photovoltaic arrays on building roofs and other areas.</li><li>- Install PV with battery storage to maximise the availability of renewable energy</li></ul>	5% provision of renewable energy	
Embodied carbon of new projects <500 kgCO <sub>2</sub> /m <sup>2</sup>	<ul style="list-style-type: none"><li>- Undertake Life Cycle Assessment with a target emissions of reducing embodied carbon.</li></ul>	<500 kgCO <sub>2</sub> /m <sup>2</sup>	

# NET ZERO INTERVENTIONS

## BUILDING ENERGY & RENEWABLES – ACTION PLAN



# NET ZERO INTERVENTIONS

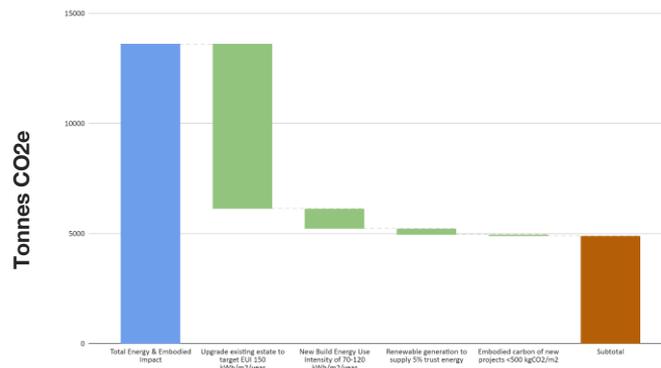
## BUILDING ENERGY & RENEWABLES

The two graphs to the right illustrate the impact of the various smart aims upon the total building energy and embodied carbon footprint.

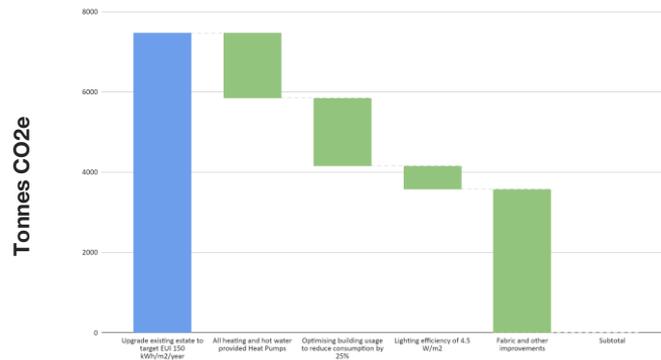
Figure 7 illustrates the impacts of all of the smart aims, whereas Figure 8 provides a breakdown of the smart aim 'Upgrading the existing estate' into a 4 smaller smart aims that all contribute.

As shown within the graph, all of the smart aims provide a significant reduction in carbon emissions, in particular, the savings from upgrading the existing estate.

Figures 7: Illustrating the impact of the smart aims upon the total energy footprint



Figures 8: Illustrating the impact of the various smart aims that contribute towards the 'Upgrading the existing estate' aim



# NET ZERO INTERVENTIONS

## WATER, WASTE & FOOD

### OVERVIEW

Between 2010 and 2017 the health and care sector across the UK reduced water consumption by 21%, equivalent to around 243,000 Olympic swimming pools, however, there is still improvements that can be made.

Of the 590,000 tonnes of waste produced by the NHS in 2016/17, 15% went directly to landfill, whilst only 23% of waste is recycled. The carbon footprint of food is also of growing concern.

In terms of Water, Waste and Food & Catering contribute 0.6%, 0.3% and 0.2% of the trusts carbon emissions in 2019.

### POLICY & STRATEGY

#### Future Waste Management Strategy

Develop a waste management strategy for the estate over the next 20 years. Taking into account the targets set and the monitoring and tracking required.

#### Water Audit & Strategy

Carry out an audit of each of the buildings to understand the condition of the fittings, systems etc and outline a strategy for reduction.

