



Welcome to The NHS Sustainability & Innovation Conference



22nd September 2026
etc.venues, Prospero House, 241 Borough High St,
London, SE1 1GA





NetZeroNHS

FEATURED ORGANISATIONS

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*“Engaging, thought-provoking and
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providing valuable opportunities to
learn and network with NHS peers”*





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Join the Healthcare Engagement Society (HES)

- **What it is** – A secure, year-round platform bringing NHS professionals together across six specialist communities.
- **Why it matters** – Stay connected beyond today's event, share challenges, and learn from peers facing the same priorities.
- **Your benefits** – Exclusive access to interviews, insights, best practice, and real-time discussion threads with colleagues nationwide.
- **How to join** – Simply scan the QR code, choose your community, and start connecting today.



SCAN ME

Stay Connected Beyond Today

Join the **HES Estates, Digital Transformation & Sustainability WhatsApp Community** to stay connected with the people, ideas and conversations shaping this space. Receive relevant updates, access focused peer discussion groups, share practical insight and be first to hear about future events, resources and opportunities.



Scan the QR code to join the Community





Help us make this event carbon neutral, scan the QR code now

For example:

Train Journey Birmingham to London	112 miles
Train Journey Manchester to London	183 miles
Train Journey Leeds to London	188 miles
Train Journey Manchester to Birmingham	113 miles
Train Journey Leeds to Birmingham	81 miles



Chair Morning Address



Gurnak Singh Dosanjh

GP & ICB Deputy Chief Clinical Information Officer
Leicester, Leicestershire & Rutland ICB



Keynote Presentation



Janet Smith

Head of Sustainability
Royal Wolverhampton NHS Trust & Walsall
Healthcare NHS Trust



Climate Resilience and Energy

Securing a sustainable future for the
NHS

Janet Smith

Head of Sustainability
The Royal Wolverhampton NHS Trust and
Walsall Healthcare NHS Trust

**NetZeroNHS 2026:
The NHS Sustainability & Innovation Conference**



Illustrative cover image

Integrated climate resilience and energy strategy

The core proposition for NHS organisations

The same estate decisions determine whether the NHS can protect care during extreme weather and reduce its reliance on fossil fuels.

- Patient safety** Thermal comfort, clean air, water, medicines and reliable critical power
- Operational continuity** Fewer weather-related failures, cancellations and unsafe transfers
- Financial control** Lower demand, better asset performance and less exposure to volatile energy costs
- Net zero delivery** Efficient buildings, clean heat, renewable electricity and lower supply-chain emissions

Observed changes in the UK climate

Recent records challenge historic estate design assumptions

LATEST NATIONAL EVIDENCE

2025

Warmest UK year in the record beginning in 1884

+1.33°C

The 2016 to 2025 UK average compared with 1961 to 1990

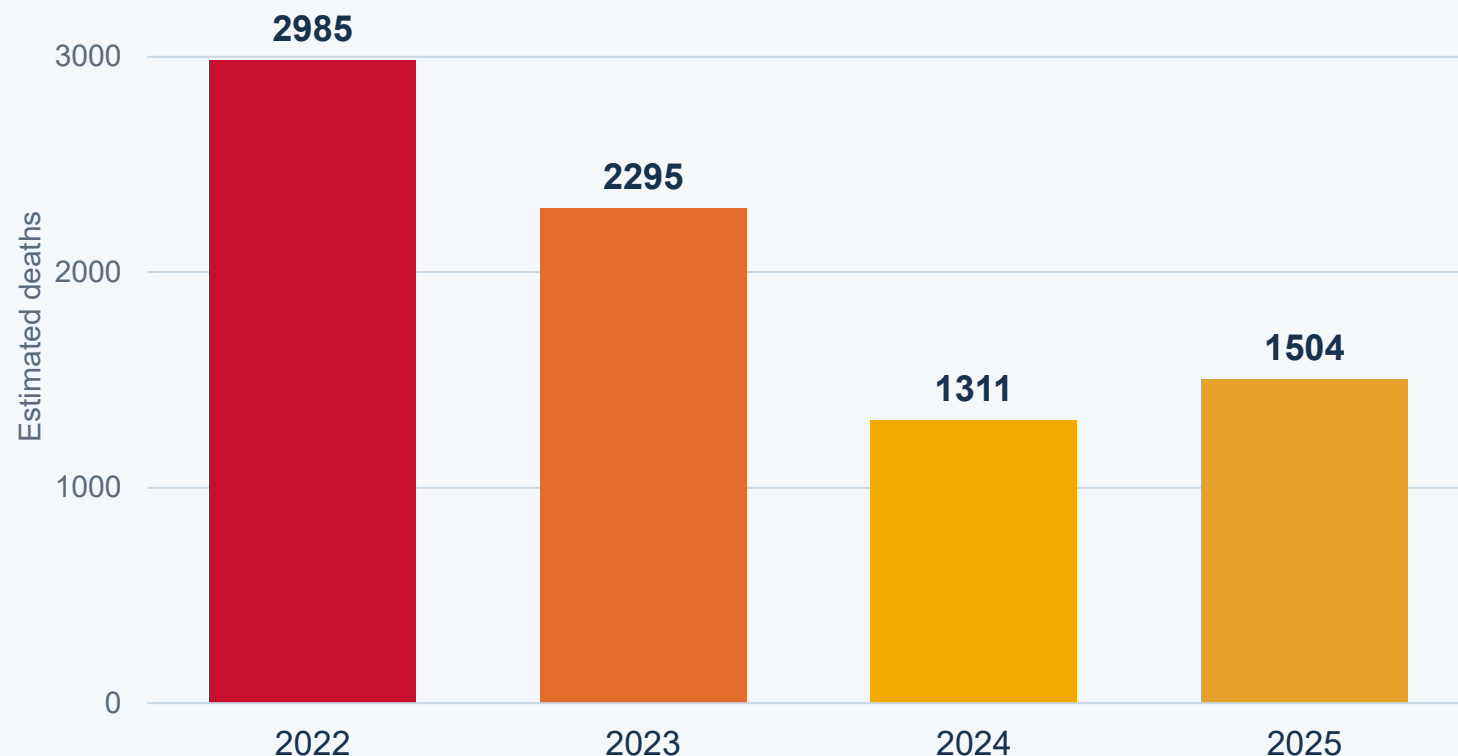
>4×

Days above 30°C and nights above 18°C in Greater London, latest decade versus 1961 to 1990

Planning implication: historical weather files and winter-led design assumptions no longer provide enough protection for clinical environments, digital infrastructure and staff.

Heat already creates a measurable health burden

UKHSA estimates for England during monitored heat episodes



2026 interim signal

2,877

estimated heat-associated deaths in May and June

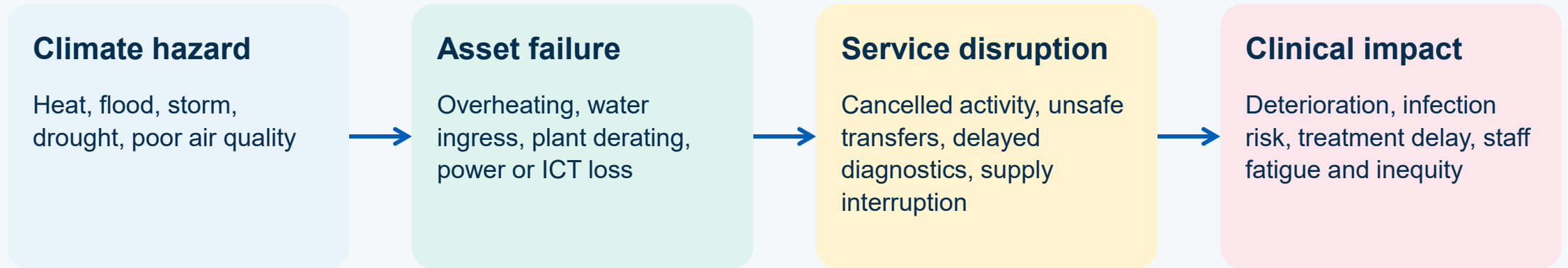
Provisional estimate. It excludes July and is not a full-summer total.

Patient safety response: combine heat-health actions with building controls and continuity plans.

Sources: UKHSA heat mortality reports, 2022 to 2026 interim

How climate hazards become patient harm

A failure pathway that crosses clinical, estate and supply boundaries



Risk ownership must follow the whole pathway

EPRR, estates, clinical teams, digital, pharmacy, procurement and workforce each control a different failure point.

NHS estate constraints

Energy demand, backlog maintenance and carbon targets compete for capital

11.3 bn kWh

Total energy consumption
across the NHS estate in
2024/25

£15.9 bn

Estimated cost to eradicate
NHS estate backlog
maintenance in 2024/25

14%

Reduction in the NHS Carbon
Footprint since 2019/20

Strategic consequence A single capital pipeline can align backlog maintenance, adaptation and decarbonisation.

Priority hazards and service consequences

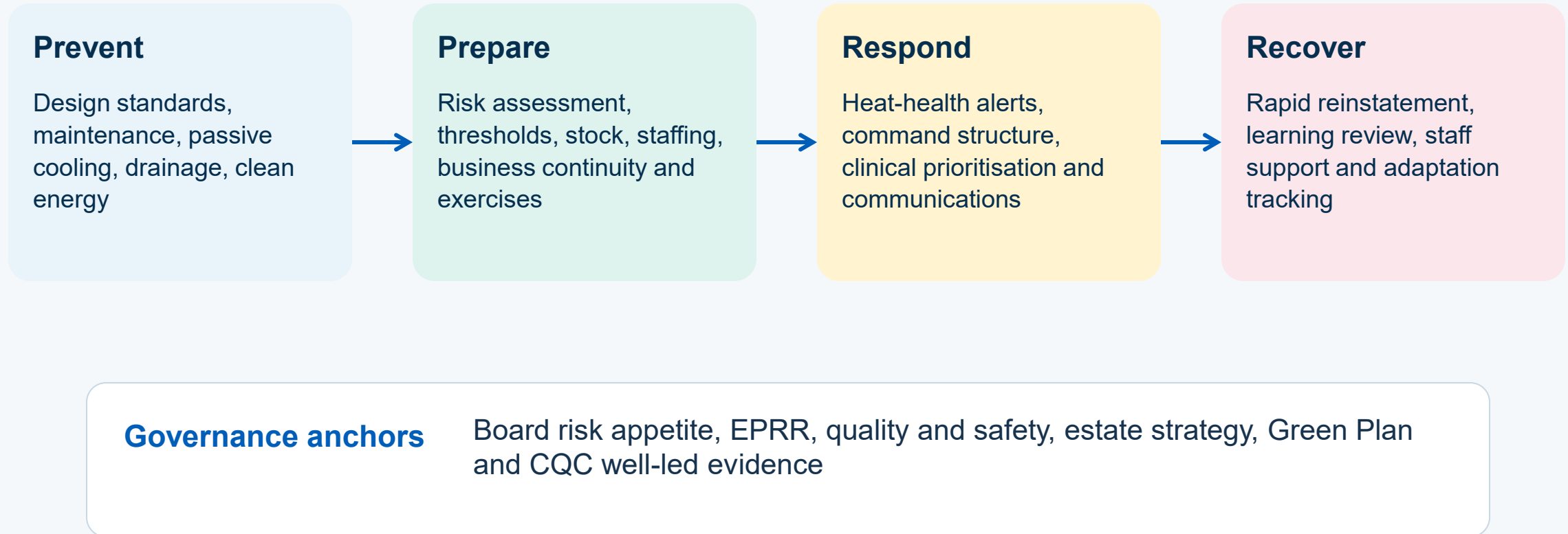
A starting matrix for trust and system risk assessment

Hazard	Direct estate effect	Clinical and workforce consequence	Priority controls
Extreme heat	Wards and theatres overheat. Cooling and electrical loads rise	Deterioration, medicine storage risk, cancellations, fatigue	Passive cooling, zoning, monitoring, heat plans
Flooding	Water ingress. Access, plant, power and ICT can fail	Evacuation, delayed care, contamination, lost capacity	Site mapping, barriers, drainage, protected plant
Water scarcity	Supply pressure, cooling and hygiene constraints	Infection prevention and critical process risk	Water plans, storage, leak control, prioritisation
Storm and power loss	Grid, roof, telecoms and transport disruption	Critical equipment risk, staff and supply delays	Redundancy, testing, fuel assurance, island-capable power systems
Poor air quality	Ventilation and filtration demands increase	Respiratory harm, staff absence, unequal exposure	Filtration, monitoring, clean transport and alerts

Use the NHS Climate Change Risk Assessment tool to localise exposure, vulnerability and controls

Climate resilience in the clinical quality system

Existing quality, risk and emergency planning controls provide the route



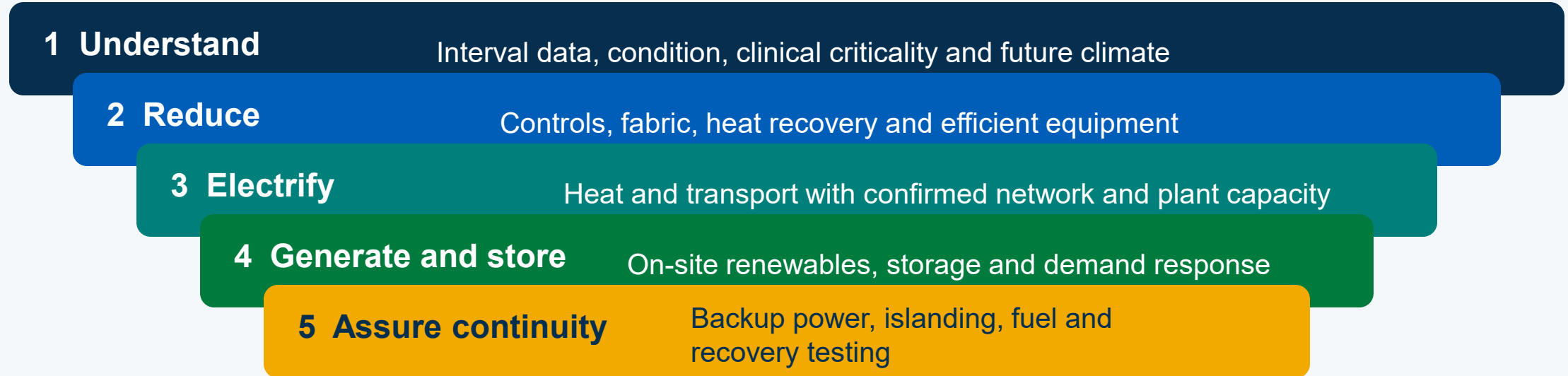
Energy strategy for reliable care

Energy strategy should manage demand, supply, capacity and continuity together

- | | | |
|----|-------------------------------|---|
| 01 | Reduce demand | Controls, fabric, lighting and ventilation optimisation lower cost and release electrical capacity. |
| 02 | Modernise heat | Low-temperature systems and heat pumps reduce gas dependence when the building is ready. |
| 03 | Diversify supply | Solar, storage and long-term procurement can reduce exposure to price volatility and grid carbon. |
| 04 | Protect critical loads | Tested backup, islanding and demand prioritisation support continuity during disruption. |

A resilient energy hierarchy

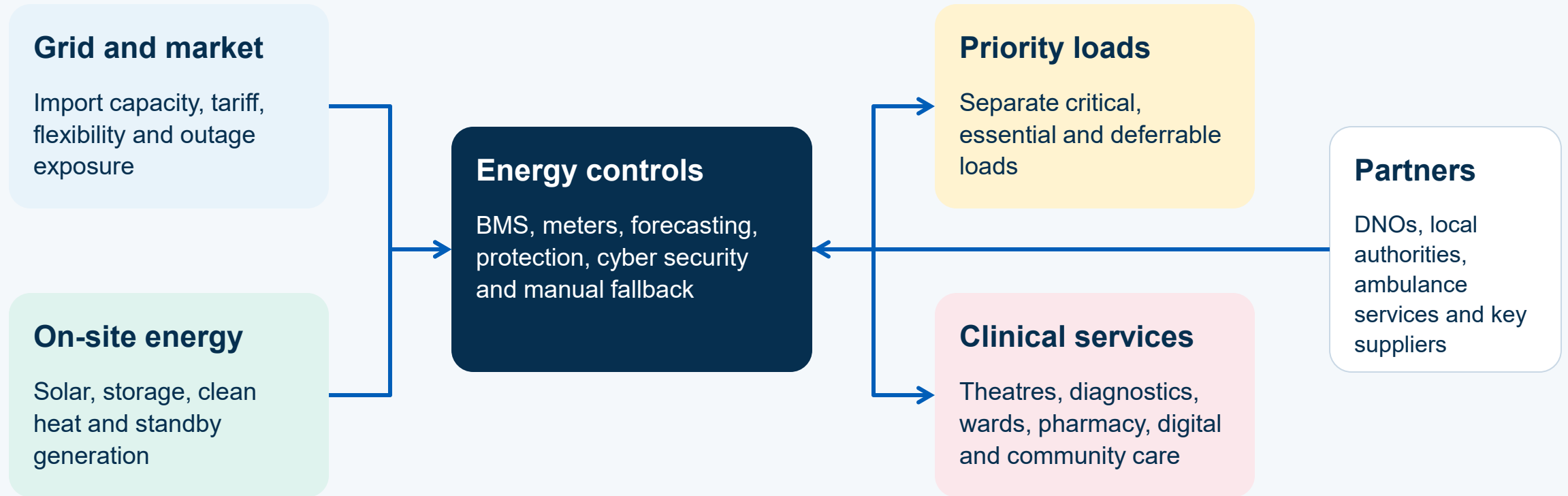
The sequence protects value and avoids oversized infrastructure



Capital gate: every major estate project should evidence both climate resilience and whole-life carbon performance.

Resilient low-carbon energy architecture

A conceptual design for critical healthcare loads



Key test: can the site maintain defined clinical loads for the required duration under a credible compound event?

Conceptual architecture. Engineering design and protection studies are site-specific.

A four-part business case

Rank investments using clinical, asset, financial and carbon evidence



Clinical criticality

Which services, patients and staff are exposed?
What harm could occur?



Asset and climate risk

Condition, remaining life, hazard exposure,
interdependencies and failure mode



Whole-life value

Capital, operating cost, avoided disruption,
maintenance and residual risk



Carbon and capacity

Energy, emissions, grid headroom, renewable
potential and future policy requirements

Portfolio rule: prioritise no-regrets measures that reduce current risk and preserve options for future heat decarbonisation.

