Our Vision
The best care for every patient

NHS
Norfolk and Norwich University Hospitals
NHS Foundation Trust

Greening with PRIDE

A more Sustainable NNUH

Foreword

2023 was the hottest year on record by a large margin. It saw unprecedented levels of extreme weather events, the likes of which we'll see much more frequently as climate change progresses.

The acceleration of climate change presents a significant health challenge to our population and NNUH will see an increase in patient admissions with climate related diagnoses.

Climate change does not affect a population equally and will have a greater effect upon our vulnerable people – the elderly, the less wealthy and our children, so we must act carefully to ensure health inequalities are not widened.

As one of the largest employers, caring for hundreds of thousands of people, NNUH is one of the largest single emitters of greenhouse gases in Norfolk. Our responsibility for patient care is not just about the patient in front of us but extends to the wider community we serve and legacy we wish to leave to our successors.

The good thing is by embedding sustainability into our Trust we will not only reduce our impact on the environment, but also improve patient outcomes and staff wellbeing as well as provide financial savings – also known as the Triple Bottom Line.

Sometimes it can feel that as individuals there is not much we can do to change the world we live in. But you are not on your own. We already have over 400 Green Champions in the Trust and as a collective, simple things like being careful about waste disposal, energy use and checking whether products are sustainable, really can add up to something significant.

Acting decisively now will ensure that NNUH is in the best possible position to provide a healthy future for our whole community.

Simon Hackwell,
Executive Lead and Senior Responsible Officer for Sustainability

Introduction

This Green Plan is for all NNUH staff. It highlights our commitment to improve sustainability and aims to ensure everyone's support in this journey.

The NHS has a vital role to play in the fight against climate change. It is a trusted public body and community anchor that can use its influence to drive down not only its own contribution to the national carbon footprint (~5%) but also show others how it's done. This is why on 1 July 2022, the NHS in England became the first health system to embed net zero into legislation, through the Health and Care Act 2022.

Climate change threatens the foundations of good health, with direct and immediate consequences for our patients, the public and the NHS. The World Health Organisation states that "Today, climate change is recognised as the single biggest threat to humanity. It impacts health in a myriad of ways, such as heat stress, increased infectious diseases and food production."

Sustainability in healthcare is about improving and promoting health and wellbeing for all, whilst respecting the capacity of the environment to support its delivery. At our hospitals we recognise that we have a duty to minimise the impact of our activities on the environment and ensure our resources are used efficiently.

We first adopted a Green Plan two years ago and have made some good progress in delivery to date. This plan is more streamlined and offers a more focused, two year take on more direct areas of influence. It takes us to within four years of our NHS England wide reduction target which commits to see an 80% reduction in direct emissions between 2028 and 2032.

This document serves as a vehicle for us to take an action-orientated approach towards improving sustainability, whilst ensuring our services remain fit for purpose today and in the future. It aligns NNUH with the wider NHS[1] and other relevant legislative drivers and outlines a clear road map to the sustainable operation and ongoing development of the Trust.

Our Sustainability Committee, made up of colleagues from across the organisation, monitors the delivery of this Plan and reports progress to the Board. It will review the plan in two years and amend as necessary to ensure it remains ambitious, agile and fit for purpose. Ultimately, we want to see significant progress in reducing our direct emissions ahead of this review.

Climate change impact risks for NNUH

This Green Plan is for all NNUH staff. It highlights our commit Climate change poses a risk to hospital operations, as well as patients and staff:

- Higher temperatures combined with an ageing population, will increase service pressure, impacting patient outcomes and staff wellbeing.
- Shortages in energy, water and food could impact NNUH and our supply chain.
- Estate exposure from heat or flooding could cause damage and/or the need for unplanned works. New and emerging pests, plants and diseases would pose new health challenges and the risk of more pandemics.
- Increasing air pollution leading to a worsening of many chronic conditions would add further service pressure.

[1]NHS Long Term Plan, The NHS Standard Contract, NHS Operational Planning Guidance, Norfolk & Waveney Integrated Care System (ICS).