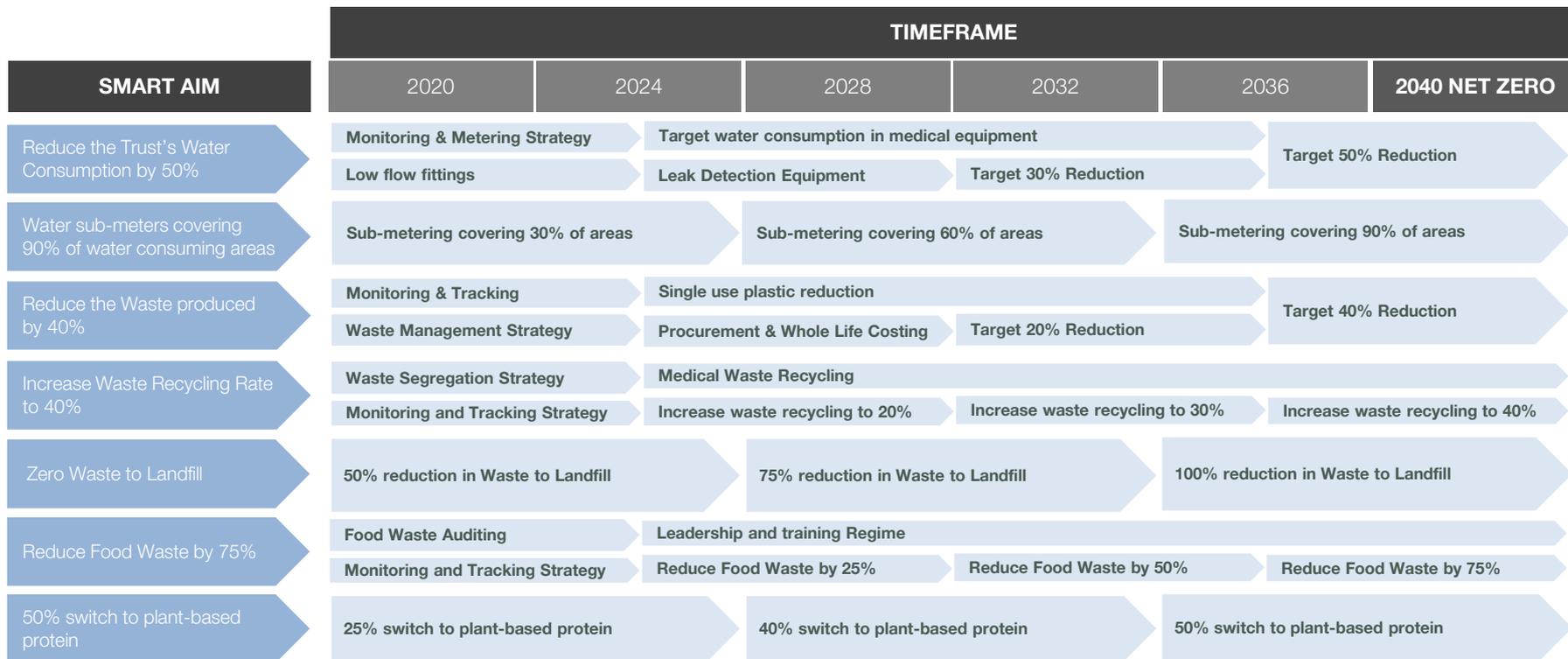
#### Food Waste Auditing & Catering Strategy

Carry out an audit of each of the buildings to understand the food and catering provision and outline a strategy for reducing waste and transitioning to plant based

SMART AIMS	OBJECTIVES	KPIs	RESPONSIBILITY
Reduce the Trust's Water Consumption by 50%	<ul style="list-style-type: none"> <li>- Install sensors, flow control, valves to reduce water consumption</li> <li>- Training, leadership and initiatives to drive reduced water consumption</li> </ul>	<b>50% reduction in water consumption</b>	Property Services
Water sub-meters covering 90% of water consuming areas	<ul style="list-style-type: none"> <li>- Install sub-meters across all buildings in the trust</li> <li>- Regular monitoring of water consumption data to ascertain areas of higher consumption</li> </ul>	<b>90% coverage by sub-metering</b>	
Reduce the Waste produced by 40%	<ul style="list-style-type: none"> <li>- Waste management strategy for increasing monitoring and tracking.</li> <li>- Reducing single use plastic</li> </ul>	<b>Reduce Waste Produced by 40%</b>	
Increase Waste Recycling Rate to 40%	<ul style="list-style-type: none"> <li>- Optimising waste segregation, easing recycling</li> <li>- Raising awareness and training including the recycling of medical waste</li> </ul>	<b>Recycling Rate of 40%</b>	
Zero Waste to Landfill	<ul style="list-style-type: none"> <li>- Development of new waste processing plant to handle the trusts waste</li> <li>- Target zero waste to landfill as soon as possible</li> </ul>	<b>Zero waste to Landfill</b>	
Reduce Food Waste by 75%	<ul style="list-style-type: none"> <li>- Audit the hospitals to identify areas to target and monitor waste produced</li> <li>- Raising awareness and training of all staff</li> </ul>	<b>75% reduction in food waste</b>	
50% switch to plant-based protein	<ul style="list-style-type: none"> <li>- Increased options within hospitals to encourage plant-based options.</li> <li>- Increased awareness of the benefits of a plant-based lifestyle from a holistic perspective</li> </ul>	<b>50% plant-based protein</b>	