Design guardrails that prevent maladaptation

Low-carbon technology can create new failure modes if the system is not ready



Cooling

Prioritise shading, ventilation, zoning and controls before adding large cooling loads.



Heat electrification

Reduce demand and confirm electrical capacity, redundancy and low-temperature performance first.



Solar and batteries

Specify protection and islanding if the assets must support care during a grid outage.



Fabric upgrades

Model overheating, ventilation, infection control, condensation and moisture risk together.

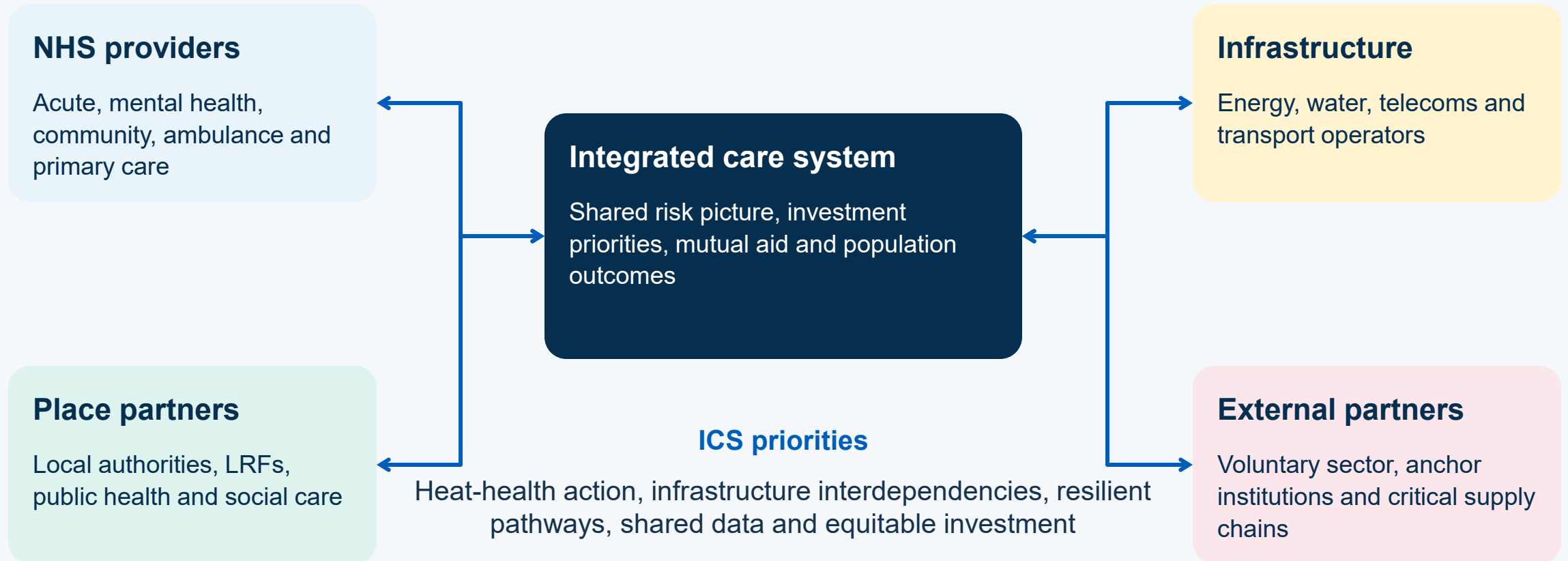


Smart controls

Build cyber security, sensor quality, commissioning and manual fail-safe operation into the design.

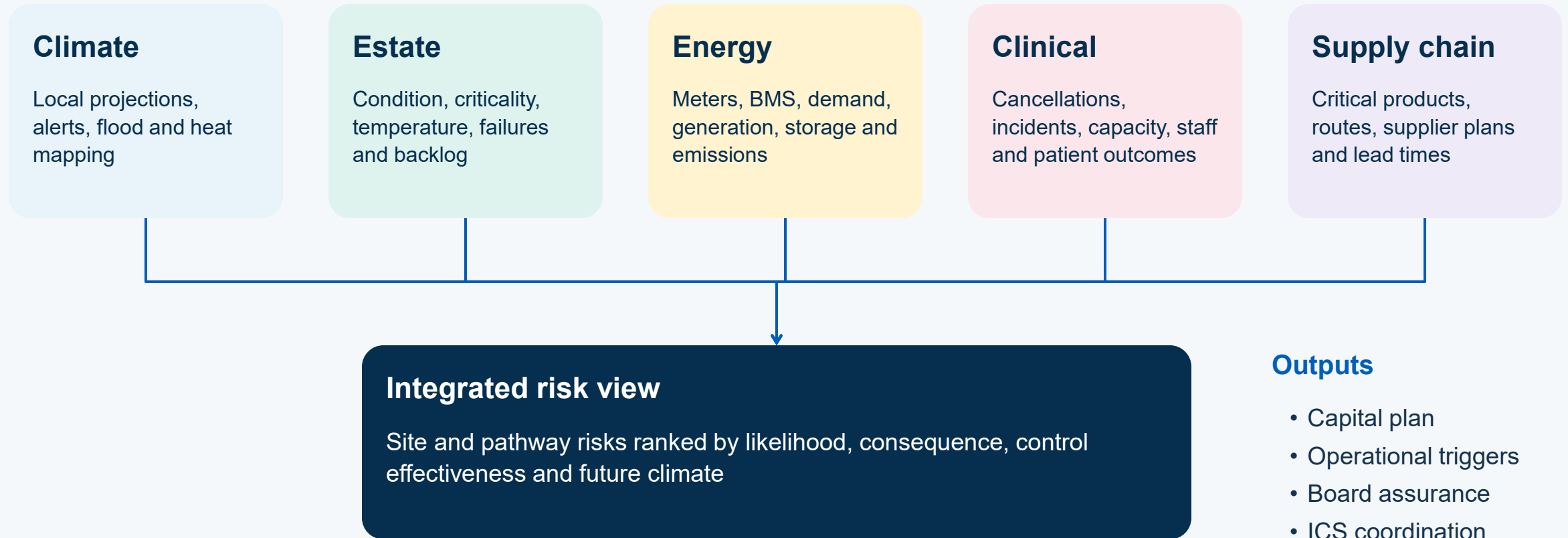
ICS coordination beyond the hospital boundary

Many critical dependencies sit outside trust control



Integrated resilience and energy data

Link climate exposure to assets, services, finance and outcomes



Implementation barriers and practical responses

The transition must work within live clinical operations

Barrier	Practical response
Ageing estate and infrastructure	Bundle resilience and energy measures with lifecycle replacement. Include enabling works and surveys in the capital plan.
Capital limits and competing priorities	Rank a portfolio by patient risk, whole-life value and readiness. Create a no-regrets pipeline.
Fragmented data and risk assessment	Adopt the NHS CCRA tool. Create one asset, energy and clinical evidence base.
Workforce capacity and capability	Name technical and clinical leads. Use standard designs, training and external support selectively.
Supply-chain fragility	Map critical products and routes. Require continuity plans and relevant carbon evidence through procurement.
Operational disruption during transition	Plan phasing, isolation, commissioning, infection controls and fallback with clinical teams.
Governance and accountability gaps	Appoint one executive SRO. Integrate reporting across quality, finance, estates, EPRR and the Green Plan.

Responses combine national guidance with practical programme controls

Governance and accountability

A clear route from risk ownership to delivery and assurance

Level	Primary accountability	Core responsibilities	Evidence
Board	Risk appetite and investment	Approve strategy, tolerances, capital priorities and reporting	Board assurance and annual review
Executive SRO	Integrated delivery	Resolve trade-offs across clinical operations, finance, estates, EPRR and digital	Benefits, risks and decisions
Programme leads	Controls and implementation	Deliver CCRA, heat plans, asset projects, energy, procurement and engagement	Milestones and control tests
Independent assurance	Challenge and learning	Audit data, test continuity, review incidents and verify benefits	Audit, exercises and post-project review
ICS partnership	Interdependencies	Coordinate shared risks, mutual aid, infrastructure and population outcomes	Integrated care strategy and joint exercises

One named SRO, one integrated risk register and one benefits framework

Governance should link Green Plan, EPRR, quality, estate and financial planning

A staged delivery roadmap

Build capability quickly while developing the capital programme

0 to 90 days

Governance and baseline

- Name SRO and programme group
- Screen critical sites and services
- Confirm heat and severe-weather controls
- Define board metrics

3 to 12 months

Risk and no-regrets delivery

- Complete priority CCRA
- Fix controls and monitoring gaps
- Develop heat and flood adaptation plans
- Create ranked investment pipeline

12 to 60 months

Estate transformation

- Integrate lifecycle and decarbonisation plans
- Deliver fabric, controls and heat projects
- Expand solar, storage and flexibility
- Strengthen critical-load resilience

Annual cycle

Assurance and learning

- Exercise compound events
- Verify savings and resilience benefits
- Refresh risks and climate data
- Report to the board and ICS

Sequence capital around clinical risk, asset life and enabling capacity

Roadmap can align with Green Plan, estate strategy and annual EPRR cycles

Actions for NHS organisations

A concise scorecard can show whether risk is reducing

Domain	Suggested measures
Patient safety	Overheating incidents, weather-related cancellations, staff heat exposure, medicine or cold-chain incidents
Operational resilience	Critical services assessed, disruption hours, backup tests passed, high risks with effective controls
Energy and carbon	Weather-normalised kWh/m ² , gas share, peak demand, renewable generation, direct emissions
Delivery and value	Milestones, capital committed, savings verified, backlog risks addressed, residual risk
System resilience	ICS interdependencies assessed, joint exercises, critical suppliers reviewed, vulnerable groups covered

Actions to take back

- Appoint one executive SRO.
- Integrate climate risk into estate and energy investment.
- Approve a ranked no-regrets pipeline.
- Use the ICS to test interdependencies and mutual aid.

Outcome: safer care, a more reliable estate and a credible path to net zero.

Select measures with clear ownership and a defined decision purpose

Skills Clinic



Jonathan Guppy
Head of Sustainability
South Central Ambulance Service
NHS Foundation Trust



Janet Smith
Head of Sustainability
Royal Wolverhampton NHS Trust &
Walsall Healthcare NHS Trust



Lyndsay Muirhead
Clinical Sustainability Project Lead
UCLH



Refreshments & Networking



Chair Morning Reflection



Gurnak Singh Dosanjh

GP & ICB Deputy Chief Clinical Information Officer
Leicester, Leicestershire & Rutland ICB



Case Study



Case Study



Adil Sardardeen
Sustainability Manager
Apollo Fire Detectors



Case Study



good
energy



Case Study



Rosie Hendry-Day
Head of Commercial Operations
Good Energy



Cutting costs not corners with **Good Energy**



Become energy resilient, save money and carbon emissions – without compromising on patient care

Rosie Hendry-Day
Head of Commercial

Progress made but **pressure remains**

14%

reduction in NHS
estate carbon
emission since
2020

£1.5bn

estimated annual
energy costs, and
the UK's largest
energy user

15%

of NHS carbon
emissions sourced
from estates and
facilities

Resilience is brilliance

Making an impact across NHS Trust sites

- GB Energy initially committed to installing solar on nearly 200 NHS sites
- Successful initial scheme has now been expanded to a further 34 NHS Trusts, covering 70 new sites
- Combined estimated lifetime energy bill savings of up to £65 million



We put people and planet **first**

- We're proud to be B Corporation certified
- For over 25 years we've been helping businesses lower carbon emissions
- Providing 100% renewable electricity
- Leading global smart energy technologies installed
- Enhanced DBS and Barred List staff
- Longer product warranties as standard
- Projects assigned a PM from day one



Healthy buildings **start from the top**

Solar PV offers a reliable way to generate electricity, supporting long-term NHS budgets and slashing carbon emissions year after year.



Reduce costs



Cut carbon



Become energy
resilient



Report
accurately

Power optimisers for **safety**

Power optimisers are designed to automatically drop to 1V DC when:

- The inverter has been switched off
- A building is disconnected from the electricity grid
- Unforeseen circumstances such as wildlife damage or corrosion/degradation of components
- System has arc fault detection, DC rapid shutdown and SafeDCTM



We put NHS roof space to work

Queen Victoria Memorial Hospital

- Generates 104,369 kW/h per year
- Reduced annual CO2 emissions by 26.4 tonnes
- Achieved RoI in 3 years and 5 months

Rye & Winchelsea Hospital

- 74,300kW/h generated per year
- Split out over multiple sites for maximum efficiency
- Stakeholder collaboration



The Good Energy difference



Find us on these frameworks:

- Crown Commercial Services
- ESPO
- YPO
- Everything Estates



Unmatched safety and risk management



Installations tailored to site-specific requirements

Thank you

Any questions?

Rosie Hendry-Day
Head of Commercial
rosie.hendry-day@goodenergy.co.uk



Leadership Interview



Dr Stefano Capozzi
CMO

Brighton and Hove GP Federation



Case Study

xWatts



Case Study



Alex Allen
Co-Founder - xWatts



Rupert Lane
Chief Commercial Officer
xWatts





Energy optimisation in two NHS buildings

A Greener NHS funded study using calibrated energy modelling and control strategy changes

WHERE

An NHS acute trust

WHAT

Two buildings modelled and calibrated
against metered data

FUNDED BY

Greener NHS



Alexander Allen,
CPO & Co-Founder of xWatts



Rupert Lane
CCO of xWatts

Lunch & Networking



Chair Afternoon Address



Gurnak Singh Dosanjh

GP & ICB Deputy Chief Clinical Information Officer
Leicester, Leicestershire & Rutland ICB



Case Study



Case Study



Simon Hayman

Regional Director | Healthcare Decarbonisation & FM
Equans UK & Ireland





Decarbonising the NHS with climate resilience at the core



Today's session



Decarbonisation

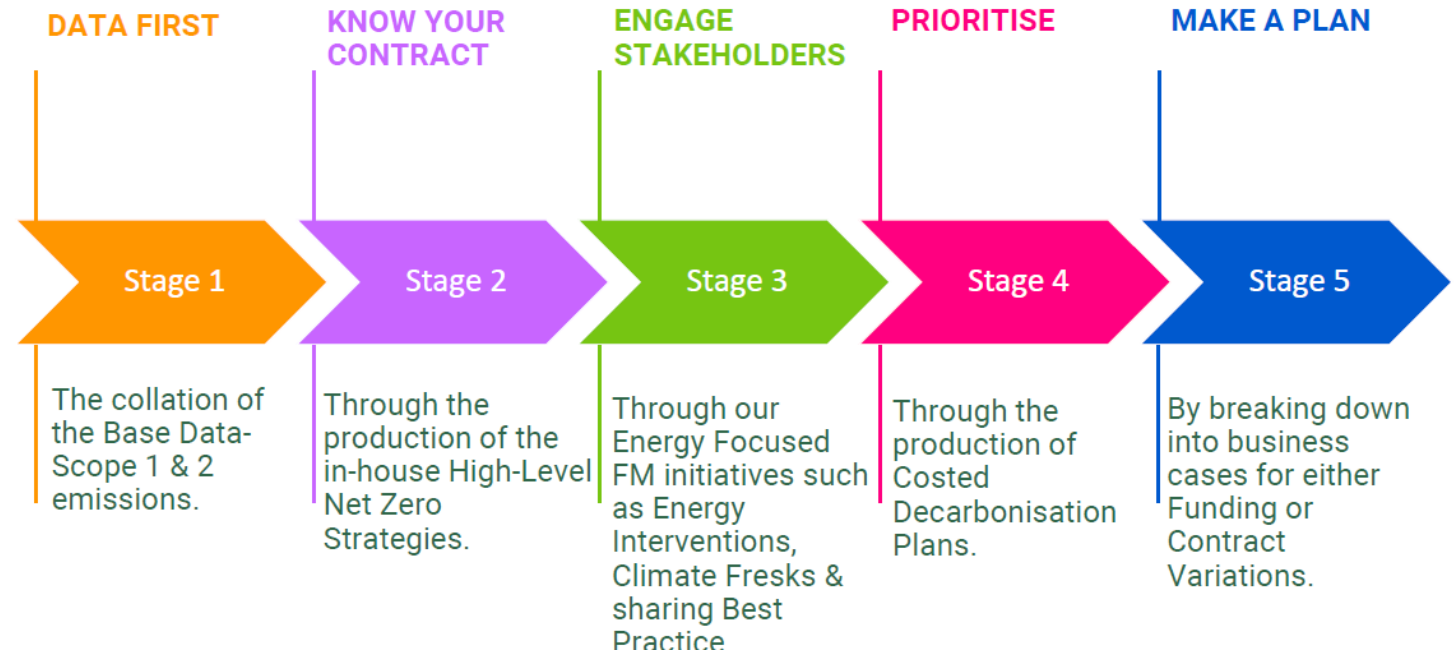
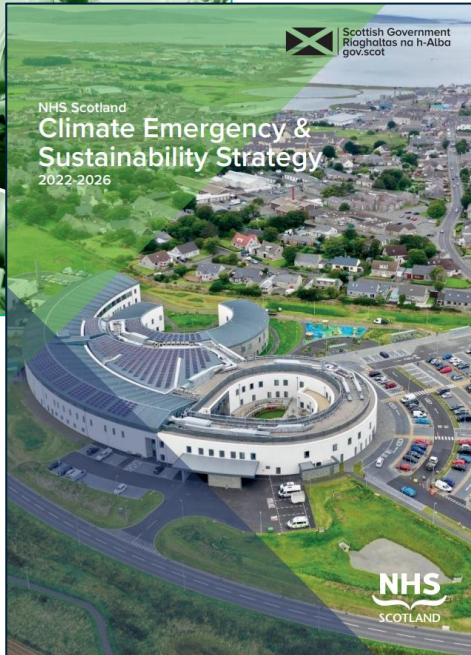
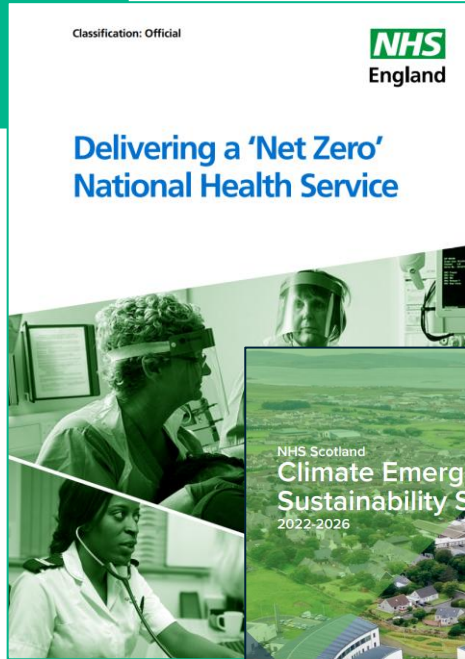


Climate adaptation



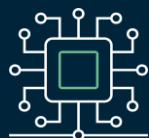
Digitalisation





The all-electric hospital

The way we power hospitals is contributing to climate change and poor air quality.