Evidence

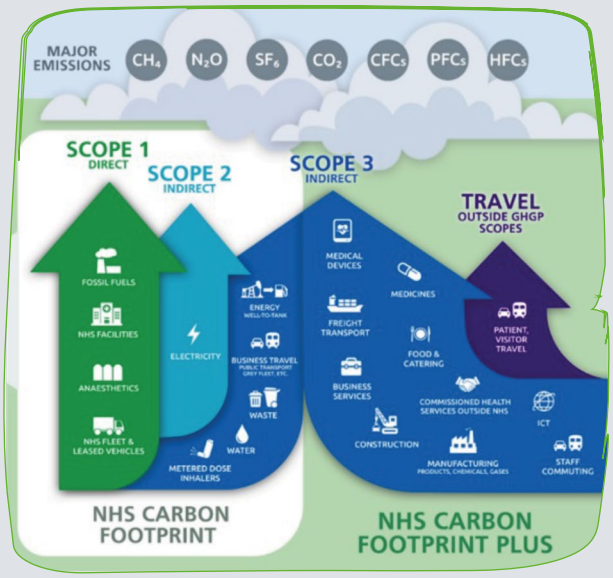


Figure 1: Emissions by scope

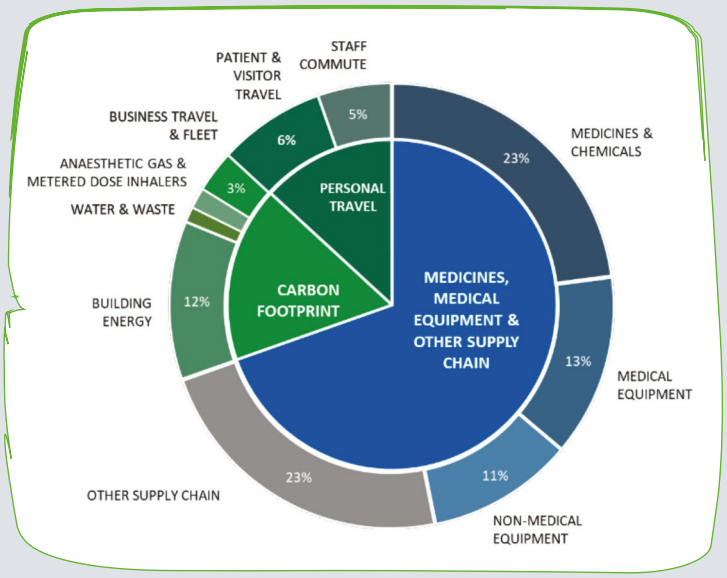


Figure 2: Sources of carbon emissions for NNUH

NHS England estimated NNUH's core carbon footprint to be 22,320t CO2e *(equivalent impact of carbon dioxide in tonnes)* in 2019/20. Similar methodology used in 2022/23 provided an increased estimate of 25,800t CO2e. In addition, we estimate that our 'carbon footprint plus', again with differing methodologies for the original NHS England work, has increased by approximately 3% over the same period.

This growth has been influenced by:

9% floorspace

an increase in internal floor area at NNUH from 128,456m² to 140,603m²

Staff Increase

an increase in Whole Time Equivalent staff for the hospitals.

9% Bed days

an increase in bed days from 401,700 in 2018/19 to 439,600 in 2022/23

While the increase in operational activity has contributed to an increase in our carbon footprint, our intensity *(i.e. CO2e/ patient activity)* has likely not increased by the same amount, meaning the Trust may have become more carbon 'efficient'. Given the complexity of the system, the changing methodologies, and the attribution of each element listed above, it is almost impossible to be certain, but we know that to achieve NHS net zero targets, we must consistently decrease both volume and intensity over time.

The first iteration of the Green Plan, issued in May 2022, aimed to create good baseline data to understand our current position on sustainability and carbon footprint. This goal has largely been achieved, although complex, and we now need to develop associated targets, KPIs, dashboards and a net zero pathway as laid out, in part, below.

Our Story so far

Green Champions

2023 saw the launch of our Green Champions campaign, which now has over 400 members. The campaign focused on a number of key areas including a 'Sustainability Week', World Environment Day, a Connected Special, Clean Air Day, Plastic Free July and some top sustainability tips to celebrate the NHS's 75th birthday. It also included Cycle to Work Day, Recycle Week, an event in Cromer, 'Switch off September', the AGM, National Tree Week and a Biodiversity Podcast.

Green Groups

Gastroenterology has set up their own green group and has tackled projects around patient choice and staff learning. Radiology also has its own green group who meet regularly examining a number of factors, including energy use, as radiology is, unsurprisingly, a high consumer.

Our Emergency Department registered with GreenED in late 2023. It is the first evidence-based national framework specifically designed for secondary care and outlines a tiered actions framework alongside the guidelines and resources needed to achieve them. A dedicated team has been brought together with work underway to develop projects which the department can work towards.

Electronic Patient Record

The Electronic Patient Record is not simply a digital programme; it's one of the biggest pieces of clinical and operational transformation in Norfolk and Waveney, set across three acute trusts. It will support NNUH to continue to work with system partners on future-proofing capacity and deliver significant sustainability benefits by aiding clinical decision making through remote consultations and monitoring so that care can be delivered closer to home where appropriate.

Respiratory Virtual Ward

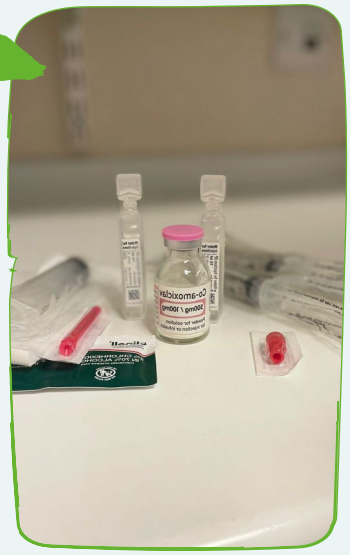
In February 2021 our Virtual Ward was set up with our respiratory department as an early adopter. In the first 2 years respiratory made up 23% of virtual ward referrals meaning suitable patients who need oxygen, nebulisers or intravenous antibiotics can manage their care at home. This has additional patient benefits, enabling them to stay active and mobile and reducing their deconditioning and hospital infection risk. It is estimated to have saved approximately 3,200 bed days which would have a carbon footprint of 121t CO_2e.

Our Story so far

Cardiology

In March 2022 our Cardiology Department partnered with Vanguard Medical to collect and remanufacture our used electrophysiology catheters. Over the 18 months or so that we have been in partnership with them we have received nearly £17,000 in payments for collected devices and saved an estimated further £87,480 from using their remanufactured devices. We have also saved around 500kg CO2e by diverting devices from waste and reducing the manufacture of new devices.

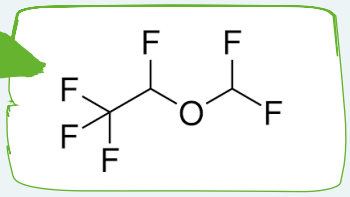
Switching from IV to oral antibiotics



Switching from IV to oral antibiotics where practicable also has sustainability benefits:
A 7-day course of ciprofloxacin has a carbon footprint almost 70 times greater via IV compared to the oral route. Swapping to oral also reduces consumables and anti-microbial resistance. Patient benefits include reduced length of stay as well as reduced infections and line-related events. The switch saves 11,000 hours of nursing time per year and £100,000.