# NET ZERO INTERVENTIONS

## WATER, WASTE & FOOD – ACTION PLAN



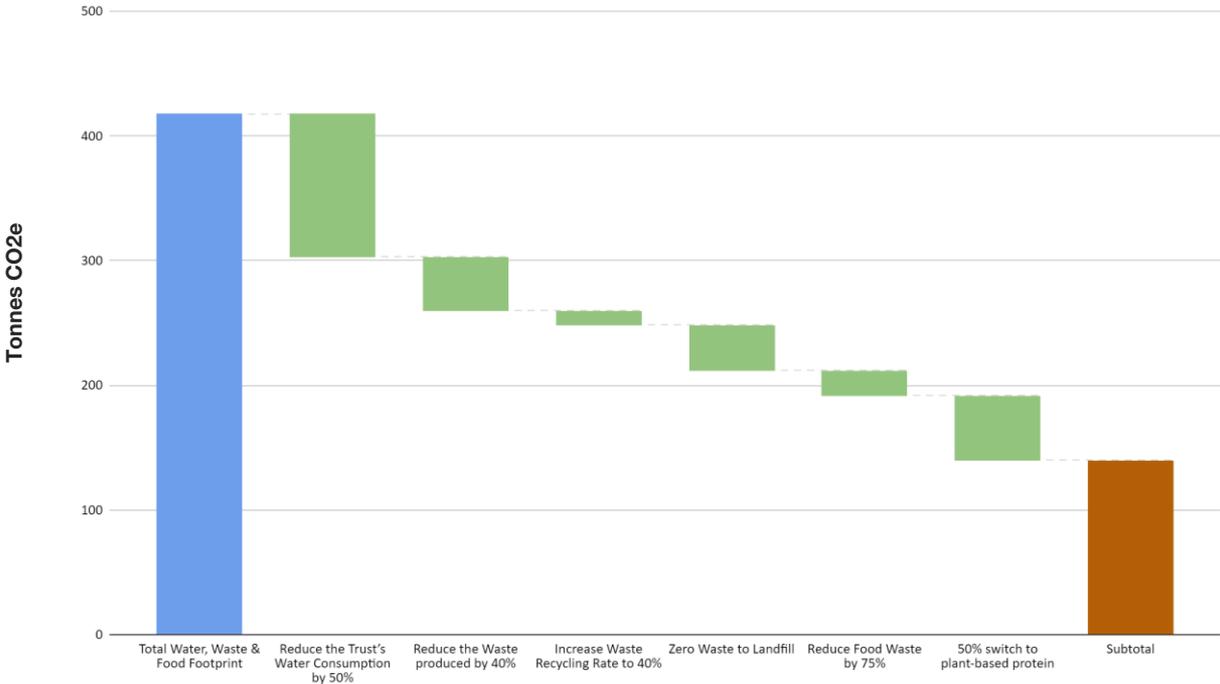
# NET ZERO INTERVENTIONS

## WATER, WASTE & FOOD

The graph to the right illustrates the impact of the various smart aims upon the total water, waste and food footprint. One of the smart aims has not been included within the analysis as it was not able to be quantified.

As shown within the graph, all of the smart aims provide a significant reduction in carbon emissions, in particular, reducing the consumption of water in the trust.

**Figure 9: Illustrating the impact of the smart aims upon the total water, waste and food footprint**



# NET ZERO INTERVENTIONS

## SUPPLY CHAIN PROCUREMENT AND MORE EFFICIENT USE OF SUPPLIES

### OVERVIEW

BHT procures products from many suppliers, each with their own supply chain. Whilst BHT does not control these emissions directly, it can use its purchasing power to influence change. This includes Medicines (2.6%), Business Services (5.2%), Non-medical equipment (4.4%), Medical Devices (9.8%), ICT equipment (5.4%), Commissioned Health Services outside the NHS (12.2%) and Other (3.7%).