These hospitals integrate digitalisation, automation, and system integration to improve energy efficiency, patient care, and operational resilience whilst achieving the Net Zero goal.

Energy interventions

An **act** taken to reduce **energy consumption** on site.

For example, closing a window, turning off a light or checking if the BMS is working correctly to optimise energy efficiency.



Energy Reduction



Climate Impact



Site Tracking

What do we track?

- Individual
- Location
- Date & Time
- Type of intervention
- Quantity

Operational integration

447,000 interventions

50 site onboarded

800+ employees engages



Solar PV + battery storage integrated solutions



Be Prepared

- Business cases up to date
- Contracts / DoV
- Energy Management



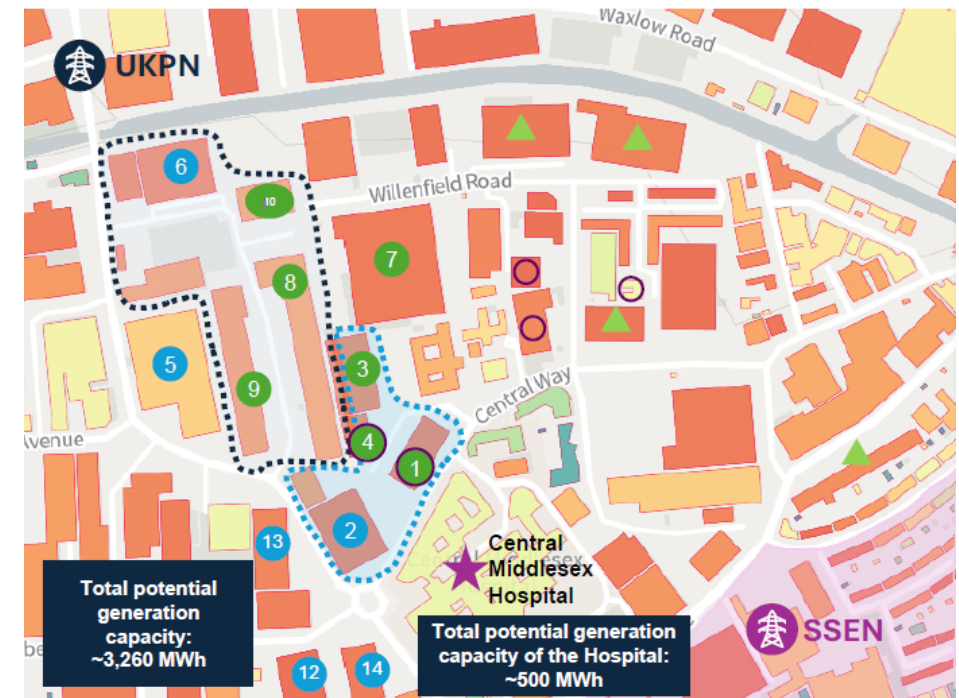
Car Ports & Roofs

- GB Energy and NHS scheme
- Battery Storage
- Supply Chain volatility



Microgrids / Private Wire

- Zero Carbon Accelerator
- Cambridge University Hospital



Low carbon heat networks



Adaptation in preparation

- Temperature Optimisation Study
- Heat pump counterfactual study



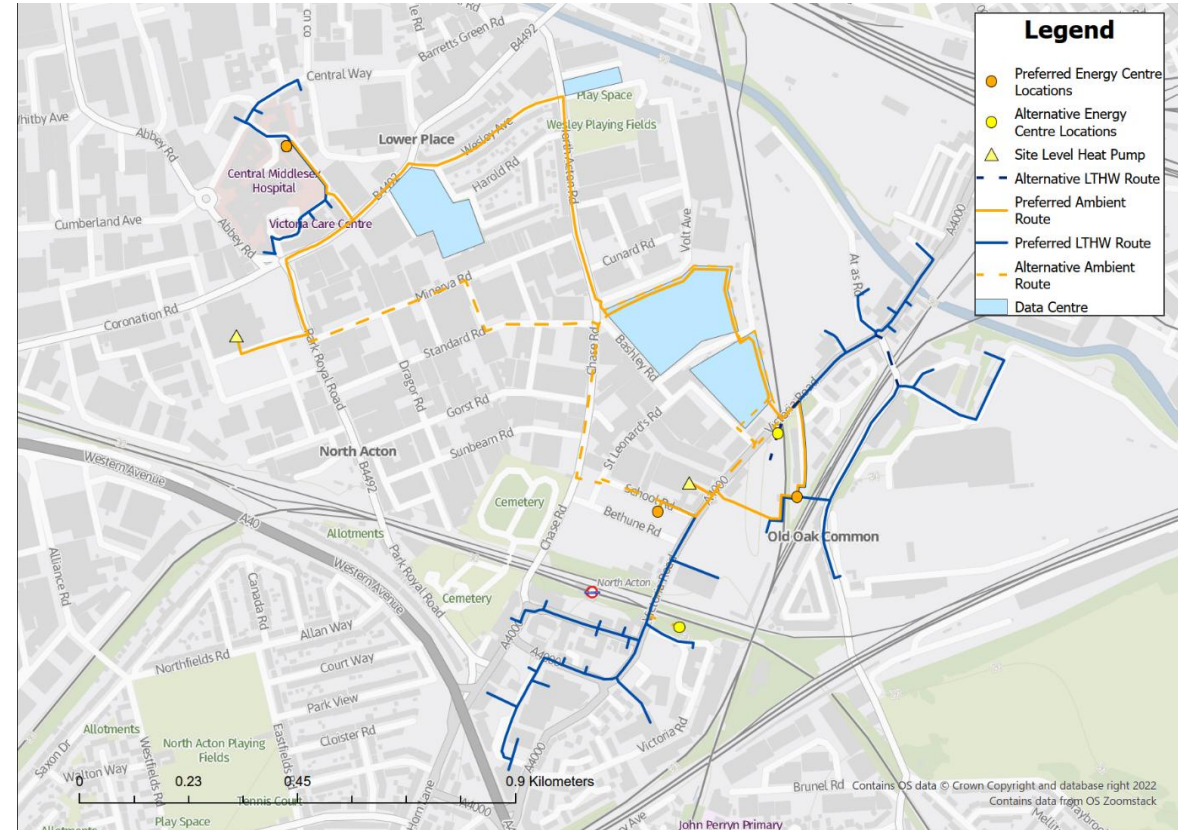
Capex

- Green Heat Network Fund
- Heat Network Efficiency Scheme
- DESNZ technical support



Opex

- Reducing load
- Spark Gap



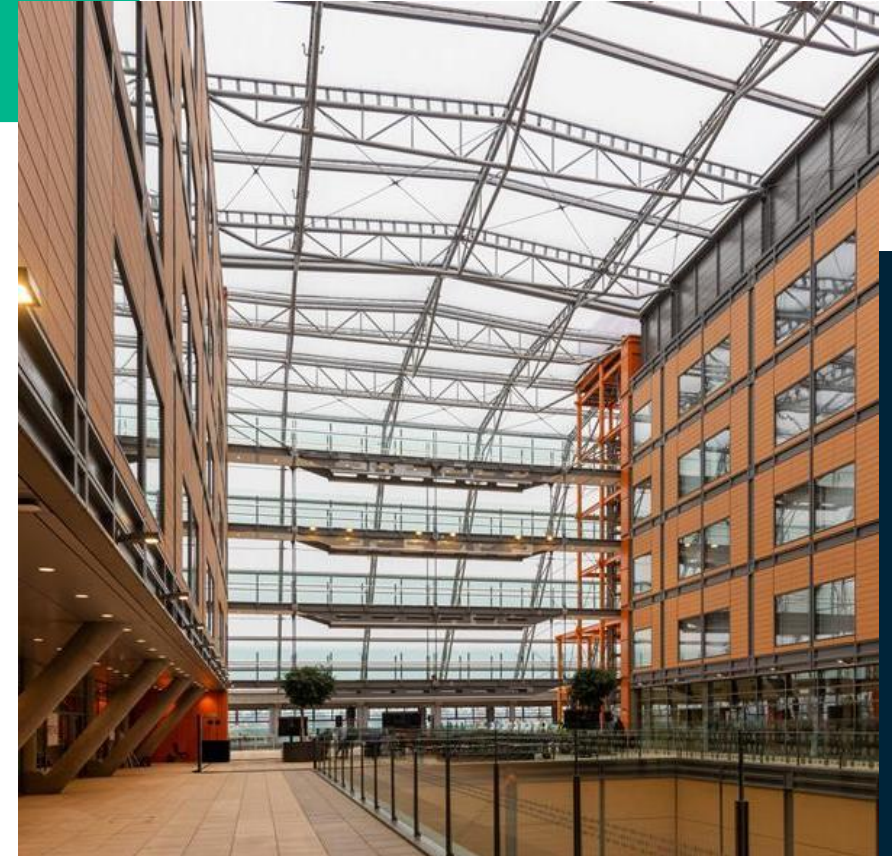
Seasonal commissioning & optimisation

Initial seasonal commissioning impact on energy

Design	49GJ/100cu.M
Handover	66GJ/100cu.M
Nov 25	59GJ/100Cu.M
Now	53-55GJ/100Cu.M

Optimisation & quick wins

- ✓ Ventilation downturns (especially Theatres)
- ✓ NOX
- ✓ CHP
- ✓ LED and Lighting Control
- ✓ Billing validation
- ✓ Productivity-Rooms



Making your estate & operations resilient to climate risks



Identify
the risks



Why do you think
climate adaptation
is important to your
NHS Trusts?



What are the biggest
barriers your
organisation faces in
implementing climate
adaptation strategies?



Does your
organisation have a
documented plan for
climate adaptation?

Climate Adaptation 5-step plan



**Climate
Adaptation
Awareness &
Maturity Survey**

01



**Understand
your risk
through
climate
intelligence &
analytics**

02



**Building level
vulnerability
assessments**

03



**Adaptation
strategy &
feasibility**

04



**Adaptation
measure design,
implementation &
monitoring
solutions**

05

Climate adaptation – heat plan

2026 – 4 heatwaves

- Heat Plan
- Heatwave Response Group
- Chillers – Service / Clean Coils
- Chillers – Top Hats
- Chillers – Permanent Connections for Temporary
- Windows
- Infection Control – Fans
- Location of temp coolers
- Order temp units
- Energy Interventions
- Designated Cool Rooms – Staff and Patients



Smart hospital:

Developing an over-arching digital strategy



KPIs for patient care, experience and overall satisfaction

- Overall patient satisfaction
- Waiting time
- Staff responsiveness



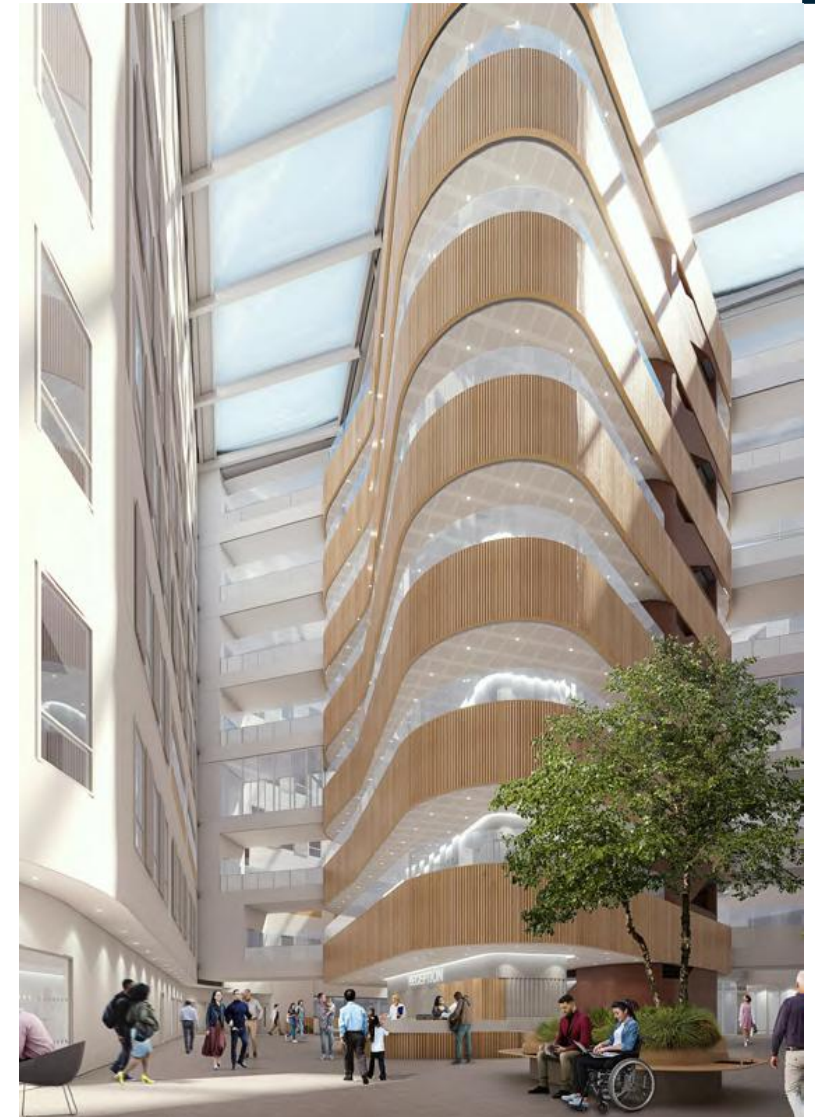
KPIs medical staff

- Bed turnover rate
- Nursing staff productivity
- Equipment turnover rate

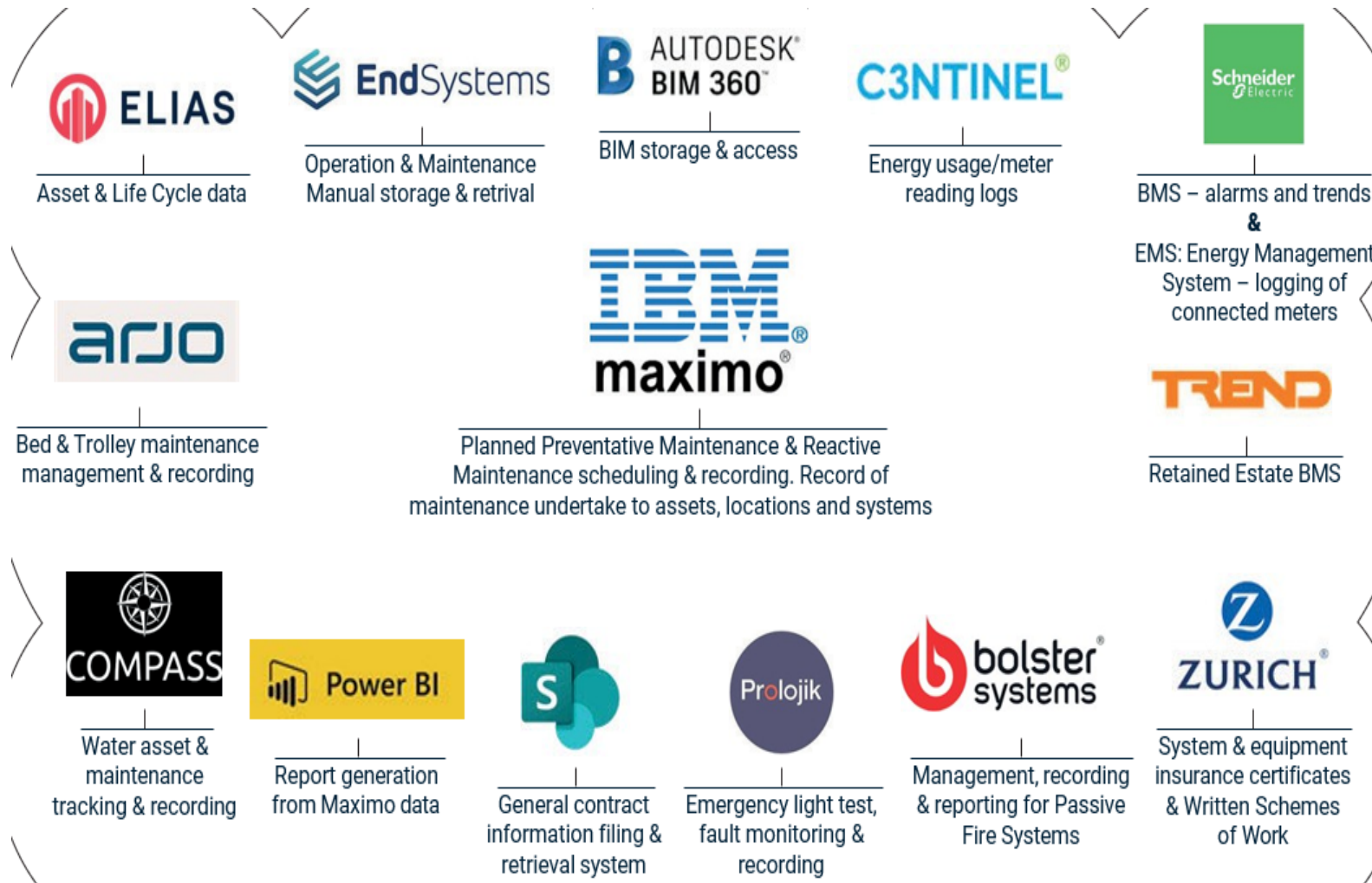


KPIs for hospital services

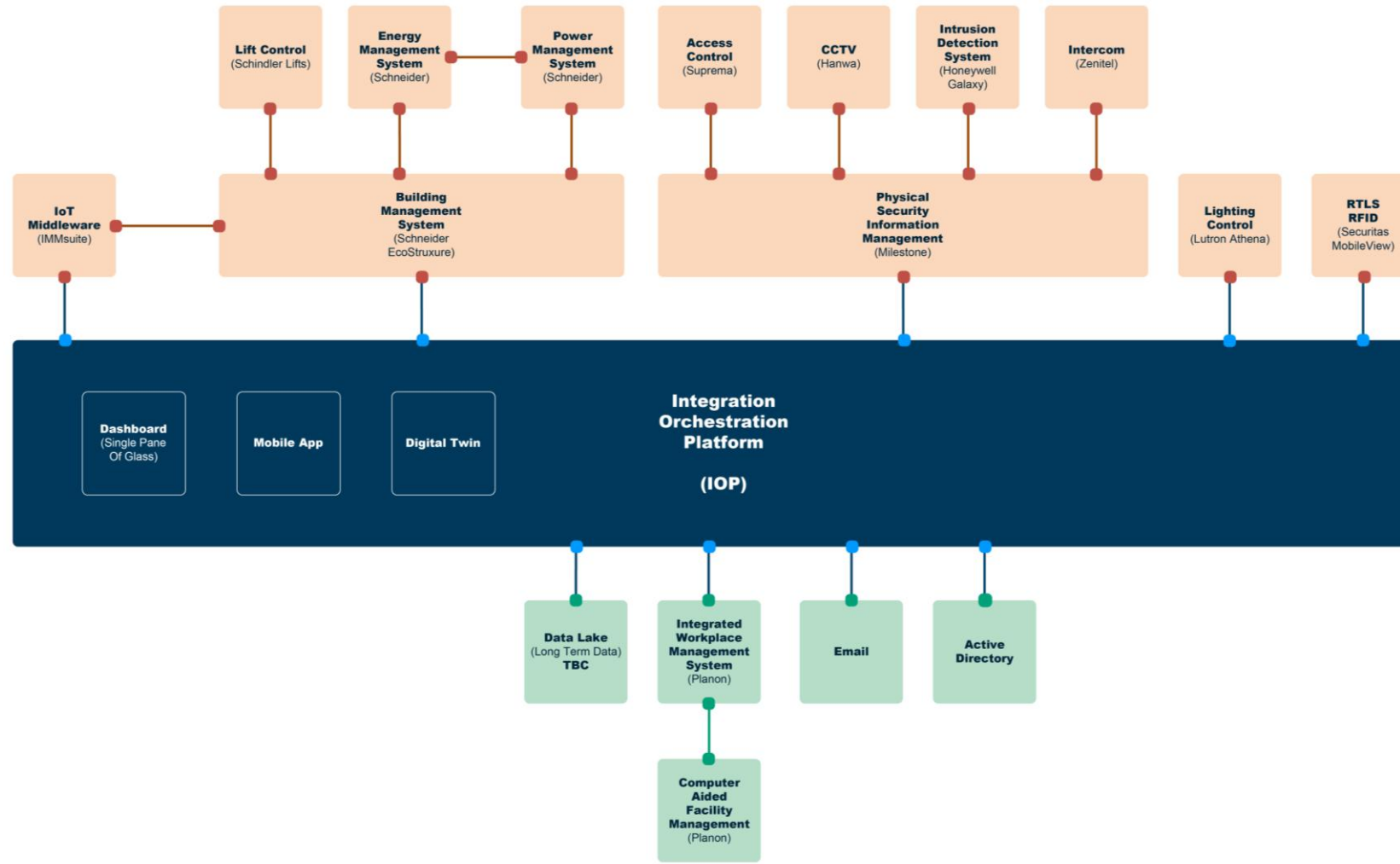
- Energy efficiency
- Carbon reduction
- Space utilisation
- One version of the truth



Smart hospitals - digital transformation



Smart hospitals - digital transformation



Keynote Presentation



Alan Stenson
CEO
Neutral Carbon Zone (NCZ)





The Credibility Test:

**Turning NHS Net-Zero Commitments into
Accountable Delivery**

The question has changed

From:

“Do we have a net-zero target?”

To:

“Can that target stand up?”



Commitment



Measurement



Credibility

NHS

ncz

The NHS opportunity

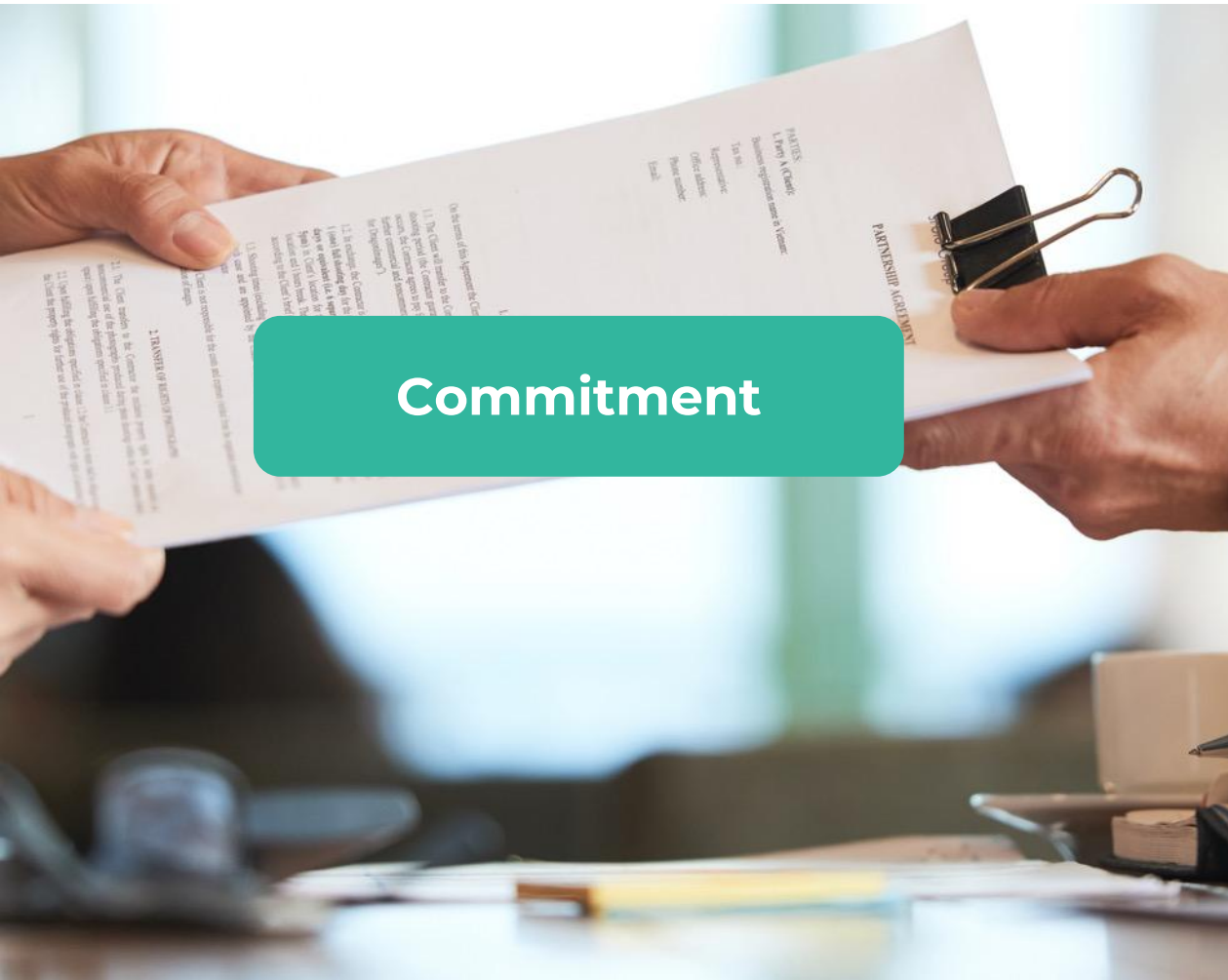
The NHS can set the standard for accountable net-zero delivery at scale.

Leadership. Influence. Trust. Delivery.



Commitment is not delivery

A target on a page is not the same as accountable delivery.



Commitment



Delivery System



The delivery triangle



If ownership is vague, delivery will be vague.

Who owns progress?

Who challenges the data?

Who reviews risk?

Which decisions are being influenced?



NHS

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Procurement should create a direction of travel, not just another barrier.

NHS



Priority Suppliers



Carbon Data



Improvement

NHS

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Reporting should not be the end point. It should be the start of better decisions.

Transparent.

Honest.

Useful.

Actionable.



NHS

ncz

Credibility does not require perfection. It requires honesty, evidence and improvement.



What we know.



What we don't know yet



What we've improved



What we'll do next



The leaders will not be the ones with the boldest claims. They will be the ones with the clearest evidence.

Govern net zero.

Use procurement as a lever.

Report with credibility.



Let's make this carbon neutral.



Alan Stenson

alan@nczgroup.com



**CARBON
ACCOUNTING
ALLIANCE**



**INTERNATIONAL
ORGANIZATION FOR
STANDARDIZATION**



**GREENHOUSE
GAS PROTOCOL**

Slido

Please scan the QR Code on the screen. This will take you through to Slido, where you can interact with us.



Case Study



Case Study



Donna Brown
Managing Director – Public
Sector Strategic
Partnerships – Government
Healthcare, Education
ISS



Richard Crawshaw
Director of Sustainability
ISS UK & Ireland



Championing Sustainable Places

WHY NHS WASTE MATTERS

WORKING TO REDUCE INEFFICIENCIES ACROSS ENERGY, PEOPLE AND PROCESSES

Donna Brown & Richard Crawshaw
ISS Facility Services

NetZeroNHS 2026 | 22 September 2026



PEOPLE-FIRST FM





THE REALITY FACING NHS ORGANISATIONS

Operational and financial pressures are the context of every Net Zero decision

Financial

Cost and efficiency targets tightening

Operational

Estate age, capacity and workforce pressures

Regulations

Net Zero and Green Plan Commitments

The challenge is how we deliver Net Zero and sustainability within these constraints.

Turning NHS Ambition Into Action

Helping NHS Trusts meet their Greener NHS commitments and Green Plan targets across their estates



Our Sustainability Commitments

Creating spaces for our people and planet to thrive

- Net-Zero by 2040 & SBTi targets
- Social Value & enabling social mobility
- Meeting NHS supplier requirements



Creating Sustainable Places

Sustainability designed in facilities management, not added on

- Sustainable materials and consumables
- Continuous improvements in delivery methods
- Delivered on site, every day by our people



Sustainability Services *guided by Anthesis*

How ISS x Anthesis turn sustainability ambition into delivery in healthcare

- Low carbon, zero waste & socially responsible places
- Measurable, evidenced improvements
- Designed to improve outcomes and reduce costs

Across all three lenses, better outcomes start by identifying and eliminating waste.

WHY WASTE MATTERS

WASTE ISN'T JUST BINS

ENERGY WASTE

- Optimisation Programme
- Audits & Procurement
- Decarbonisation

FOOD WASTE

- Right Food, Right Time
- Measure Uneaten Food
- Prevent Over-Ordering

PHYSICAL WASTE

- Clinical & Offensive
- Recycling & Reduction
- Segregation at Source

PROCESS WASTE

- New Portering Standards
- Match Capacity to Demand
- Underused Skills & Talents

RESOURCE WASTE

- Water Consumption
- Consumables
- Chemical Use

ASSET WASTE

- Poor Asset Utilisation
- Premature Replacement
- Reactive Maintenance

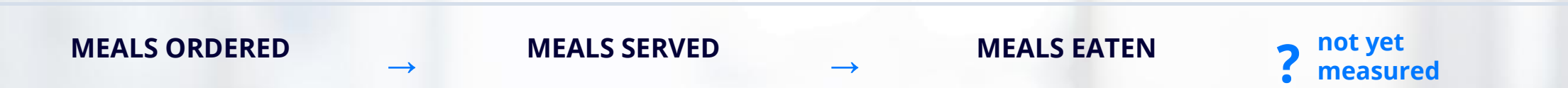
**IT'S ENERGY,
FOOD, RESOURCES,
ASSETS AND TIME.**



FOOD WASTE

MEASURE WASTE – NOT JUST FOOD COST

Three warning signals tell us where to look - but none yet measures food waste directly.



How many meals return untouched and how many kilograms are discarded?

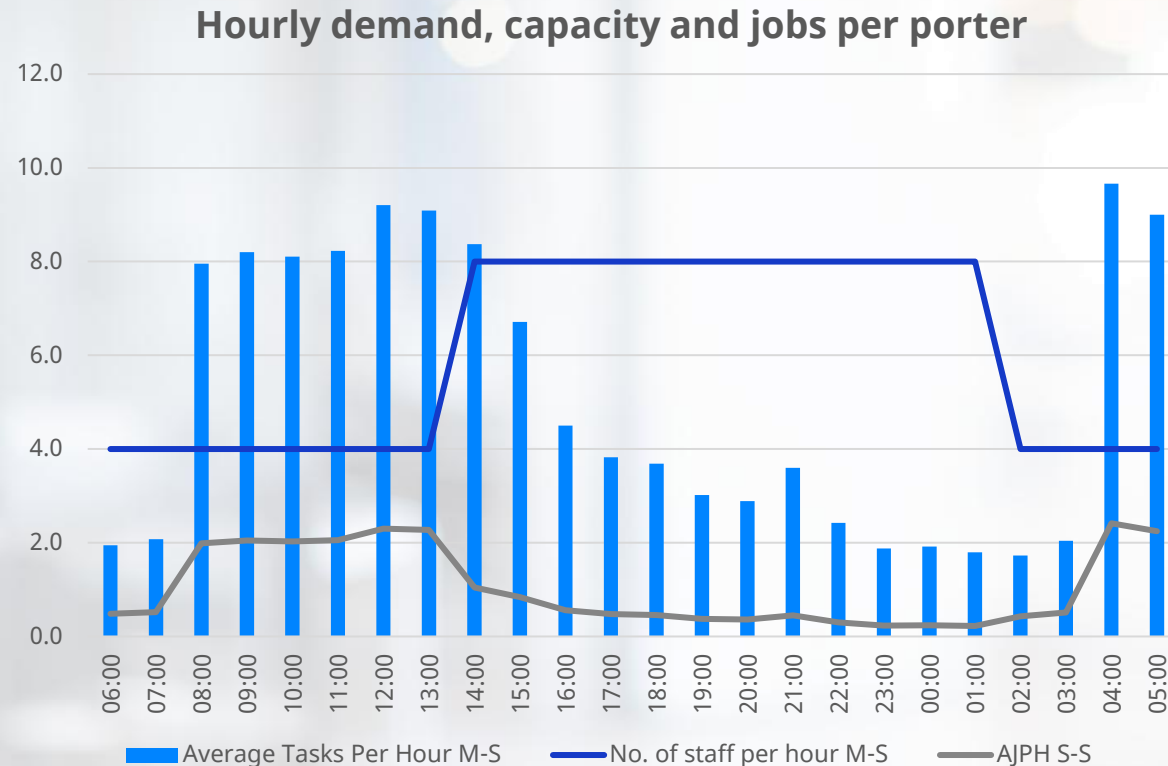
MEASURE NEXT

Uneaten meals	Food waste	Waste cost	Reasons
by ward and meal period	kilograms per meal	per occupied bed-day, production waste	nil-by-mouth, discharge, refusal, portion or over-ordering

The cost data tells us where to look. Measuring uneaten food tells us what to change.

PORTERING MAKES WASTED TIME VISIBLE

Time is often the waste stream we measure least.



ONE SIMPLE MAP. THREE ACTIONS.

1 Match capacity to demand

Capacity exceeds activity overnight; demand exceeds capacity from 08:00–14:00.

2 Find the friction

Variation can reveal delays in patient readiness, lifts, access or task hand-offs.

3 Measure what matters

Capture request, response and completion times - then remove avoidable delay.

A national mandate for improvement

NHS England's new standards and maturity matrix provide a framework for consistent, measurable improvement.

Source: NHS England, National standards for healthcare portering services, 8 July 2026

ENERGY WASTE

REDUCE CARBON & COST BY REDUCING ENERGY WASTE

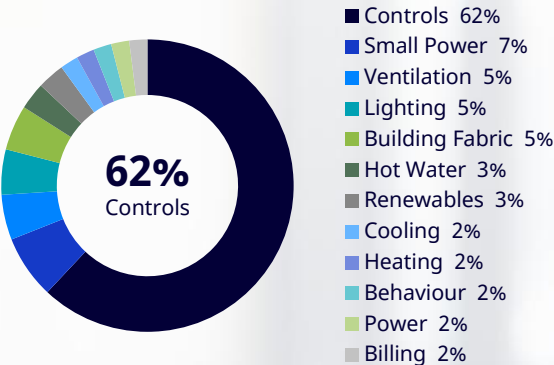
Understanding your energy use can unlock significant savings; as a recent audit showed:

8 GWh
Energy Waste Identified
Without impact to patient care

£1.4m
Cost Saving Opportunity
Available for re-investment

1,360t. CO₂e
Carbon Emission Avoidance
Supporting NHS Net-Zero Progress

Summary of Energy Saving Opportunities by Type



Maintaining your Energy Conservation Measures (ECMs) to sustain savings

EXAMPLES

Time Schedules
Managing environments to hospital capacity demand

Temperature Settings
Improved BMS & IoT controls with service user engagement

People-First Technology
Stakeholder engagement on analytics and data

Capital Investment
Ensuring forecast reductions deliver the expected ROI

The cost/consumption data tells us where to look. Measurement & Verification evidences the success

CLINICAL WASTE

SEGREGATE BETTET TO REDUCE WASTE, CARBON & COST

Improved waste performance through simpler recycling systems, digital tracking and targeted behaviour change

61%

Offensive Waste

Ahead of NHS 20:20:60 target

↓23%

Healthcare Waste Vol

230 tonnes annualised reduction

0.4t. CO₂e

Saved per tonne diverted

From infectious to offensive waste



Audit Waste



Make Segregation Easier



Track Performance

Improve Infrastructure & Support Behaviour Change

DELIVERY IN PRACTICE

Ward Level Insight

Identify where waste and contamination are generated

Digital Tracking

Monitor variance and identify improvement opportunities

Targeted Engagement

Focus support and behavioural change targeted at hotspots

Simpler Recycling

Right assets, right location with clear easy to use waste routes

Better data. Better segregation. Less waste. Lower cost and carbon.

CHAMPIONING SUSTAINABLE PLACES

The ISS Team



Donna Brown

Managing Director, Public Sector Strategic Partnerships

Brings senior leadership experience across NHS healthcare partnerships and the operational challenges facing healthcare estates



Richard Crawshaw

Director of Sustainability, UK & Ireland

Combines sustainability leadership with a strong understanding of FM, helping customers turn ambition into practical action across complex estates



Jenny May

Senior Social & Environmental Business Partner

Works with healthcare teams to embed social and environmental sustainability into everyday operations and customer delivery



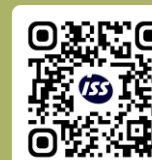
Lee Clark

Key Account Manager

Brings frontline healthcare FM experience and an operational perspective on delivering change within NHS environments

For 125 years, ISS has been championing **sustainable places**, supporting the wellbeing of people and creating healthier environments where organisations can perform at their best.