A similar approach can be used in paediatrics by switching from liquid to tablet when appropriate.

Volatile anaesthetic agent - Desflurane



Desflurane is used to keep patients asleep to undergo surgery and other procedures. It is the most polluting of the anaesthetic gases with use of one bottle of Desflurane being equivalent of driving over 3,000 miles in a standard petrol car.

In 2020, Dr Amy Greengrass, Consultant Anaesthetist and Clinical Lead for Sustainability presented this data to the Anaesthetic Department and immediately saw a drop in use of all volatile anaesthetic agents with virtual elimination of Desflurane. In 2020 51% of our general anaesthetics were gas based compared to 25% in 2023. In August 2023, Desflurane was removed from our formulary to pre-empt the national removal in 2024.

Entonox cracking – working with Octagon

At NNUH we have around 4,800 deliveries per year and approximately 50% use Entonox, a greenhouse gas with a significant global warming potential. At NNUH, in conjunction with our PFI partners, we are currently in the process of procuring 3-4 individual patient mobile destruction units (MDUs) which can break down Entonox, after use, into its environmentally harmless constituents: nitrogen and oxygen. In the future we hope to move to a more centralised system.

Pharmacy – reducing waste

The ease of ordering via EPMA can discourage use of pharmacy ward stocks, leading to additional workload and duplication of medication supplies. Pharmacy technicians now work more closely with wards to focus on earlier medicine reconciliation and patient documentation. Over a year NNUH believes it could reduce the supply of almost 50,000 medication items, saving £520,000 and 63t CO2e. Importantly a short pilot also improved morale in the pharmacy workforce by allowing greater autonomy and more time to focus on other patient care and sustainability improvements.

Infection Prevention and Control (IP&C)

Our IP&C team has worked closely on implementing several initiatives, most notably, the Gloves Off campaign. The aim is to encourage glove use only when appropriate and discouraged otherwise. This has many benefits including reduction in single use plastic items, less contact dermatitis, a reduction in clinical waste and can actually reduce the risk of transmission. Gloves Off was introduced at NNUH as part of World Hand Hygiene week in May 2023. Quantifying reduction has been difficult due to changes in supply chain post covid, but we hope to ratify reductions shortly.

Other projects

Diabetes and Endocrinology, in partnership with Pharmacy, have started work on a QI project looking at reducing waste from disposable insulin pens and our Radiotherapy Department has joined a European project auditing the carbon footprint of certain brachytherapy procedures.

Our Physiotherapy Department is also actively pursuing options to disinfect and re-use walking aids, a scheme which is already deployed in some other local Trusts.

Community Diagnostic Centre (CDC)

Building Lean, Clean and Green is an approach NNUH has taken in the design for the new Community Diagnostic Centre. Early consideration of sustainability and a full lifecycle thought process led to the CDC being designed as a net zero building and one that would facilitate waste reduction and a circular economy. It aims to be classed as BREEAM (Building Research Establishment Environmental Assessment Method) “excellent” with respect to sustainability and energy.

Our Story so far

Sustainability checklist

For business cases over £250,000, NNUH now has a sustainability checklist.

Theatre ventilation – working with Octagon and Serco

Theatre ventilation systems are a high user of energy and although vital to enable clean operating conditions they are often left on 24/7, albeit at a reduced rate. After careful consideration of Health Technical Memorandum 03-01 we began trialling turning ventilation off overnight. After three months we crucially saw no associated increase in surgical site infections. This will result in a cost saving of £45,000 in laminar flow theatres alone and a reduced carbon footprint of 50t CO2e annually.

Chiller efficiencies – Octagon lifecycle betterment

Chiller replacements have and will continue to be replaced with more efficient versions; an approach regularly taken by the PFI as part of sustainable lifecycle betterment. Recently this change has led to a carbon footprint reduction of 73t CO2e annually.

Waste segregation educational video

QI nurse for Medicine, Hiroko Spooner, commissioned a video outlining the sustainability and cost implications of mis-segregating waste. Clinical waste is typically 4x as expensive to dispose of as recyclable waste and its carbon footprint is almost 50x greater. The video can be found on NNUH's YouTube channel and has been viewed over 1,100 times since it launched in late 2023.

https://www.youtube.com/watch?v=FzdoWsH07EY

Reusable sharps bins – delivered by Serco

Reusable sharps bins have been rolled out across the Trust. Once the project is fully up and running it will save an estimated 300t CO2e per year. The sharps bins project not only delivers sustainability benefits but health and safety benefits too. This deployment was negotiated through the Alternative Procedure process which offered the Trust financial savings too.

Grounds Maintenance – working with Serco

We are working closely with Serco's grounds team to improve conservation within the grounds of NNUH. 2023 saw tree planting and more water bags, the first areas of wildflower matting and less frequent grass cutting. We have also extended the mulched areas around trees which helps to promote nature, water conservation and improves soil structure and aeration.

Offsite interventions

Norse are already using more environmentally friendly cleaning products and have actively pursued LED lighting in both the Cotman Centre and Rouen Road.

Sustainable Transport

NNUH has long worked with local bus companies to help drive modal shift through better timetabling and affordability. It's also working on improving active travel capacity and facilities and offers Beryl Bikes onsite as well as onsite bike maintenance and an affordable salary sacrifice scheme.

What can we all do?

Every staff member is in a unique position to see which processes, consumables and equipment have room for sustainability improvement in their area. We want everyone to feel empowered to act but there are some things common to all departments:

- Always remember the mantra of refuse, reduce, re-use, repurpose and recycle *(including in pharmacy where appropriate)*:
  - Reduce unnecessary consumables, particularly single-use items including non-sterile gloves via 'Gloves Off' *(see Our Story so far)*. This could lead to a reduction in glove use of 50%.
  - Rigorous waste segregation, leading to a 20% reduction in clinical waste.
- Consider greener supply chain alternatives and greener forms of travel *(see section 4)*.
- Turn off non-essential equipment out of hours - i.e. computers and lights.
- Prescribe lower carbon footprint medication - i.e. dry power inhalers and IV to oral where available and appropriate.