BHT can reduce emission from its supply chain in three ways: more efficient use of supplies; low-carbon substitutions and product innovation; and by ensuring our suppliers are decarbonising their own processes.

### POLICY & STRATEGY

#### Sustainable Procurement Policy

Develop a sustainable procurement policy that sets out the mechanisms for influencing the supply chain to reduce their carbon emissions.

#### Whole Life Costing & Assessment

Develop a whole life costing & assessment to ascertain areas where single use plastics can be replaced with reusable alternatives

#### Device Lifespan & Recycling Strategy

Develop a strategy for extending the lifespan of devices as well as recycling the content at end of life.

SMART AIMS	OBJECTIVES	KPIs	RESPONSIBILITY
Eliminate petrochemically derived single use plastic	<ul style="list-style-type: none"> <li>- Outline strategy for moving away from plastics</li> <li>- Facilitate transition to bio-based polymers through the supply chain</li> </ul>	<b>Switch to bio-polymers</b>	Head of Procurement
Reduce single use plastic by 50%	<ul style="list-style-type: none"> <li>- Identify opportunities for reusable plastics</li> <li>- Training and leadership to raise awareness throughout the trust</li> </ul>	<b>50% reduction in single use plastic</b>	
Extend non-medical device life span by 10%	<ul style="list-style-type: none"> <li>- Set up an organisational group to promote repair and restoration</li> <li>- Produce database and strategy for tracking device lifespan and operation</li> </ul>	<b>10% increase in non-medical device life span</b>	
Eliminate paper usage	<ul style="list-style-type: none"> <li>- Develop digital capability to replace the use of paper in all scenarios</li> <li>- Training and leadership of staff to raise awareness of consumption</li> </ul>	<b>Zero paper usage</b>	
Recycle 75% medical / non-medical devices	<ul style="list-style-type: none"> <li>- Identify all items that are recyclable and track through database logging.</li> <li>- Monitor and measure the recycling rate to track performance</li> </ul>	<b>75% device recycling rate</b>	
Clinical training of 100% of staff	<ul style="list-style-type: none"> <li>- Training of staff to raise awareness and importance of reducing usage</li> <li>- Leadership and ownership of driving improvements</li> </ul>	<b>100% training of clinical staff</b>	
Non SCCL products & services procured in line with SPP	<ul style="list-style-type: none"> <li>- Develop sustainable procurement policy setting out targets</li> <li>- Implement SPP policies, beginning</li> </ul>	<b>100% compliance with SPP</b>	

# NET ZERO INTERVENTIONS

## SUPPLY CHAIN PROCUREMENT AND MORE EFFICIENT USE OF SUPPLIES – ACTION PLAN

SMART AIM	TIMEFRAME					
	2020	2024	2028	2032	2036	2040 NET ZERO
Eliminate petrochemically derived single use plastic	Outline plastics which can be plant-derived		Target 50% reduction		Zero petrochemical plastic consumption	
	Target 25% reduction					
Reduce single use plastic by 50%	Outline plastics which can be reusable		Target 40% reduction		Target 50% Reduction	
	Target 20% reduction					
Extend non-medical device life span by 10%	Develop database with device life planning		Target 6% increase in lifespan		Target 10% increase in lifespan	
	Target 3% increase in lifespan					
Eliminate paper usage	Target 30% reduction		Target 70% reduction		Eliminate Paper Usage	
Recycle 75% medical / non-medical devices	Target 25% reduction		Target 50% reduction		Target 75% Reduction	
Clinical training of 100% of staff	50% of clinical staff trained		100% of clinical staff trained			
Non SCCL products & services procured in line with SPP	Procurement in line with 1 policy		Procurement in line with 2 policy		Procurement in line with all policies	