As climate change and societal expectations reshape how buildings operate, we are focused on helping our customers succeed in the next 125 years.



Scan the code or visit us online at **uk.issworld.com** to learn more.

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Slido

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NHS Deep Dive



Rebecca Housley
Consultant Nurse of the
Virtual Healthcare HHFT
Hampshire Hospital NHSFT



David Cruttenden-Wood
Clinical Director of Virtual
Healthcare, HHFT.
Acute, General & Colorectal Surgeon.
NHS England Regional Clinical
Advisor (UEC)
Hampshire Hospitals NHSFT



Exploring the Carbon Impact of virtual wards

Kate Townsend

Sustainability Manager, Berkshire Healthcare NHS Foundation Trust

Kate.Townsend@berkshire.nhs.uk

Rebecca Housley

Consultant Nurse, Virtual Health Hub, Hampshire Hospitals NHS Foundation Trust

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David Cruttenden-Wood

Virtual Health Hub Clinical Director, and Colorectal Surgeon, Hampshire Hospitals NHS Foundation Trust

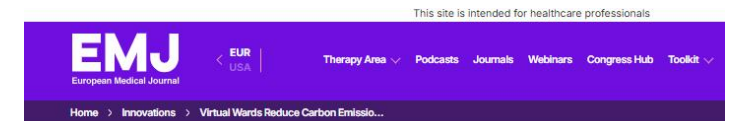
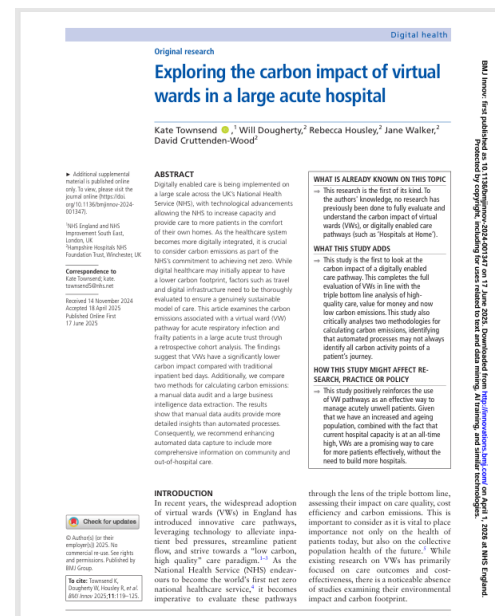
david.cruttenden-wood@hhft.nhs.uk



[Home](#) / [Posts](#) / [Press release](#) / [BMJ Innovations](#) / 'Virtual ward' bed uses 4 times less carbon than traditional inpatient bed

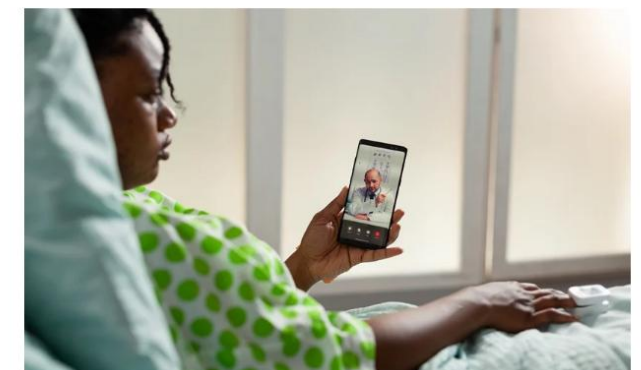
These wards have the potential to reduce need to build more high-carbon impact hospitals

A virtual ward bed uses 4 times less carbon than a traditional inpatient bed, so helping the NHS achieve its net zero target by 2045, finds the first [study](#) of its kind, published in the open access journal *BMJ Innovations*.



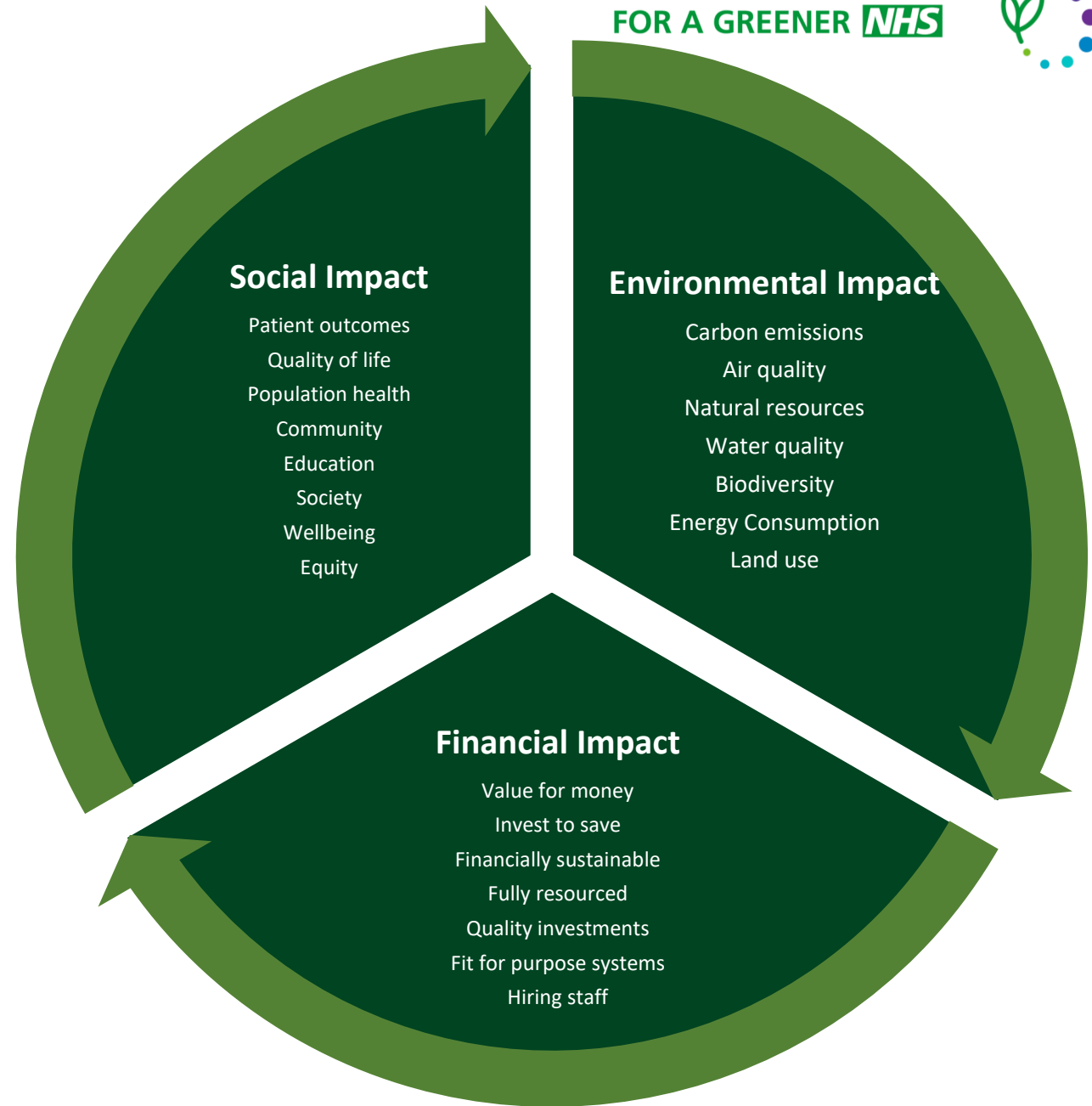
Virtual Wards Reduce Carbon Emissions Compared to Traditional Hospital Care

26 Jul 2025 | [Innovations](#) | [View All News](#)



Sustainable Healthcare

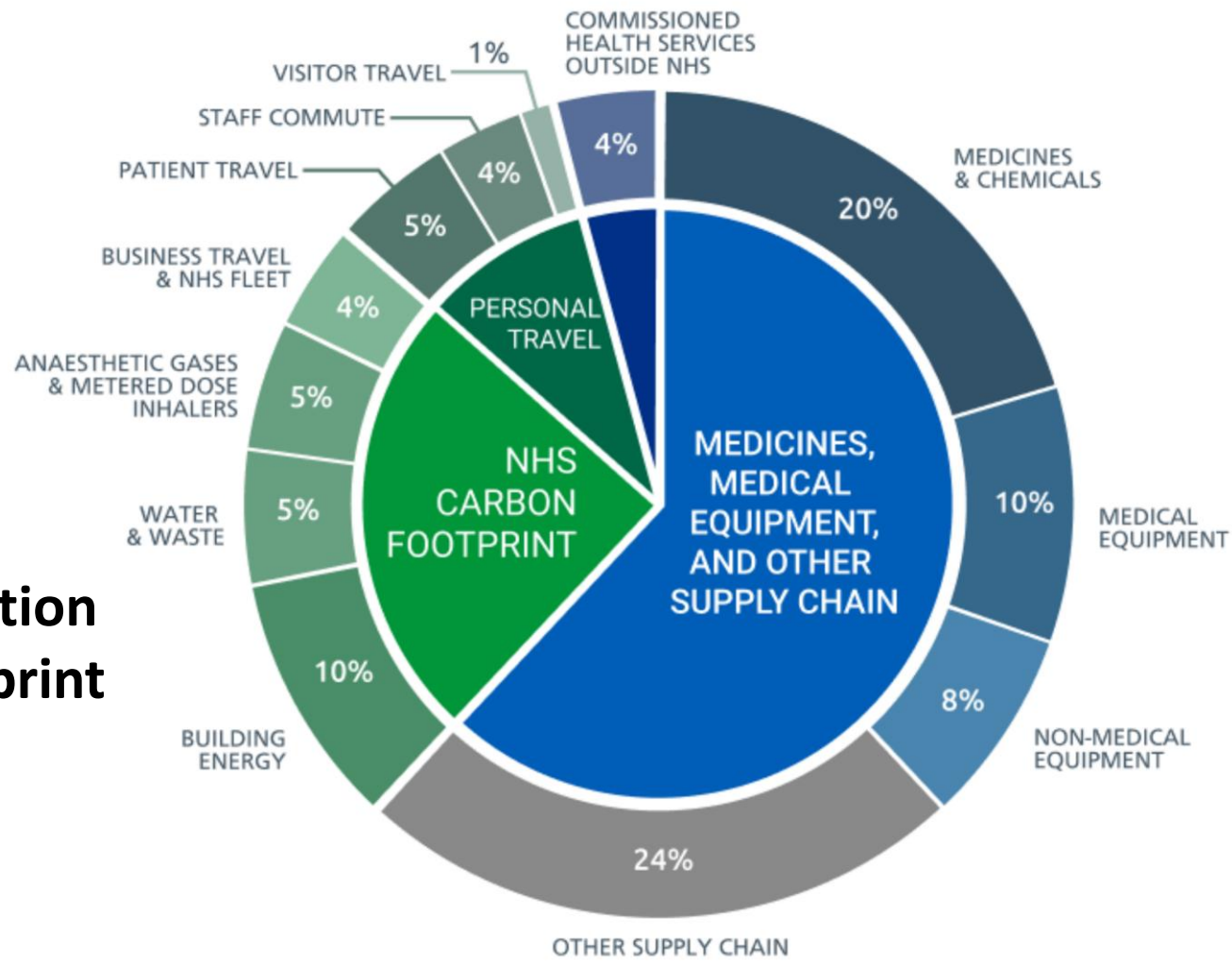
- Advancing into a rapidly evolving digital healthcare era
- Significant changes and new care models require robust evaluation
- Assess across three key domains:
 - Social impact
 - Financial impact
 - Environmental impact
- These factors shape patient outcomes and wider population health



FOR A GREENER **NHS**

Greener NHS: National Context

Sources of Carbon Emissions by Proportion of NHS Carbon Footprint



Source: Delivering a 'Net Zero' National Health Service Report. 2020

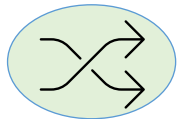
What Is a Virtual Ward?



A safe and efficient **alternative to NHS bedded care.**



Virtual wards support patients who would **otherwise be in hospital** to receive the acute care, monitoring and treatment they need in their own home.



Virtual wards can **prevent avoidable admissions** into hospital, or **support early discharge** out of hospital.

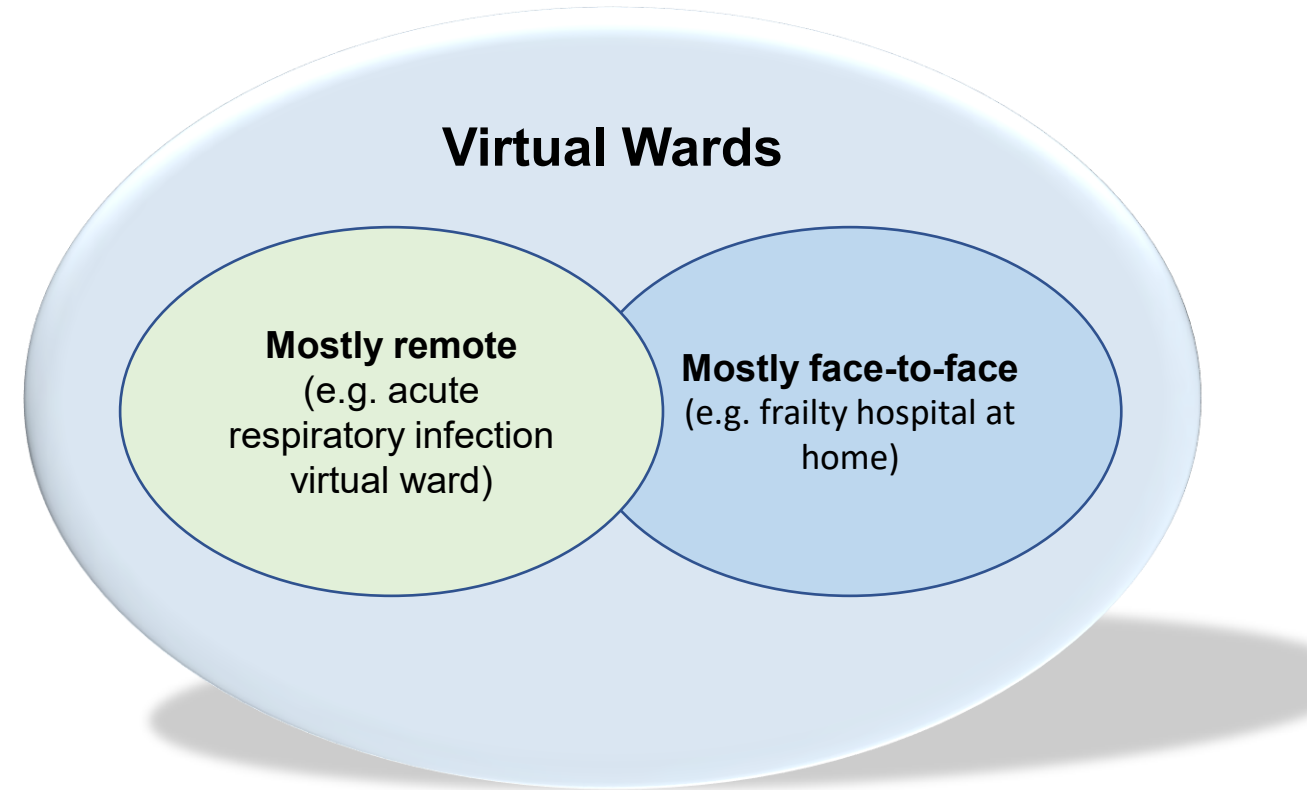


Figure: NHS Digital Virtual Ward description

Objectives

1. Understand the carbon footprint (CO₂e) of a virtual ward
2. Establish the avoided carbon emissions compared with a traditional impact bed day, and identify the carbon hotspots.
3. Identify the methodological differences in calculating the carbon emissions of a virtual ward pathway



National Toolkit

FOR A GREENER **NHS**

Climate action
**Hampshire
Hospitals**

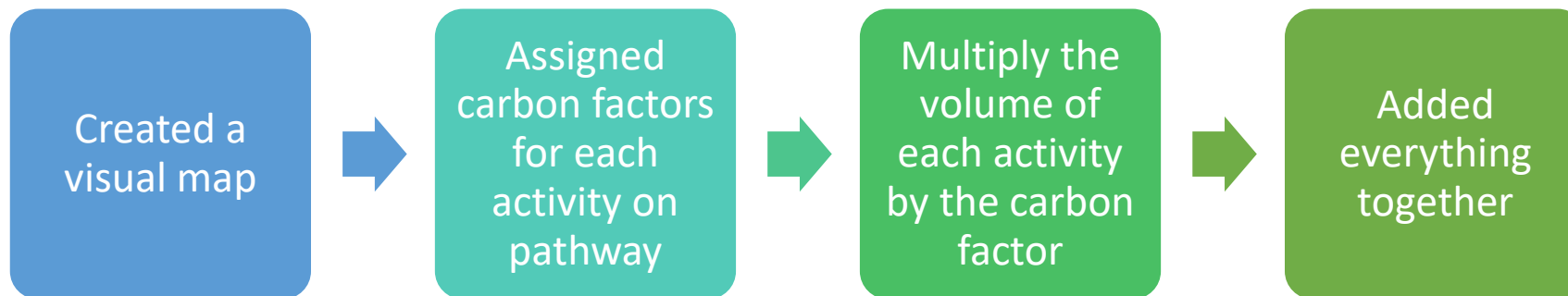
Purpose:

A document that offers guidance on how to estimate and reduce the carbon impact of Virtual Ward pathways. This is done by demonstrating:

1. How to assess the carbon impact of Virtual Ward care
2. How to identify carbon intensive activities and comparisons for pathway redesign
3. Examples of further opportunities to reduce carbon emissions



Step by step process:



Patient pathway example - Frailty

FOR A GREENER **NHS**



Patient at home

Ambulance
Transport

56

Kg CO₂e

Patient in Emergency Department

Diagnostics

14

Kg CO₂e

Inpatient

Length of stay,
transport,
diagnostics

580

Kg CO₂e

Virtual ward

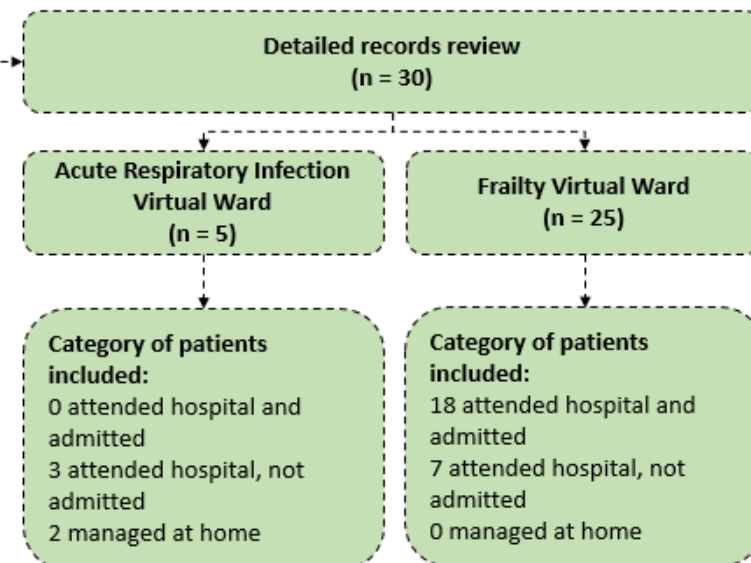
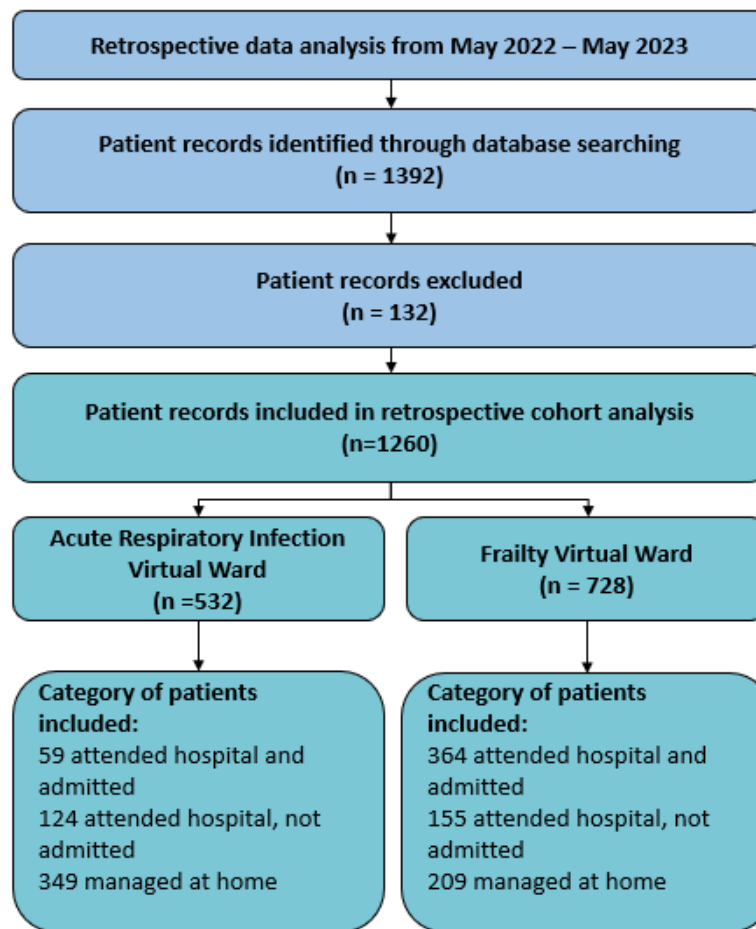
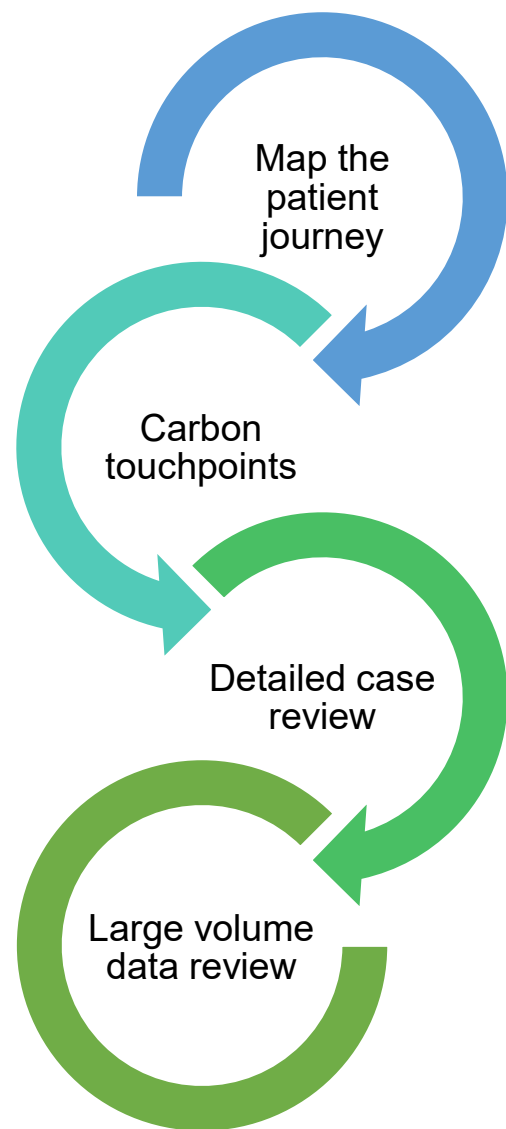
Length of stay,
heating, equipment,
PPE, Interaction
with clinicians

141

Kg CO₂e

Total
793
Kg CO₂e

Methodology: Phase 1



Findings: Average Kg CO₂e per patient day

Average Kg CO ₂ e	National Toolkit Kg CO ₂ e	Detailed Case Review Kg CO ₂ e	Large Scale Analysis Kg CO ₂ e
In Hospital High Dependency Ward	89.5	N/A	N/A
In Hospital Inpatient Ward	37.9	Toolkit	47.8
Patient Pathway Hospital to Virtual Ward		24.1	18.1
Virtual Ward Only		8.4	8.2

Findings: Prevented Carbon Emissions

FOR A GREENER **NHS**

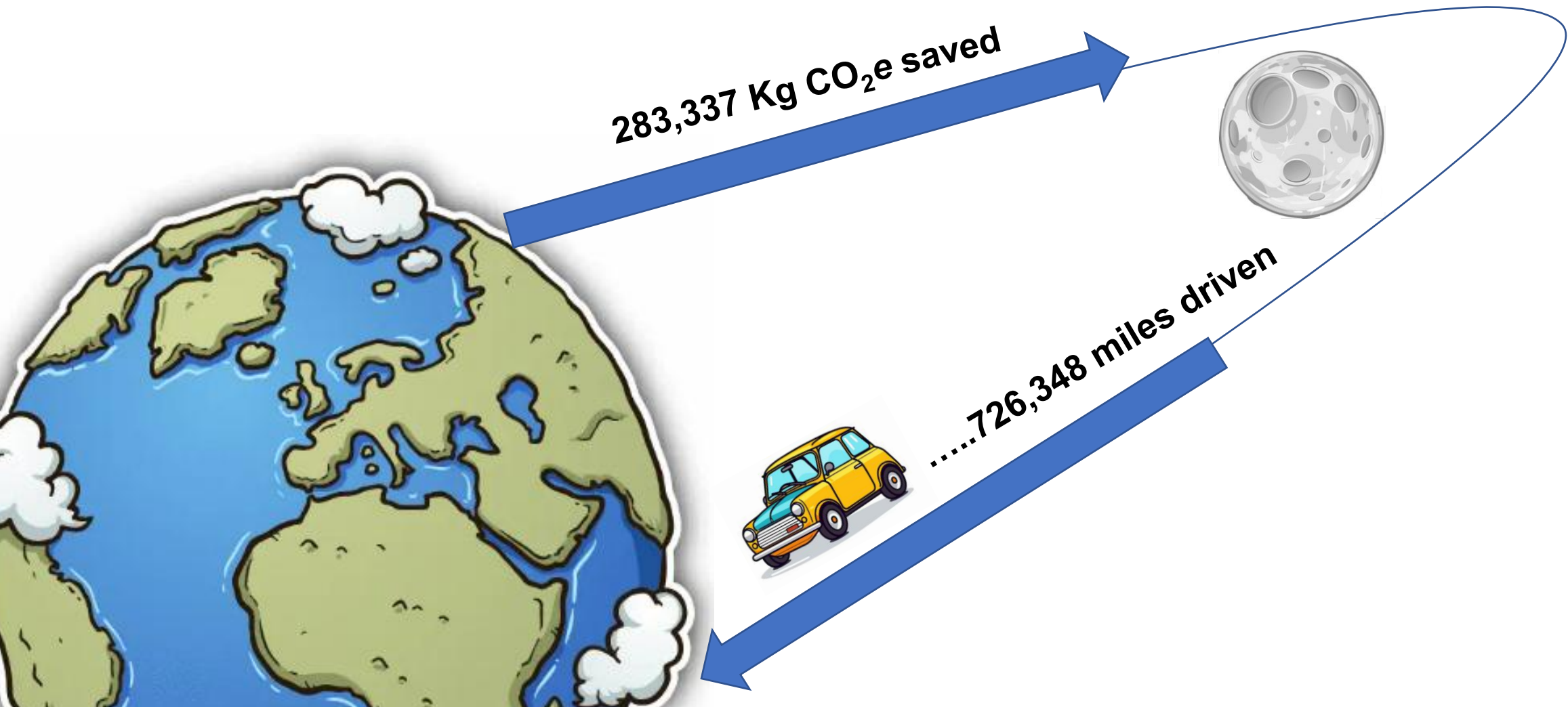


Virtual Ward	No. Patients	Category		Bed Days Saved	Average Kg CO ₂ e per day <u>HOSPITAL</u>	Average Kg CO ₂ e per day <u>HOME</u>	Combined Kg CO ₂ e
Acute Respiratory Infection	59	Attended	Admitted	229	61.9	8.2	12,292
	124	Attended	Not Admitted	714	14.2	8.2	38,344
	349	Home		1,974	N/A	8.3	105,819
Frailty	364	Attended	Admitted	1,096	48.4	8.1	44,211
	155	Attended	Not Admitted	876	54.5	8.0	35,341
	209	Home		1,175	N/A	8.1	47,330
TOTAL	1,260	All		6,064	48.3	8.1	283,337

To the moon and back.....

FOR A GREENER **NHS**

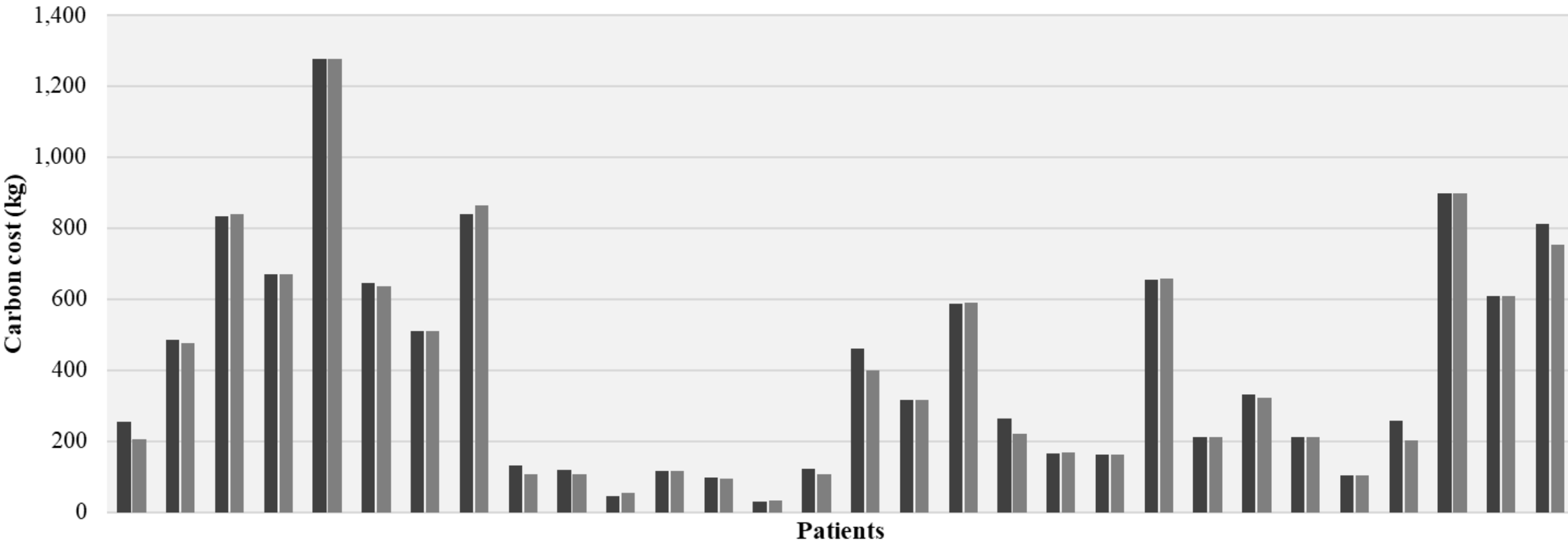
Climate action
Hampshire
Hospitals



Findings: Methodological differences

Patient carbon cost of manual audit & data extract

■ Manual audit ■ Data extract



Carbon Hotspots

Ambulance journey

21,504
Kg CO₂e



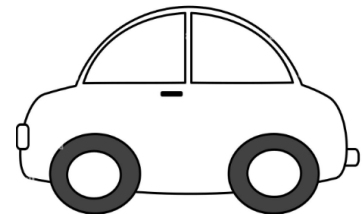
Accident and Emergency Department

7,783
Kg CO₂e



Transportation of diagnostic tests

19,710
Kg CO₂e



Limitations

1. Measuring carbon emissions, or creating a carbon footprint is a **highly complex process**, particularly for something as complex as a care pathway.
2. **Data quality needs to be improved** with carbon in mind. Elements such as PPE usage, GP/community call out (travel) not always available
3. **Impact of technology not fully recognised.** Health monitoring applications largely not noted down and impact/outcomes unavailable



Conclusions

1. Virtual Wards are a lower carbon model of care
2. Manual data analyses is more accurate than large-scale BI data analysis
3. Validated methodology of National Toolkit



Next Steps:





Thank you for your time

Any question?

Slido

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Skills Clinic



Dr Philip Tamuno
Head of Sustainability and
Net Zero
Homerton Healthcare
Foundation NHS Trust



Dr Samson Ogunlarin
GP Registrar
NHS Education for Scotland



A group of six healthcare professionals, including three men and three women, are posed in two rows. The back row consists of three people standing, while the front row has three people sitting or kneeling. They are all wearing blue scrubs and blue surgical caps. The background features a large blue rectangle with white text and a yellow and orange circular graphic on the left. At the bottom of the slide, there are several horizontal bars in red, blue, dark blue, yellow, magenta, and teal.

Delivering Measurable Reductions in Emissions Across Estates, Logistics, and Clinical Operations

**Philip Tamuno, PhD, FISEP & CEnv.
Head of Sustainability & Net Zero**



Homerton

University Hospital NHS Foundation Trust

A Year in the Life of Homerton

5,500

babies
born



236,000

out
patients



63,000

admissions
to hospital



70 community
services across

20 sites



£396m

income



3,800

staff



500 beds



54

apprenticeships



28,000

operations/
procedures



260,000

patients cared
for at home



140

research
activities



20,000

ambulance
handovers

73,500

hot meals for
patients



1,100

students



325

patients seen
per day in A&E



244

trainee
doctors



Our Six Strategic Priorities



1. Improve the health & wellbeing of our communities



2. Deliver outstanding, equitable care



3. Develop happy, healthy & heard staff



4. Strengthen partnerships



5. Secure our future



6. Foster innovation, improvement & learning

Climate change

Vulnerability

Vulnerability factors

- Demographic factors
- Geographic factors
- Biological factors & health status
- Sociopolitical conditions
- Socioeconomic factors

Exposure pathways

- Extreme weather events
- Heat stress
- Air quality
- Water quality and quantity
- Food security and safety
- Vector distribution & ecology

Health system capacity & resilience

- Leadership & governance
- Health workforce
- Health information systems
- Essential medical products & technologies
- Service delivery
- Financing

Climate-sensitive health risks

Health outcomes



Injury and mortality from extreme weather events



Heat-related illness



Respiratory illness



Water-borne diseases and other water-related health impacts



Zoonoses



Vector-borne diseases



Malnutrition and food-borne diseases



Noncommunicable diseases (NCDs)



Mental and psychosocial health

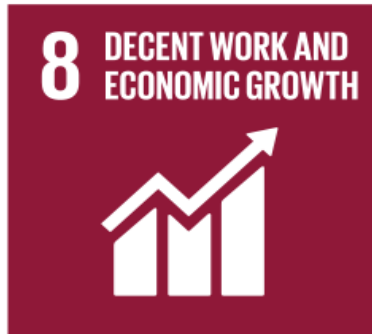


Impacts on healthcare facilities



Effects on health systems

SUSTAINABLE DEVELOPMENT GOALS



1. PREVENTION

Promoting health and preventing disease by tackling the causes of illnesses and inequalities

3. LEAN SERVICE DELIVERY

Streamlining care systems to minimise wasteful activities



PRINCIPLES OF SUSTAINABLE CLINICAL PRACTICE

2. PATIENT SELF-CARE

Empowering patients to take a greater role in managing their own health and healthcare

4. LOW CARBON ALTERNATIVES

Prioritising treatments and technologies with a lower environmental impact

Drivers: Energy Management & Net Zero

The United Nations Sustainable Development Goals

Fit for the Future: 10 Year Health Plan for England 2025

Environmental / Building / Energy Compliance (HTM & ERIC)

Building Research Establishment Environmental Assessment Method (BREEAM)

Greener NHSE Agenda



Drivers: Energy Management & Net Zero

Health and Care Act 2022: Climate Change Duties

Net Zero Targets by 2040 and 2045

Energy Reporting and Compliance: DEC and UK ETS

Estates NHSE's Net Zero Delivery Plan

Homerton: The London Plan (Net Zero Building)