Our two-year plan

This plan takes us to within four years of NHS England's ambition to reduce direct emissions by 80%.

Our vision is to make sustainability a part of everything we do: The best care for every patient is the most sustainable care for every patient.

Together, NNUH will:

Deliver an average 10% reduction in our Core Carbon Footprint per year

→ 2,600 tonnes

Deliver an annual 5% reduction in our Carbon Footprint Plus with the aim of this increasing to 8% by 2030

→ 6,250 tonnes, rising to 10,000 tonnes

"We do not inherit the earth from our ancestors, we borrow it from our children"

1. People Focused Leadership[2]:

NNUH will further develop communications and engagement to ensure appropriate profile is given to this plan to engender and support empowerment and transformation.

Together, NNUH will:

- Have 500 Green Champions by the end of 2024.
- Develop a PowerBI data dashboard including a minimum of energy, anaesthetic gases and waste by summer 2024.
- Have divisional green groups established and meeting bi-monthly by summer 2024. Groups will be focused on undertaking a peer-review streamlining process to positively address sustainability. They will feedback, implement and monitor through Divisional Performance Committee.
- Develop a green accreditation programme for wards/departments by summer 2024.
- Ensure all staff receive a level of sustainability education appropriate to their role.
- Ensure senior leaders having sustainability actions within their annual objectives for 2025/26.
- Ensure all Trust policies and procedures undergo a sustainability accreditation as part of their update/approval process.

2. Sustainable Models of Care:

NNUH will embed sustainability into our divisional operations, adapting the way we work to be more informed and responsible consumers.

Together, NNUH will:

- Identify specific energy/carbon hotspots and trace them to their underlying clinical activities and associated carbon reduction measures identified and implemented wherever practicable.
- Review **Medication** usage and waste, to identify high carbon areas and alternatives identified/implemented wherever feasible - i.e. IV to oral and low carbon inhalers where appropriate.
- Reduce non-sterile glove use by 50% by May 2026 to align with World Hand Hygiene Day.
- Reduce clinical waste by 10% by 2026 *(20% by 2027 to align with the Clinical Waste Strategy)*.
- Work with partners to remove piped Nitrous Oxide from our operations by 2026 and ensure the adequate capture and destruction of Entonox.
- Work to increase sterile services capacity to limit the amount of single use items needed onsite.
- Ensure the Trust's strategic research programme includes targeted sustainability research.
- Continue to work with **Digital Health** to explore new ways to reduce our carbon footprint.

[2]Aligned with ICS focus

3. Making our Infrastructure Count:

NNUH will use technology to reduce its energy consumption, preparing for electrification/other decarbonisation in the future.

Together, NNUH will work closely with **Estates and Facilities** to:

- Ensure new permanent buildings >£15M will achieve BREEAM[3] Excellent as a minimum.
- Reduce electrical demand by 30%, all things being equal, through lifecycle efficiency *(including sensored LED)* and other 'switch off' /demand projects.
- Develop an options appraisal for decarbonising heat by 2025.
- Replace gas boilers with a more sustainable solution by 2030 *(and consider back up)*.
- Deliver a 50% reduction in carbon emissions produced from waste by 2026, in line with the Clinical Waste Strategy
- Introduce an offensive waste stream as soon as possible.
- Introduce further opportunities for recycling i.e. soft plastics and certain clinical packaging.
- Develop a **Biodiversity Plan** and deliver Biodiversity Net Gain for new projects.
- Develop a Climate Change **Adaptation** *(and Resilience)* Strategy.
- Develop a plan to reduce water consumption.

4. Reducing Travel and Transport emissions:

NNUH will support reducing the need to travel, encourage green forms of transport and look to provide supporting infrastructure.

Together, NNUH will:

- Develop a net zero travel strategy by 2026. It will ensure all new vehicles owned and leased by the Trust will be zero emission by 2027 and aim to reduce staff travel emissions, including commuting by 50% by 2033, in line with Net Zero Travel and Transport Strategy.
- Use the Clean Air Hospital Framework to improve air quality across our sites.

[3] Building Research Establishment Environmental Assessment Method

5. Sustainable Procurement:

NNUH will support procurement processes to limit the production of consumables where possible and ensure their responsible use and disposal.

Together NNUH will:

- Contribute to national supply chain activities that will lead to reductions in the carbon footprint.
- Reduce consumables and eliminate single use plastics wherever practical by following the waste hierarchy: refuse, reduce, re-use, repurpose and recycle.
- Consider greener supply chain alternatives, using evidence, wherever practical.
- Work with Serco to deliver the Food and Drink Strategy and look to reduce meat consumption by 30% by 2032 through the new Alternative Procedure (2027), deliver a new food digestor by March 2026, deliver locally/seasonally sourced food onsite, ensure catering facilities are used efficiently.

6. Making it Happen:

NNUH will work towards having the right funding and resources in place to support the Green Plan. This includes development of an 'invest to save' mechanism.

Together, NNUH will look to:

- Recruit a Waste and Energy manager to support efficiencies in Estates and Facilities.
- Further embed sustainability into business planning.
- Retain clean renewable electricity through a new aggregation arrangement with NHS England.
- Develop a space utilisation strategy and subsequent masterplan by September 2025.
- 3 to 5 sustainability schemes within our Capital Programme.

1.People Focused Leadership

This theme relates to the establishment of a point of focus for sustainability issues, on a day-to-day basis.