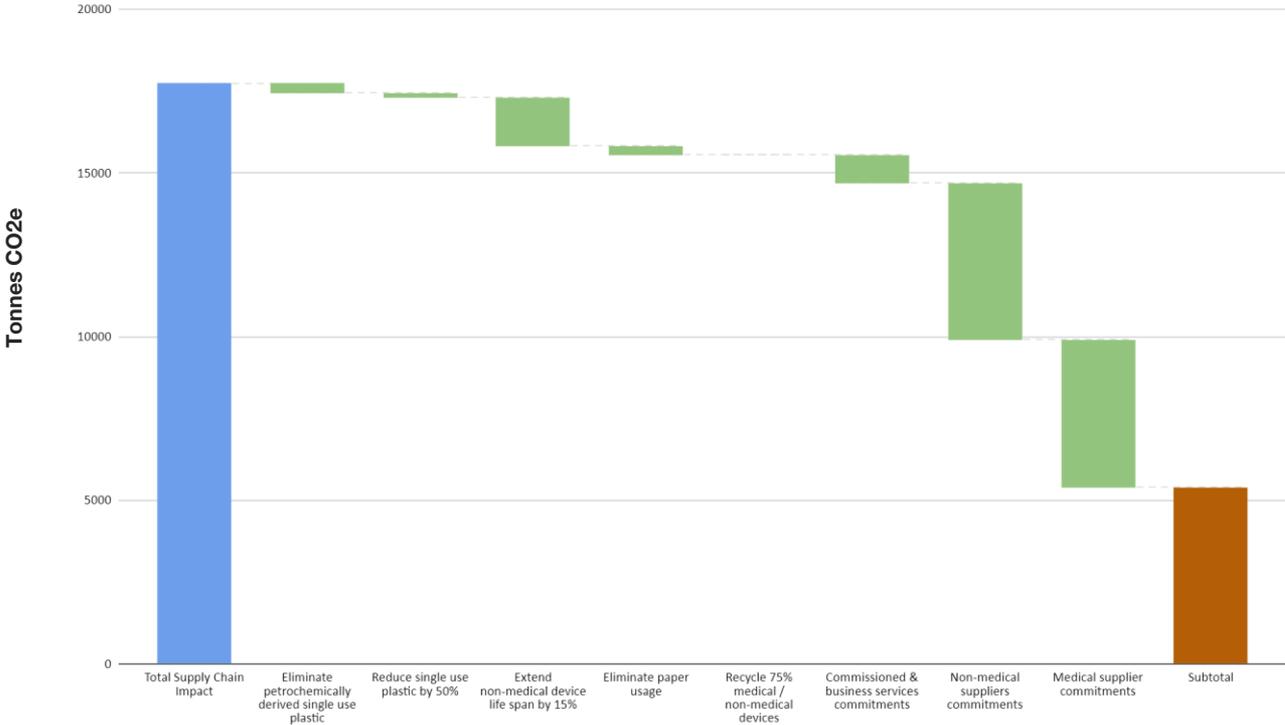
# NET ZERO INTERVENTIONS

## SUPPLY CHAIN PROCUREMENT AND MORE EFFICIENT USE OF SUPPLIES

The graph to the right illustrates the impact of the various smart aims upon the total supply chain footprint. This graph also includes the impact of the nationwide initiatives for commissioned health services, business services, medical suppliers and non-medical suppliers to commit to reducing the carbon emissions within their supply chains.

As shown within the graph, all of the smart aims provide a significant reduction in carbon emissions, in particular, the impact from the supplier commitments.