MAJOR EMISSIONS

CH₄

N₂O

SF₆

CO₂

NF₃

PFCs

HFCs

CFCs

SCOPE 1

DIRECT

SCOPE 2

INDIRECT

SCOPE 3

INDIRECT

PERSONAL TRAVEL

INDIRECT

FOSSIL FUELS

NITROUS OXIDE &
ANAESTHETIC
GASES

NHS FLEET

REFRIGERANTS

GRID
ELECTRICITY

PURCHASED
HEAT & STEAM

INHALERS

ENERGY
WELL-TO-TANK

BUSINESS TRAVEL
INCLUDING GREY FLEET

WASTE

WATER

MEDICAL
DEVICES

CLINICAL SUPPLIES

BUSINESS
SERVICES

INFRASTRUCTURE

MEDICINES

EQUIPMENT

FOOD &
CATERING

PERSONAL &
CONTINUING CARE

NON-NHS
COMMISSIONED SERVICES

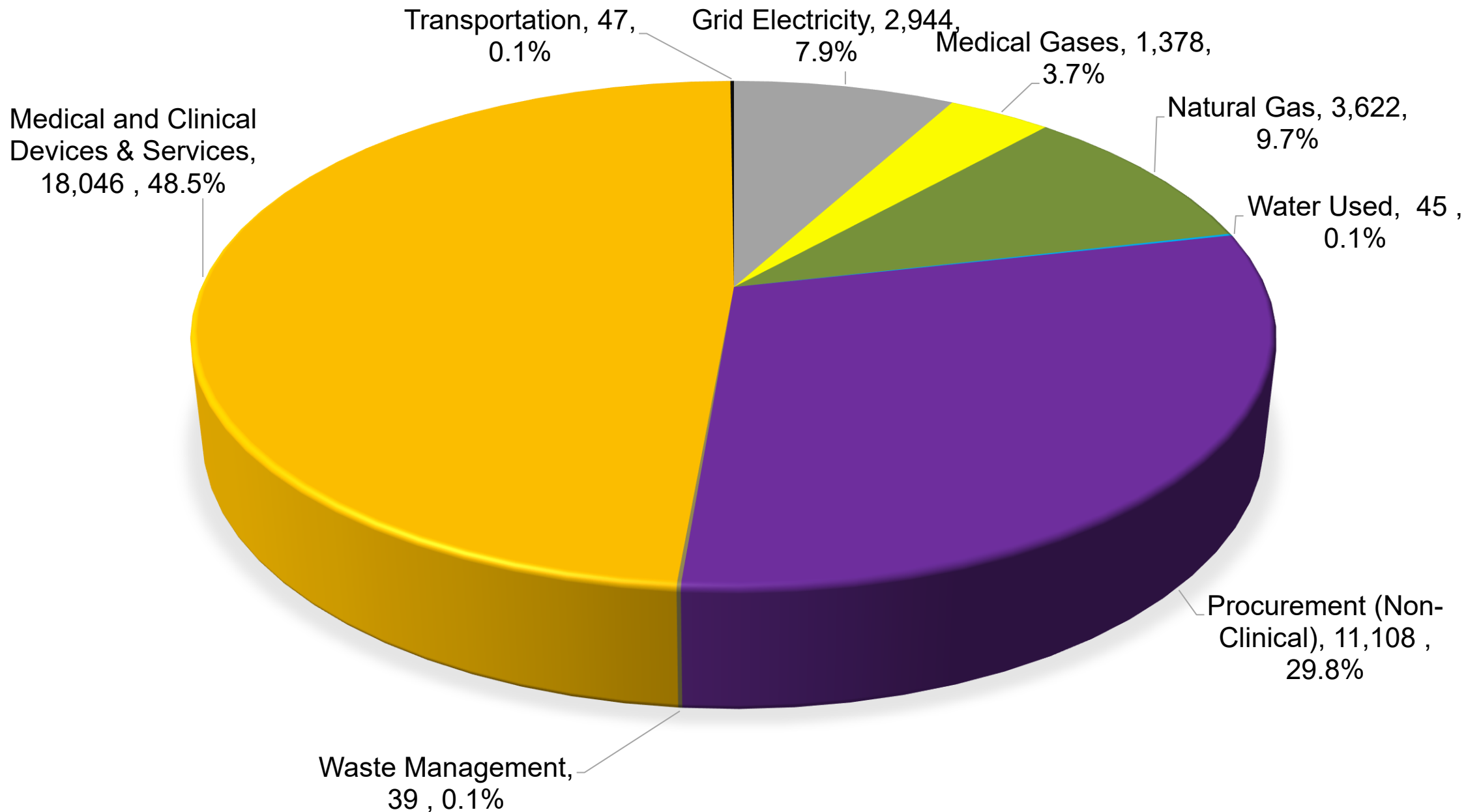
PATIENT,
VISITOR
TRAVEL

DIGITAL

STAFF
COMMUTING

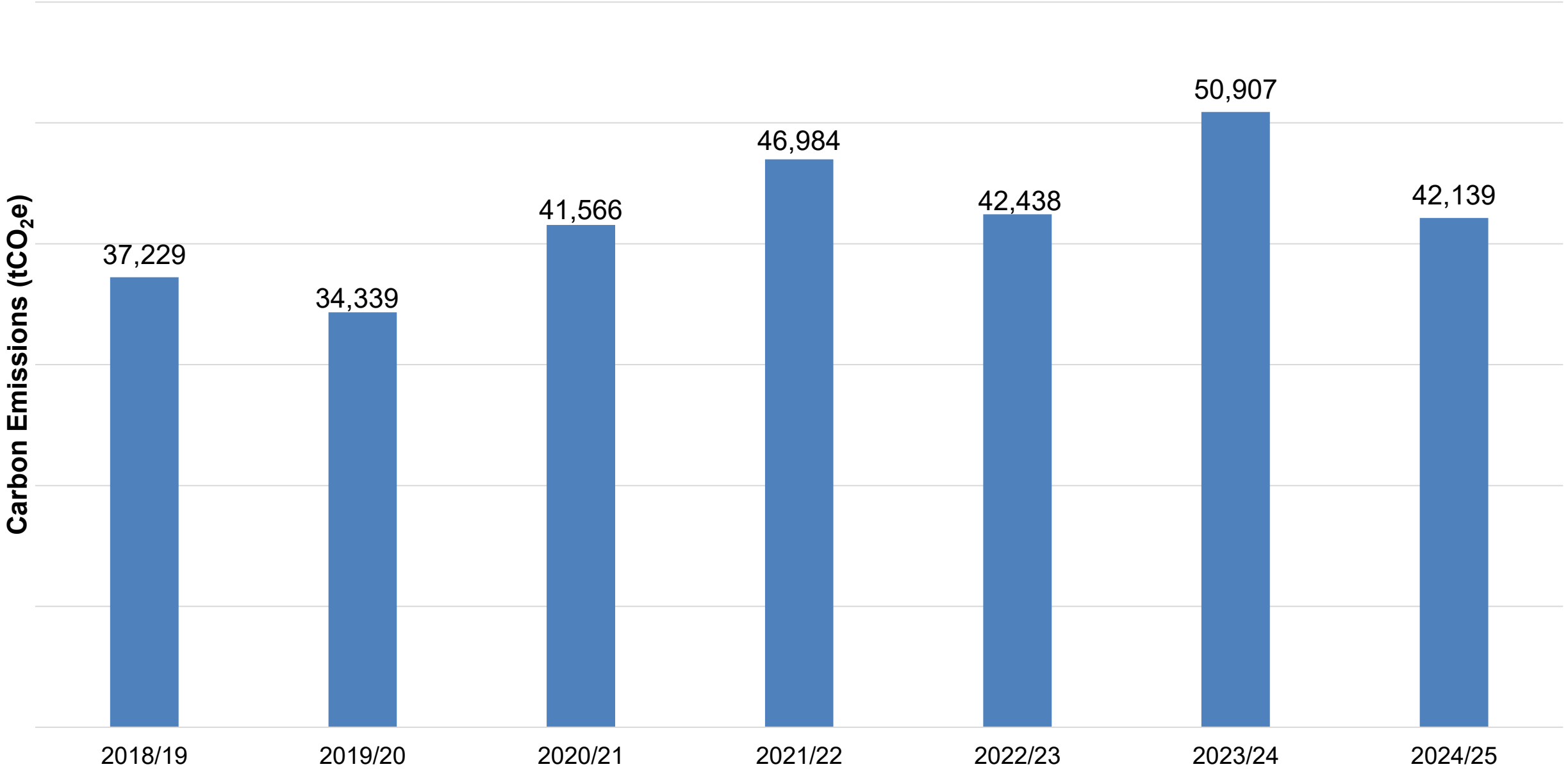
NHS CARBON
FOOTPRINT

NHS CARBON
FOOTPRINT PLUS

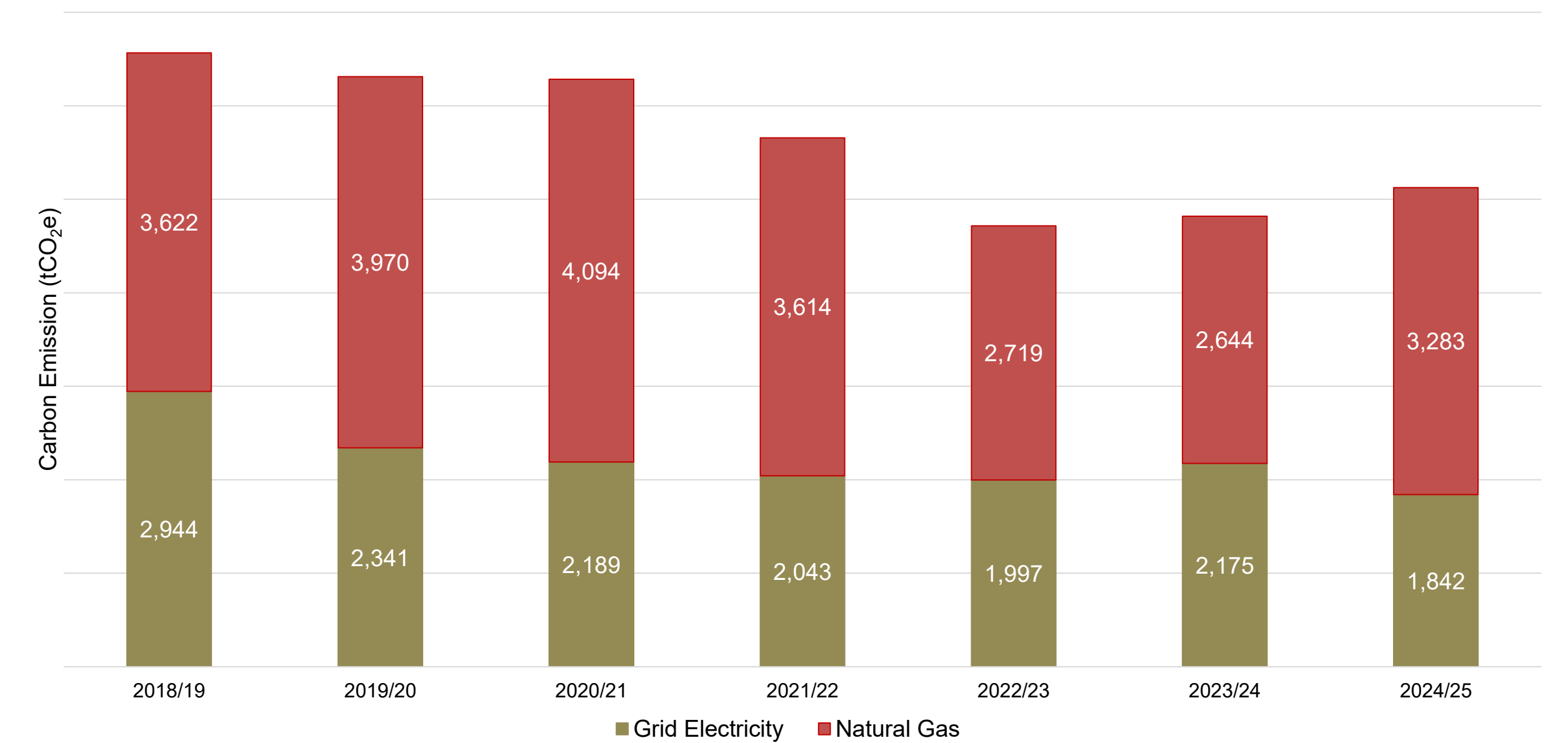


Homerton's Carbon Footprint (2018/19): 37,229 tCO₂e

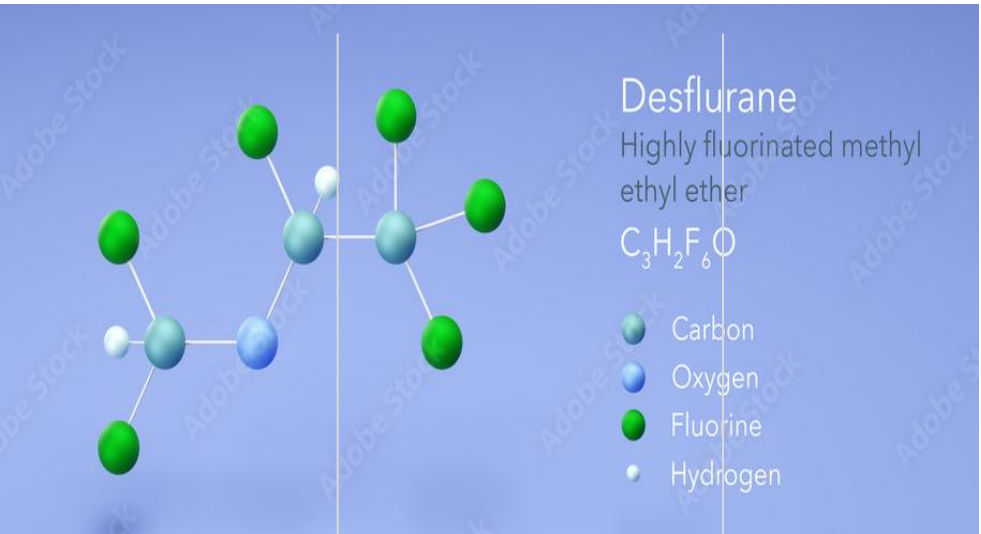
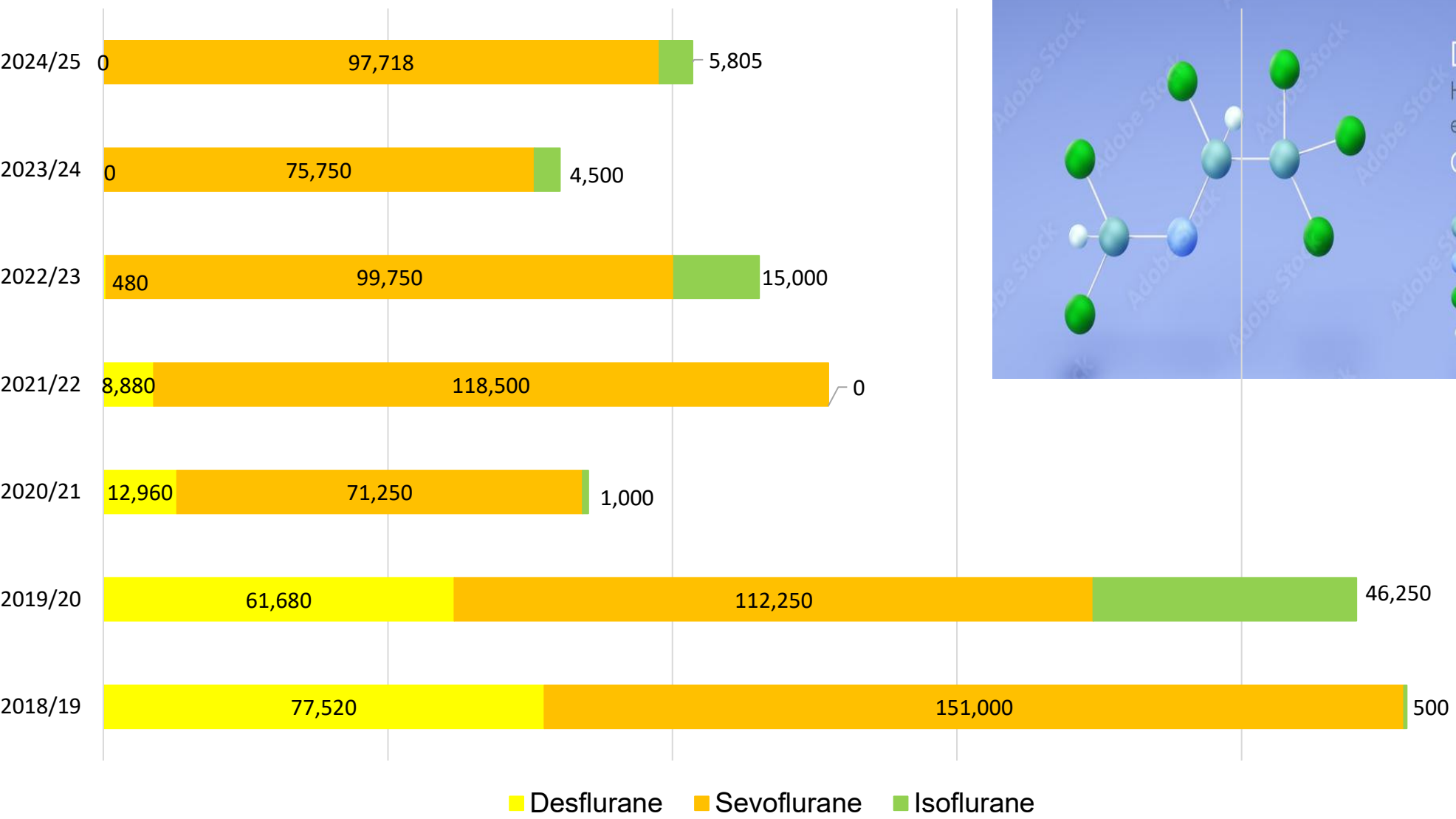
Homerton's Net Zero Carbon Performance