Green Champions

Engaging our workforce is vital for the delivery of this Green Plan if we are to limit risk in terms of its delivery. Shifts in behaviour and learning, driven by cultural values and embedding sustainability in everyday operations is vital. We know that engagement of a relatively small amount of people ~25% can lead to social tipping point: we aspire to achieve this through this renewed plan.

So far, we have established a Green Champions communications campaign which includes a network of Green Champions, regular blogs and staff communications as well as engagement with the Patient Panel and Governors. Through this network, NNUH will arm staff with actionable information and advice, empowering them to embed positive changes at the operational level.

NNUH aims to deliver on this theme by:

- Having 500 Green Champions by the end of 2024
- Developing a PowerBI data dashboard for information dissemination by summer 2024
- Having Divisional green groups established and meeting bi-monthly by summer 2024
- Developing a green accreditation programme for wards/departments by summer 2024
- Introducing a system to reward staff for their personal contributions to sustainability
- Developing a PowerBI data dashboard for information dissemination by summer 2024
- Working with Workplace Health and Wellbeing and Practice Development and Education

NNUH will work with identified stakeholders, such as Octagon, Serco, Norse, Norwich Research Park (NRP) and Integrated Care System (ICS) partners to deliver strategic and cooperative change with shared sustainable objectives as a key driver.

2. Sustainable Models of Care

This theme focuses on the clinical element of sustainability. It covers NNUH's four clinical divisions, with sustainability being synergistic with our ongoing work in providing evidence based, high quality care for our patients, something the CQC was particularly interested in during their recent visit.

Adapting models of care can reduce the environmental impact of our services. The best way to improve sustainability in healthcare is to improve human health through preventative care. Promoting healthy eating and physical exercise, both of which benefit our planet too through reduced air pollution and plant-based diets, is an example of how this can be achieved.

Similarly, moving care into the community, where appropriate, reduces the demand on high carbon acute services and gives a much better patient experience.

Digital methods of care like the virtual ward and patient-initiated care, again where appropriate, can also offer sustainability benefits. Digital care helps to reduce the need to travel as well as the volume of paper required to conduct our operations. It can also reduce the number and acuity of services through more efficient and coordinated access to care as well as earlier diagnosis. To complement this, we need to develop digital literacy.

Finally, we know that pregnant women, children and older people are more vulnerable to the climate changes we are seeing already – air pollution and extreme heat in particular. Climate change is further increasing health inequality and we must work hard to ensurethis is minimised.

Divisions are asked to set up Green Groups. They should identify specific energy/ carbon hotspots and trace them to the clinical pathway and identify and action measures to reduce wherever practicable.

This should be supported by the Trust's Strategic Research Programme and by Departmental Green Groups, including Quality Improvement, where necessary or where interest/ resource dictates.

The Centre for Sustainable Healthcare is a valuable resource which covers most clinical specialties.

Surgery, Critical and Emergency Care

Demands and consumes a huge amount of energy and carbon intensive resources, many of which are single use. The carbon footprint of surgical care in the UK in 2019 was estimated as 5.7million t CO2e, equivalent to 3.2million standard petrol cars.

Medicine

Medicine manages and influences clinical activity in a significant proportion of the hospitals. NNUH has over 60 medical specialties, all of whom have their parts to play. There are some great examples of work in our Medical Division already but there are further opportunities in other departments including water intensive renal, the Acute Medical Units (AMUs) and Older People's Medicine – a particularly vulnerable demographic, in particular.

Women and Children's

Women and Children's is the smallest but arguably the one with the demographic most at risk from climate change so one where adaptation, as well as mitigation, are critical. It will be crucial to try and mitigate the impacts of climate change on women's health, as a demographic known to be more vulnerable to climate change and adapt to its effects on our health for our children and young people.

Clinical Support Services

Our Clinical Support Services Division are already making great strides in sustainability *(see Our Story so far)*. The Division will continue to strive for sustainability benefits throughout their operations, including an increase in sterile service capacity and look to extend towards dietetics and sustainable food and nutrition.

Anaesthetic gases

Anaesthetic gases are an essential to the NHS. However, they are responsible for over 2% of all NHS emissions and an area we need to continue working on to reduce their impact. NNUH will:

- continue to raise awareness of anaesthetic gas emissions and working with partners, remove from its operations, piped nitrous oxide (N2O), a gas which is 298 times more potent as a greenhouse gas than carbon dioxide.
- ensure the adequate capture and destruction of Entonox *(of which nitrous oxide is an active ingredient)*, which is used in many births across our Delivery Suite and Midwifery Led Birthing Unit at NNUH.

3. Making our Infrastructure Count

This theme relates to energy efficiency, capital projects, heat decarbonisation, renewable energy, soft facilitates management and adaptation.

Capital Projects and Lifecycle Betterment

The Net Zero Building Standard *(and BREEAM Excellent for projects >£15m)*, with its whole life approach and ambition to accelerate Estate decarbonisation, should be followed as required. When looking at undertaking capital projects to relocate or expand services, the first consideration should always be whether the project can be incorporated into existing building stock rather than building new. If new building stock is required then we should think flexibly and adaptively about typology and scale at the design stage, aligning with clinical strategy. Buildings should be efficient to limit energy demand and be supported by green solutions. Energy and carbon footprint strategies and upfront limits should be set and monitored throughout the project's lifecycle and iterative learning and increased evidence-based ambition introduced as our net zero target approach. Circular economy principles *(where materials never become waste and nature is regenerated)* should be included.

Make every kWh count

Based on 2022-2023 data, NNUH is consuming 23.4GWh of electricity *(clean renewables: wind, solar and hydro)* and 39.6GWh of gas, equating to over 11,200t CO2e emissions per annum – a significant area for improvement.

Oil is still used at NNUH, but only as a back-up fuel source.