**Figure 10: Illustrating the impact of the smart aims upon the supply chain footprint**



# NET ZERO INTERVENTIONS

## OVERALL REDUCTION

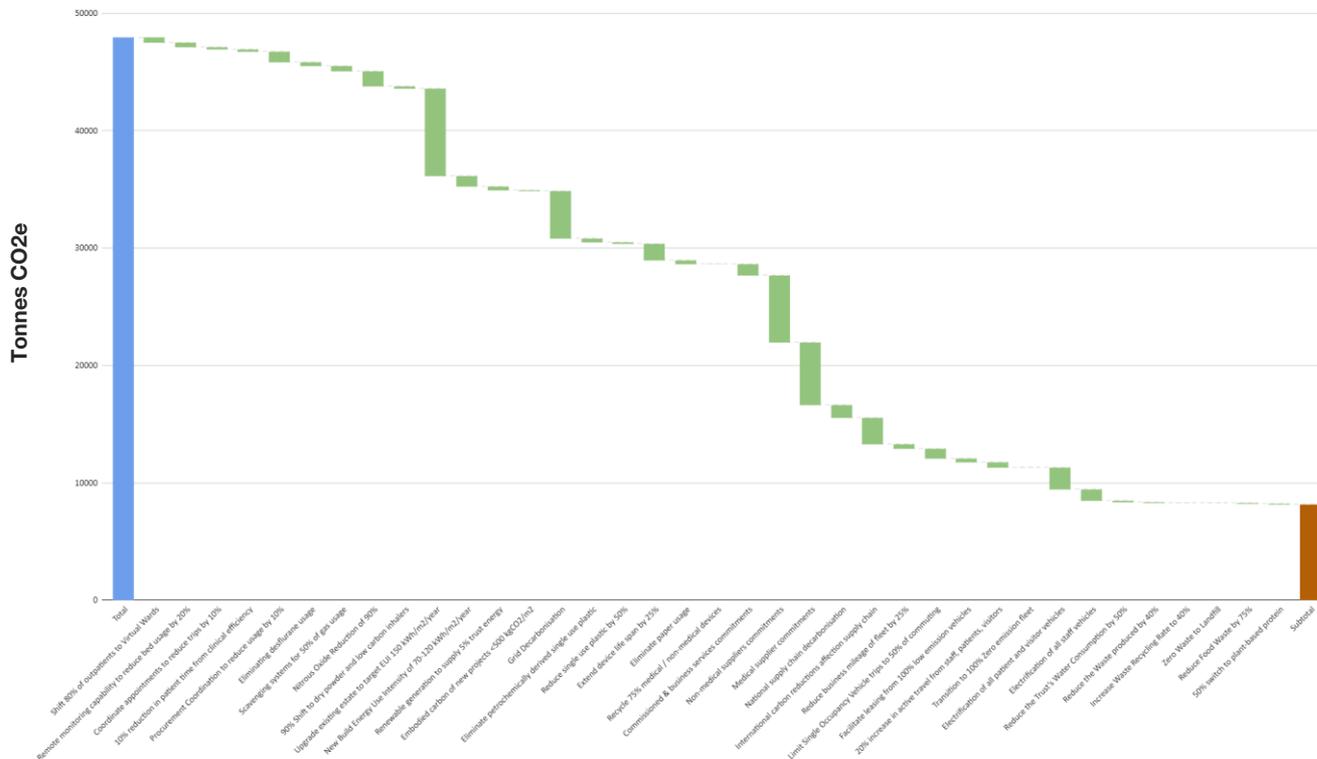
The graph to the right illustrates the impact of all of the proposed smart aims upon the total BHT footprint upon the total BHT footprint.

This graph also includes the impact of the nationwide initiatives for:

- A switch to 100% electric vehicles for patients, visitors and staff.
- Commissioned health services, business services, medical suppliers and non-medical suppliers to commit to reducing the carbon emissions within their supply chains
- UK grid decarbonisation impact upon trust carbon
- UK grid decarbonisation impact upon supply chain carbon
- International carbon reductions affection supply chain

As shown within the graph, all of the smart aims provide a significant reduction in carbon emissions.