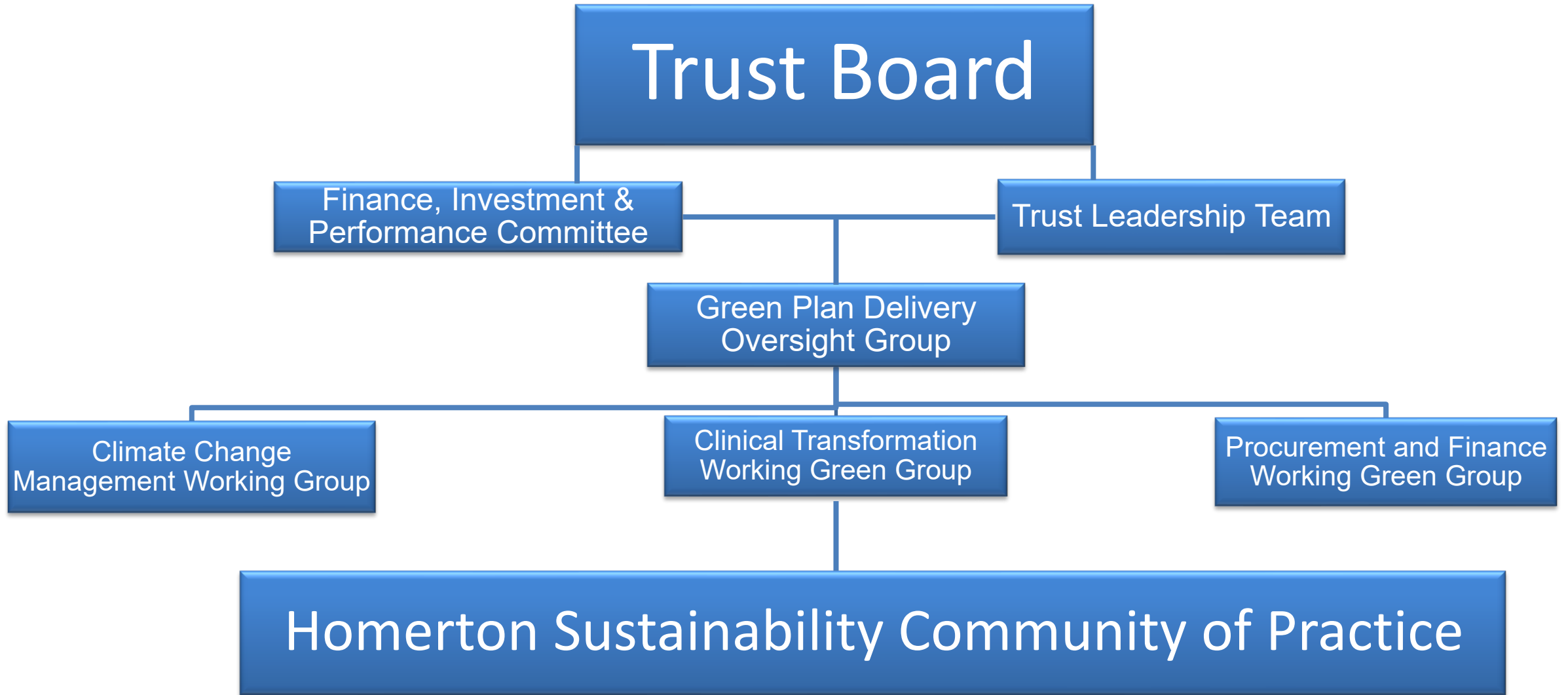


Net Zero Performance: Electricity & Gas



Net Zero & Decarbonisation Performance (kg)





STATUTORY COMPLIANCE



Policy



Law



Terms



Regulation



Transparency

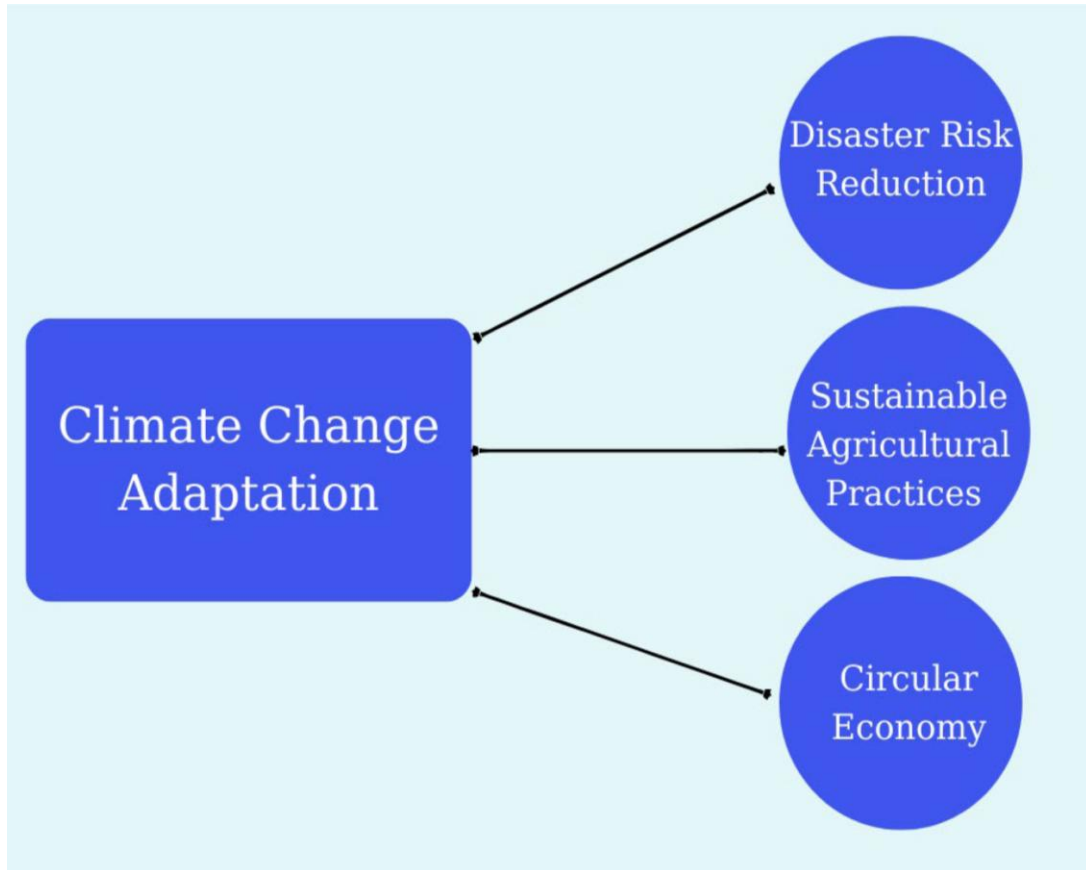
Homerton: Cost Savings & Efficiency

Energy Use & Management Services (£475,000)

Reporting Period: 2025/26



Climate Change Adaptation



Climate Change Risk Assessment



Emergency Preparedness & Response



Supply Chain & Business Continuity



Climate Change Adaptation



Net Zero & Decarbonisation Performance

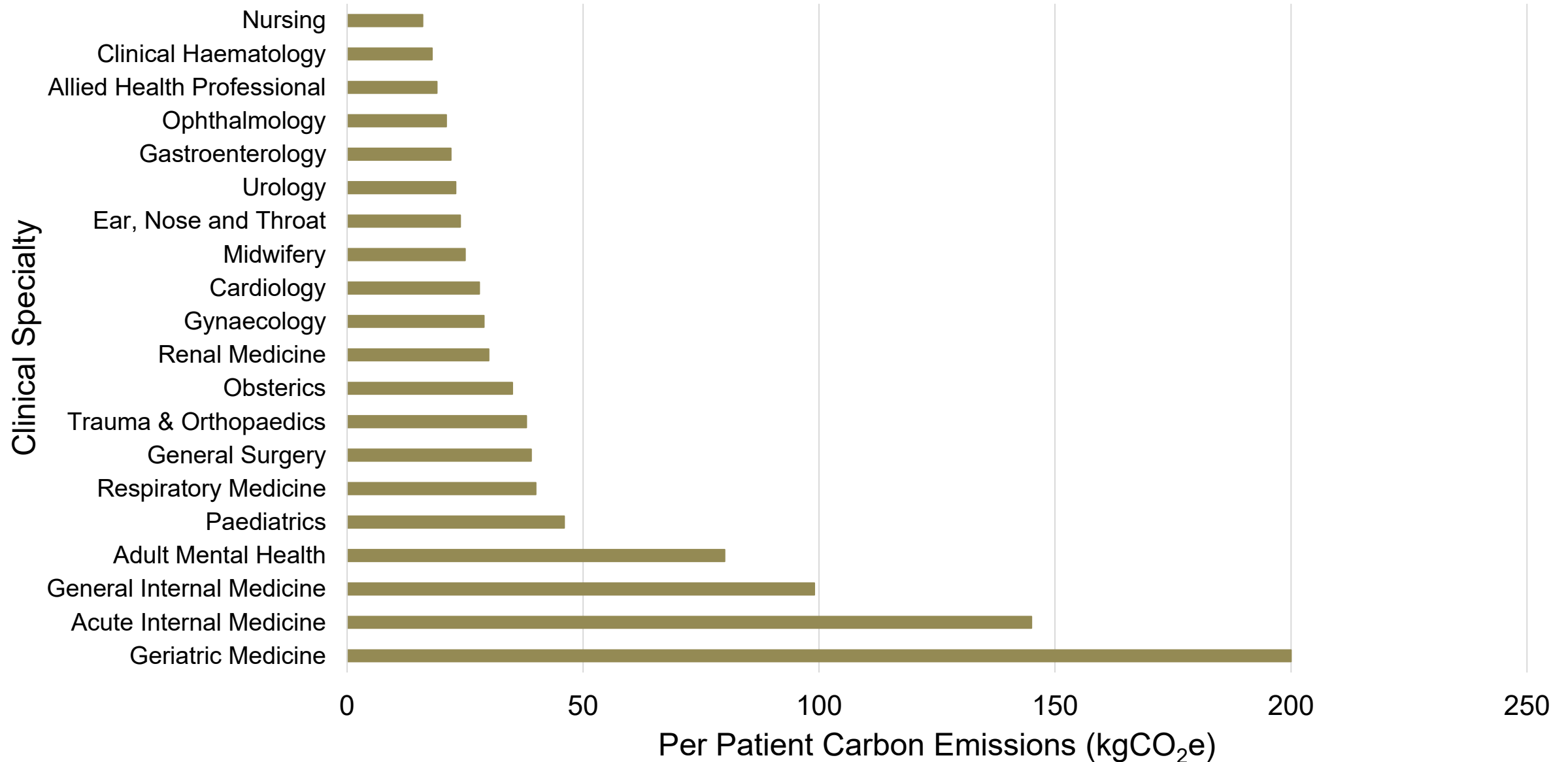
We recently attracted £11.9 million as part of the PSDS Phase 4 and £1.4 million as part of the Department of Energy Security and Net Zero (DESNZ) and Great British Energy (GBE) NHSE renewable energy programme. These grants will be used to implement projects that would reduce our carbon footprint as well as reduce our energy spend by £850,000 per year (after the completion of these projects).



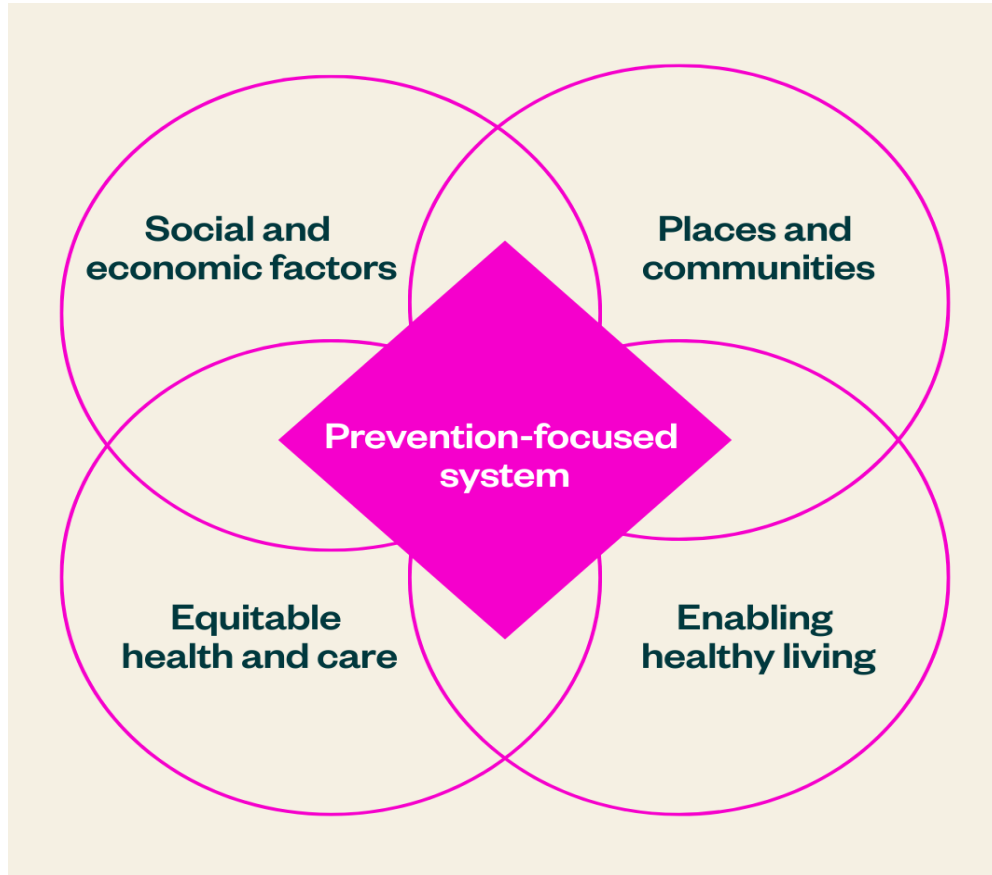
NHS' Emissions by Specialty: Top 20

- | | |
|---|--------------------------------------|
| 1. General Internal Medicine: 562 (14%) | 11. Midwifery: 109 (3%) |
| 2. Trauma and Orthopaedics: 291 (7%) | 12. Adult Mental Illness: 105 (3%) |
| 3. General Surgery: 223 (7%) | 13. Nursing: 104 (3%) |
| 4. Paediatrics: 223 (6%) | 14. Respiratory Medicine: 103 (3%) |
| 5. Allied Health Professional: 201 (5%) | 15. Urology: 83 (2%) |
| 6. Geriatric Medicine: 183 (5%) | 16. Gastroenterology: 81 (2%) |
| 7. Ophthalmology: 150 (4%) | 17. Acute Internal Medicine: 78 (2%) |
| 8. Obstetrics: 130 (3%) | 18. Ear Nose and Throat: 72 (2%) |
| 9. Gynaecology: 121 (3%) | 19. Clinical Haematology: 67 (2%) |
| 10. Cardiology: 111 (3%) | 20. Renal Medicine: 63 (2%) |

NHS: Per Patient Carbon Emissions



Clinical Transformation: Data and Digitalisation



- Clinical Transformation Working Green Group
- Principle of Sustainable Clinical Practice
- Service Lead / Driven Initiatives
- Environmental Sustainability KPIs
- Net Zero Performance
- Partnerships and Collaboration
- Critical Pathways and Decarbonisation





Nottingham Trent
University

Partnership for Healthcare Decarbonisation (Early Stages)



Homerton Healthcare
NHS Foundation Trust

Decarbonising Orthopaedic Care Pathways

- NHS contributes ~4.5% of UK greenhouse gas emissions
- Statutory Net Zero targets: 2040 (direct), 2045 (indirect)
- MSK and Orthopaedics conditions = up to 30% of GP workload
- High outpatient volume, diagnostics, surgery, rehabilitation
- Significant travel, estate energy, consumables, procedural emissions
- However:
 - Carbon is not routinely measured at pathway level.
 - Decisions are being made without carbon intelligence.



Our Aim

To develop, implement and evaluate a carbon-aware process intelligence approach to redesign MSK and Othorpaedics pathways, achieving measurable emission reductions while maintaining or improving:

- Clinical outcomes
- Equity of access
- Service efficiency

Aligned with:

- NHS Net Zero
- GIRFT
- MSK Advanced Practice Framework
- Referral Optimisation Guidance



Research Questions

01

Which components of MSK pathways contribute most to emissions and operational pressure?

02

How can routine NHS data quantify pathway-level carbon at scale?

03

What lower-carbon pathway models maintain safety and equity?

04

What are the real-world impacts of implementing redesign?



Our Approach

- We are not proposing
 - A Sustainability audit or a modelling-only study
- We are proposing
 - Carbon-Aware Process Mining embedded into real NHS healthcare pathway redesign



HEALTHIER PLANET

HEALTHIER PEOPLE

NHS



Philip.Tamuno@nhs.net

Thank You



SolarisNet AI

100% Solar

Transition

Powering global data operations
with *100% solar energy* by 2029

Lower emissions. Greater resilience.
Sustainable computing leadership.

22 September 2026

EXECUTIVE SUMMARY

100% solar power for all global data operations by 2029

Lower emissions and reduced exposure to grid volatility

£18.5m capital investment
145% ROI over 10 years

Establish **SolarisNet AI** as the leader in sustainable computing



PROJECT OBJECTIVES

45 MW

solar capacity rollout

Transition four global hubs to onsite and local solar generation

45 MW

solar with battery storage

Install 45 MW solar capacity with grid-scale battery storage

36

month rollout

50% capacity by Month 18
100% capacity by Month 36

Q4 2029

target completion

Complete using existing tech and green financing



CAPITAL EXPENDITURE BREAKDOWN

£18.5m

Solar panels & installation (45 MW)	£10,250,550
Battery storage (grid-scale BESS)	£4,755,200
Microgrid infrastructure & inverters	£1,850,000
Structural reinforcements & planning	£1,040,250
Contingency	£604,000
TOTAL INVESTMENT	£18.5m



OPERATIONAL EXPENDITURE

OVERVIEW

£580.5k
/year

System maintenance and
cleaning

£185,000

Monitoring, security,
and software

£65,500

Insurance costs

£120,000

Component amortization
(inverters, batteries)

£210,000



FUNDING STRATEGY

£8m

green bonds
targeting ESG investors

£5.5

private equity / venture
debt from climate tech funds

m
£2m

government grants / subsidies
from green energy schemes

£3m

internal capital reallocated
over three years



ROI & FINANCIALS

£4.2m

current annual energy spend

£580,500

new annual solar OPEX

£3,619,500

annual savings

5.1 year
approximate payback

145%

ROI over 10 years

excess power sales possible



ENVIRONMENTAL IMPACT

15,000 tonnes CO₂
annually eliminated

300,000 tonnes CO₂ over
20 years

Local generation reduces
transmission losses significantly

Waste server heat repurposed
for communities and industries



PROOF OF CONCEPT

Surrey and Sussex NHS:

£1.6m for **2,827** panels, **13%** consumption offset

Royal Wolverhampton NHS solar farm
powers hospital **288** days/year

Samso Energy & NHS installed
solar-plus-storage in **three days**

Demonstrates critical infrastructure
viability and resilience



INVESTOR Q&A

£4.75m grid-scale battery ensures days of backup power

Tier-1 solar panels guaranteed 25–30 years with minimal degradation

Phased microgrid installation avoids AI workload disruption

£8m Green Bonds secured via fully costing transition plan