Through energy management alone, savings in the region of 20% could be achieved with close to zero capital expenditure, significantly reducing NNUH's energy demand.

We must identify and act on 'quick wins'.

Some key areas of focus within NNUH are:

- Energy usage/intensity hotspots identified *(via sub-metering)* and acted on where possible.
- Upgrade to more energy efficient infrastructure *(through lifecycle replacement/condition survey output and associated lead in requirements)*, alongside other 'switch off'/demand projects:
  - Air cooling and chiller systems *(including consideration of refrigerant gases)*.
  - Heating, including recovery and re-use through a Heating Strategy.
  - Ventilation.
  - A Lighting Strategy which includes 'switch off' plans in certain areas.
- An evidence base built up to allow for more efficient building and carbon/energy management and distribution systems.
- Further smart tech/digitalisation opportunities explored and delivered where practicable.
- A space utilisation strategy and subsequent masterplan to ensure all buildings are occupied and operated to their maximum feasible capacity with energy and carbon production targets being met or exceeded.

Prepare for electric heating, switch to non-fossil fuel heating and on-site renewables

Some other key areas of focus within NNUH must involve:

- Our decarbonisation of heat strategy needs to be developed into a clear roadmap for intervention. Working with the University of East Anglia (UEA) we will determine the best direction.
- Fabric first approach *(where possible)*: building upgrades to be planned and delivered.
- Efficiencies in the hot water systems planned and delivered.
- A bid to the Public Sector Decarbonisation Scheme *(PSDS)* to decommission gas boilers in a timely way.
- Increased electrical capacity in due course: onsite (likely via PSDS)/private wire renewables.
- Back up generation solution developed.
- Blending and hydrogen opportunities (for the new CHP) explored and developed.

Water

Reuse of water is challenging in a hospital setting, however technology such as rainwater harvesting and water efficiency projects should be pursued where practicable.

Biodiversity and green space

Healthy green spaces not only promote health and wellbeing, they also reduce the effects of climate change and improve biodiversity. There is perhaps a conflict between nature conservation and the ever-increasing demand for space on our constantly developing sites, but a growing number of patients, staff and visitors support the importance of good balance.

NNUH will continue to work with partners, to deliver the three strands of Biodiversity Net Gain by:

- Continuing to protect our nationally important Elm trees that pre-date Dutch Elm Disease.
- Developing our shelterbelt to improve air quality and limit surface run off during heavy rain.
- Continuing to record and understand the various species onsite, including birds, insects and fungi.
- Developing low lying planting and engaging in 'No Mow May' across our sites to continue diversification.
- Improving soil quality by adding topsoil, limiting compaction impact and surface run off.
- Eliminating pesticides and reducing the use of salt on our pathways.
- Continuing our 'Right Tree, Right Location' approach and ensuring appropriate pruning.

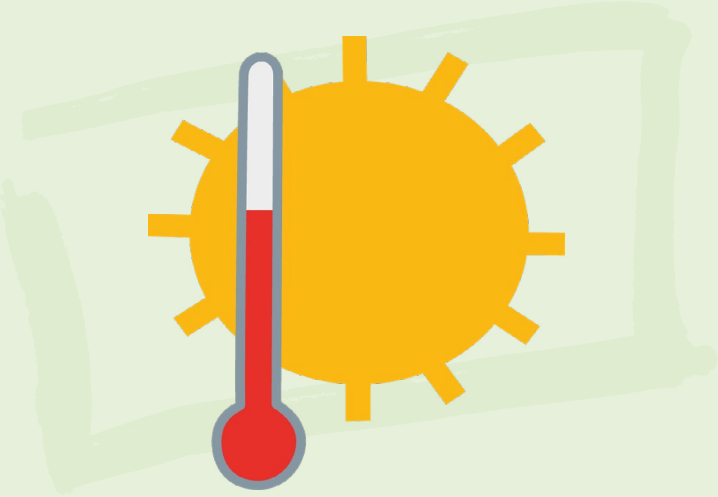
Climate Adaptation and Resilience

It is increasingly important that we adapt to the effects of climate change. Rising temperatures and extreme weather conditions, such as flooding, droughts and heat waves, are increasing in severity and frequency and are now a visible reality that impacts the way our care is delivered.

Nature can provide shading, reduce surface temperatures and the urban heat island effect, and offer potential protection from climate change impacts such as flooding. These qualities make the existing shelterbelt and additional tree coverage particularly important at NNUH where internal overheating is an issue. Further investment in climate resilience could include increasing internal temperature controls through shading and mechanical ventilation and cooling. We could also invest in ways to reduce flooding risk.

NNUH will:

- Undertake a Climate Risk Assessment using NHS England's Climate Risk Assessment Tool with appropriate mitigation including work with Emergency Planning.
- Develop an Adaptation Plan for Climate Resilience *(specifically heat and flooding)* including service resilience *(Trust and suppliers)*.