**Figure 11: Illustrating the impact of all the smart aims upon the total BHT carbon footprint**

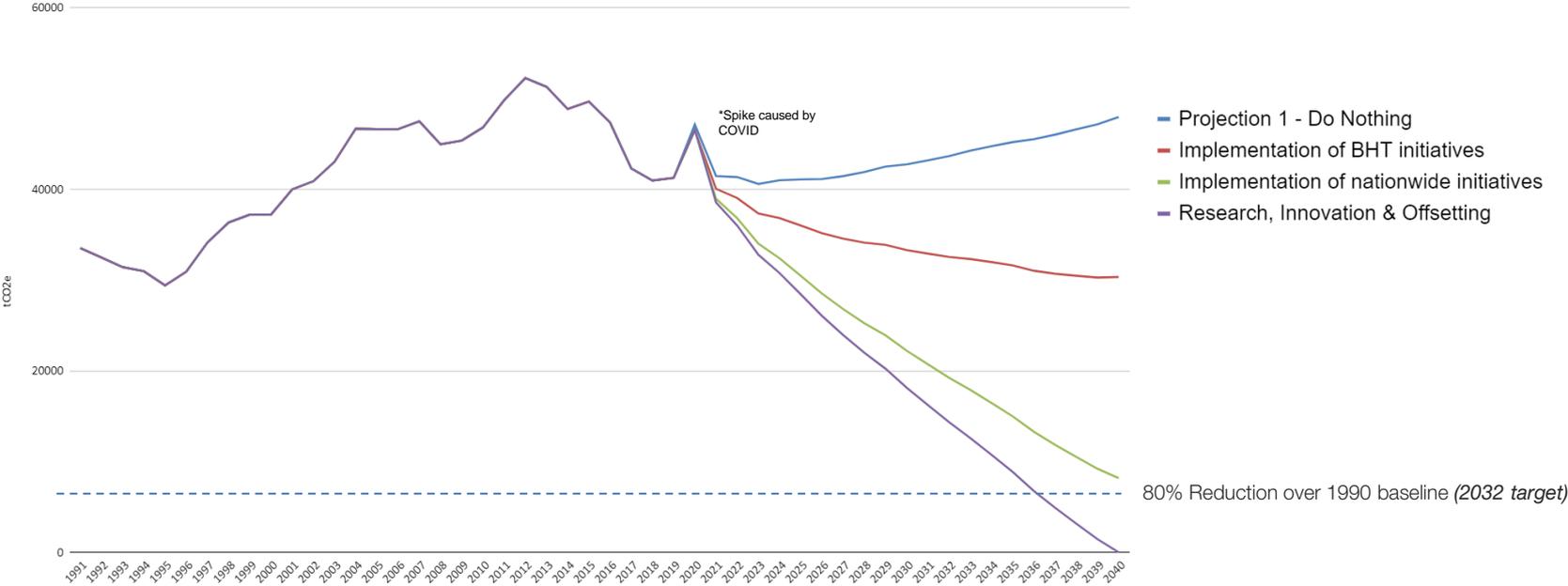


# NET ZERO INTERVENTIONS

## PATHWAY TO NET ZERO

The graph below outlines the impact of the BHT and nationwide initiatives incrementally over a 20-year period to 2040 as well as the backcasted data to 1990. The rate of carbon reductions has been calculated in accordance with the action plans set out for each of the intervention areas. As shown in the graph, both the BHT and nationwide initiatives provide significant reductions in carbon emissions. 1990 is the year used to derive the 80% reduction target required by 2032.

**Figure 12: Illustrating the impact of the national and BHT interventions on the BHT footprint from 1990 to 2040**

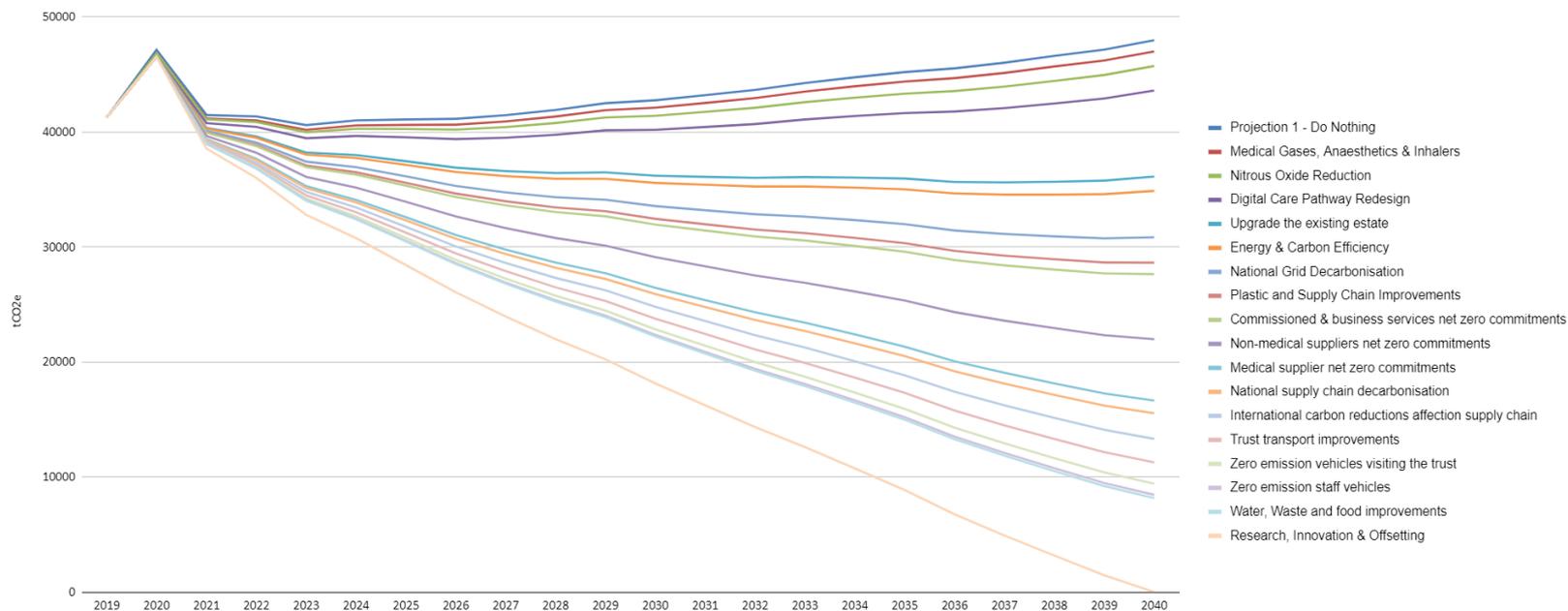


# NET ZERO INTERVENTIONS

## PATHWAY TO NET ZERO

The graph below outlines the impact of the smart aims incrementally over a 20-year period to 2040. The rate of carbon reductions has been calculated in accordance with the action plans set out for each of the intervention areas. 2019 was used as the baseline year for the carbon footprinting exercise so that our backcasting and forecasting data was not erroneously influenced by the impacts of COVID in 2020 (the spike from COVID can be seen below). Each line illustrates the cumulative carbon reductions achieved by the various BHT and nationwide initiatives.

**Figure 13: Illustrating the impact of all of the key interventions on the BHT footprint from 2019 to 2040**



# OVERARCHING RECOMMENDATIONS

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In addition to the specific recommendations set out within the preceding sections, it is also recommended that the following more general recommendations are implemented to assist with the achievement of the KPIs and the delivery of the roadmap.

## **Data Collection**

As part of implementation phase of the roadmap, it is recommended that data is collected at least annually to ensure that the incremental targets within the roadmap can be verified. For the carbon categories where the collection methodology was top-down, it is recommended that for as many of these as possible, the data moving forward is gathered by a bottom-up approach.

## **Low Carbon Training**

Within each of the various intervention areas, there are recommendations for low carbon training of both the occupational and the clinical staff. It is recommended that this is carried out for the specific areas as well as overall to cover the objectives of the roadmap.

## **Low Carbon Leadership**

In addition to the low carbon training, it is recommended that an internal roadmap coordinator is appointed as well as various leaders within different departments to take ownership of achieving the specific KPIs.

## **Annual Review against Roadmap**

It is recommended that an annual review is undertaken to assess the progress against the roadmap targets.

## **Return on Investment Assessment**

In order to determine the priority for implementation of the various different measures, it is recommended that a ROI assessment is undertaken to highlight the measures that will be most cost beneficial to the trust.

## **Whole Life Costing Exercise**

In addition to the ROI assessment, it is recommended that a whole life costing exercise is undertaken for various areas of the trust that have high consumables to understand the benefits of moving away from single use items.

# OFFSETTING PLAN

The table to the right outlines the plan for carbon offsetting within the trust. This follows the plan for targeting emissions reductions annually from now until 2040. This offsetting plan is provisional, the amount of carbon required to be offset is dependent on the performance against the KPI targets across the roadmap. For example, accelerated performance against certain targets would reduce the amount of carbon offsetting required. Furthermore, carbon reductions from research and innovation could further reduce the quantity of carbon offsets required.

Carbon offsets can be carried out on site (e.g. through tree planting) or through local initiatives, as long as the carbon removal calculations are robustly quantified and validated. Carbon offsets through off-site schemes should be purchased via a portfolio mix of emission reductions and removals projects. Approved standards includes the following:

- Gold Standard
- Verified Carbon Standard
- Clean Development Mechanism
- UK Woodland Carbon Code
- UK Peatland Code
- Or other local initiatives where the carbon sequestration can be verified.

**Table 4: Carbon Offsetting Plan detailing the quantity of offset required per year**

Year	Carbon Reduction from Research, Innovation & Offsetting (tonnes CO <sub>2</sub> )
2021	0
2022	0
2023	0
2024	0
2025	0
2026	0
2027	0
2028	0
2029	0
2030	0
2031	0
<b>2032</b>	12,533
2033	11,198
2034	9,757
2035	8,276
2036	6,583
2037	5,146
2038	3,808
2039	2,505
<b>2040</b>	8,168

# BHT NET ZERO ROADMAP