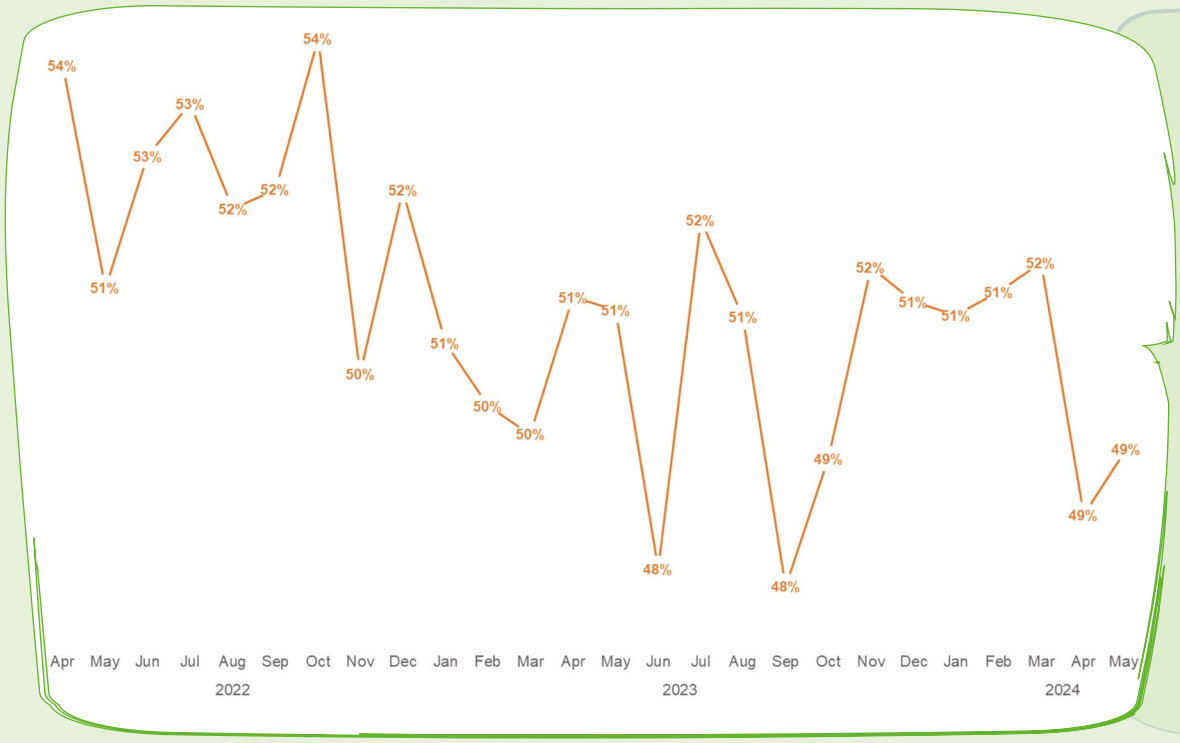
Food and Nutrition

NNUH wants to offer healthy and nutritious catering, as well as reduce its environmental impact from both the food supplied and the catering facilities themselves. Providing more plant-based food options and locally and seasonally sourced food can help to support the aims of this Green Plan. Indeed, the National Food Strategy looks to reduce meat consumption by 30% by 2032.

NNUH will introduce initiatives to help educate people on the importance of food choices and actively encourage sustainable food choices, while working with dietetics to ensure the fundamental health and wellbeing of staff and patients is maximised. A new Food and Drink Strategy will have sustainability elements which include food re-use/waste reduction, the removal of macerators and the introduction of a further digestor and more composting where appropriate. NNUH will also work with suppliers to understand their sustainability credentials and encourage improvements where possible.

Waste

Resource efficiency is an area that could help to reduce our carbon footprint. This includes considering the waste hierarchy including repair/repurposing and the appropriate segregation and disposal of waste.



Medical waste is required to be disposed of responsibly. NNUH will introduce a new offensive waste stream and alternative treatment in line with the NHS's Clinical Waste Strategy. This will help to reduce emissions from waste by 50% by 2026.

Figure 3: Proportion of clinical waste

There are further initiatives across the Trust that will help reduce emissions from waste including:

- Eliminating single use plastic from non-clinical areas and focus on reusable alternatives elsewhere.
- Reusing/reprocessing equipment *(such as walking aids)* until the end of their useful life.
- Introducing a 'swap shop' initiative, perhaps with other Trusts, for redundant pieces of equipment.
- Better waste segregation through continued communication and updated bin layouts, leading to:
  - Reduced clinical waste and the removal of 'covid' bins in non-clinical areas.
  - Establishing domestic as the 'go to' waste stream and the removal of office bins.
  - Increased recycling and consideration of other previously excluded items i.e. soft plastics and certain medical packaging.

4. Reducing Travel and Transport emissions

This theme relates to the movement of people: patients, visitors and staff which makes up 11% of our carbon footprint. The first area to focus on is reducing the initial need to travel. Digital transformation, hybrid working, and community intervention offer real opportunities in this regard. Thereafter we must endeavour to deliver modal shift by encouraging public and active travel, something we have made significant strides on in the last 18 months *(see case study)*, with further incentives yet to implement, including car sharing. Finally, the electrification of transport, and its supporting infrastructure, will help us achieve the last element of transition.

The new NHS Net Zero Travel and Transport Strategy looks to deliver a fully decarbonised fleet by 2035, with its ambulances following in 2040. Several key steps will mark the transition of NHS travel and transport:

By 2026 **sustainable travel strategies will be developed and incorporated into Green Plans.**

From 2027 **all new vehicles owned and leased by the NHS will be zero emission vehicles.**

By 2033 **staff travel emissions will be reduced by 50%.**

NNUH will:

- Continue to be dedicated to the promotion of sustainable travel and transport and work with staff, visitors and partners to ensure ease of access and appropriate infrastructure in order to aid the transition to net zero.

The Clean Air Hospital Framework should be used to improve air quality across our sites.

5. Sustainable Procurement

This theme relates to NNUH's significant purchasing power as the sixth largest hospital in the UK. Our supply chain accounts for ~70% of our carbon footprint *(including our PFI partners)*. Analysing where more sustainable products, practices and delivery routes can be taken and considering lower carbon alternative supplies in our procurement will actively help to deliver our Green Plan. The Trust must engage with these parties and NHS Supply Chain to align our strategies and seek mutual benefit to reduce our Carbon Footprint Plus.

The Trust has made good progress towards this theme, but this is an area where we would like to see more accelerated progress. NNUH now:

- Requires all procurements £5m+ per year to have a Climate Reduction Plan. Expectations regarding content and value will increase over time to include all suppliers from 2027.
- Uses a 10% weighting for Social Value in all procurements including climate change on each occasion. Modern slavery requirements must be included in those tenders identified as medium/high risk.
- Uses the Evergreen Assessment Tool.
- Uses the following supply chain objectives:
  - NNUH aims to reduce its carbon footprint by 80% by 2036 and suppliers are expected to contribute 40% of this reduction.
  - NNUH aims to reduce its energy and water carbon footprint by 80% by 2030 and suppliers are expected to contribute 40% of this reduction, albeit by 2036.
  - NNUH aims to eliminate non-essential single use plastics at the earliest opportunity and reduce clinical single use plastics by half. Our supply chain is expected to facilitate this by either eliminating single use plastics from packaging, and/or follow the waste hierarchy by reducing, reusing or recycling.
  - NNUH aims to reduce transport emissions by 80% by 2036 with a 40% contribution expected from suppliers by reducing miles, consolidating deliveries and/or electrifying fleets.

Areas of high supply chain emissions have been identified as follows: computer hardware/software, rents, imaging equipment maintenance, consulting services, medical and surgical equipment, pharmaceutical blood products and medical gases, orthotics, catering equipment maintenance, and dressings.

Supply chain

Many procurement decisions are made by NHS Supply Chain; it is our aim to align with these where possible as NNUH will then benefit from central efforts made to engage with suppliers to reduce their emissions. In due course, NHS Supply Chain will require product level carbon footprinting. When purchasing decisions are outside of this, we must strive to source products locally and through sustainable suppliers.

6. Making it Happen

Governance, Accountability and Assurance

An Executive led Sustainability Committee is now established. Members include representatives from across the Trust and our partners including our Sustainability Manager and our Clinical Lead for Sustainability. It is tasked with embedding sustainability into our operational activity and working towards the actions set out here.

The Committee reports to Hospital Management Board as well as Finance, Investments and Performance Committee and reports to Capital and Estates Committee where necessary. Influence and reporting by exception is also established through the PFI sub-committees *(Hard FM, Soft FM and Commercials)* through into Liaison Procedure Meeting where required.

In order to further support embedment and accountability within the organisation NNUH looks to include sustainability objectives in senior leader appraisals in the first instance and seeks to work with HR further on similar initiatives. NNUH will also ensure all policies and procedures of the Trust undergo a sustainability accreditation as part of their update/approval process.

Ongoing work is taking place to engage other branches of Trust governance including each of the Clinical Divisional Boards, Procurement Board, Digital Transformation Committee and the Nursing, Midwifery and Clinicians Forum and Board.

Divisions are asked to set up Green Groups. They should identify specific energy/carbon hotspots and trace them to the clinical pathway and identify and action measures to reduce wherever practicable.

Dedication to Funding, Resource and Finance

In the medium-term, a budget for feasibility/viability studies and resourcing *(including training)* will need to be allocated to enable meaningful change and to achieve the legislative targets required. This is essential to deliver actions within the Green Plan and ensure that the Trust is progressing towards its compliance requirements and reducing climate change risks.

In addition, the Capital Programme will need to include investment for both minor interventions that have invest-to-save benefits and (subject to the capital envelope) funds for major interventions, such as capital injection costs for the PFI. NNUH will actively pursue external financing for larger investments. This will include Carbon Energy Fund (CEF), Salix/ Department of Energy Security and Net Zero (DESNeZ) funding, and NHS funding. To minimise finance required, NNUH, commercial partners and Project parties, should consider:

- Minimising resource demands through staff training and facilities-based interventions.
- Increasing generation resilience on-site where possible to limit fuel price volatility.
- Working together to find whole lifecycle saving solutions, leveraging lifecycle funding.
- Ensuring all capital projects and business planning consider sustainability opportunities.
- Develop a space utilisation strategy to ensure Estate efficiency.
- Actively investing in adaptation measures for extreme events to reduce their impact.
- Ongoing reviews of emissions charge forecasts to limit risk.

The Triple Bottom Line concept is useful for any project, be that cost or quality improvement or a business case for new investment – it combines the typical goals of cost and quality with environmental outcomes. Remember: patients, planet, profit. This concept is referenced throughout the Green Plan.

Key Performance Indicators

1. People Focused Leadership

500 Green Champions by the end of 2024	410
345 PowerBI data dashboard by summer 2024	Yes/no
Divisional green groups established and meeting bi-monthly by summer 2024	Yes/no
Green accreditation programme for wards/departments by summer 2024	Yes/no
Senior leaders having sustainability actions within their annual objectives for 2025/26	Yes/no

2. Sustainable Models of Care

Reduce non-sterile glove use by 50% by May 2026 to align with World Hand Hygiene Day	406,500pw [4]
Reduce clinical waste by 10% by 2026 (20% by 2027).	113.7[5]
Remove piped Nitrous Oxide from our operations by 2026.	Yes/no

3. Making our Infrastructure Count

Reduce electrical demand by 30%, all things being equal	20.2m kWh[6]
Options appraisal for decarbonising heat by 2025	Yes/no
50% reduction in carbon emissions produced from waste by 2026	24 tonnes[7]
Introduce an offensive waste stream as soon as possible	Yes/no
Introduce further opportunities for recycling i.e. soft plastics and certain clinical packaging	Yes/no
Water reduction plan	Yes/no

4. Reducing Travel and Transport emissions

Net Zero Travel and Transport Plan.	Yes/no

5. Sustainable Procurement

Reduce consumables and eliminate single use plastics wherever practical	TBD
Consider greener supply chain alternatives, using evidence, wherever practical	TBD
Deliver a new food digestor by March 2026	Yes/no

[4] Q1 2024
[5] 12 months to Jan 2024
[6] 2023/24
[7] 2022/23

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