



NUH Green Plan

[2022 – 2025]

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Document Control

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List of acronyms

CCRA	Climate Change Risk assessment
CEP	City Energy Project
CEP	City Energy Project
CHP	Combined Heat and Power Unit
CO ₂	Carbon Dioxide
CO ₂ eq	Carbon Dioxide Equivalent
DPI	Dry-powder inhalers
EPR	Electronic Patient Records
GHGs	Green House Gases
GSHP	Ground source heat pump
HTM	Health Technical Memorandum
HV	High voltage
HVAC	Heating, ventilation and air conditioning system
ICS	Integrated Care System
ICT	Information Communication Technology
LED	Light-emitting diode
LTHW	Low Temperature Hot Water
MDIs	Metered-dose inhalers
NCC	Nottingham City Council
NCC	Nottingham City Council
NET2	Nottingham Express Transport Phase 2
NHSEI	NHS England and Improvement
NottsCC	Nottinghamshire County Council
NPS	Net Performance Score
NUH	Nottingham University Hospitals NHS Trust
PBC	Programme Business Case
PBPs	Placed Based Partnerships
PCN	Primary Care Networks
PV	Photo Voltaic Technology
PV	Photovoltaic
SDU	NHS Sustainable Development Unit
SOC	Strategic Outline Case
STP	Sustainability Transformational Partnership

Executive Summary

This Executive summary of the NUH Green Plan is provided to succinctly show our sustainability goals, targets and out methods and action plan to achieve them.

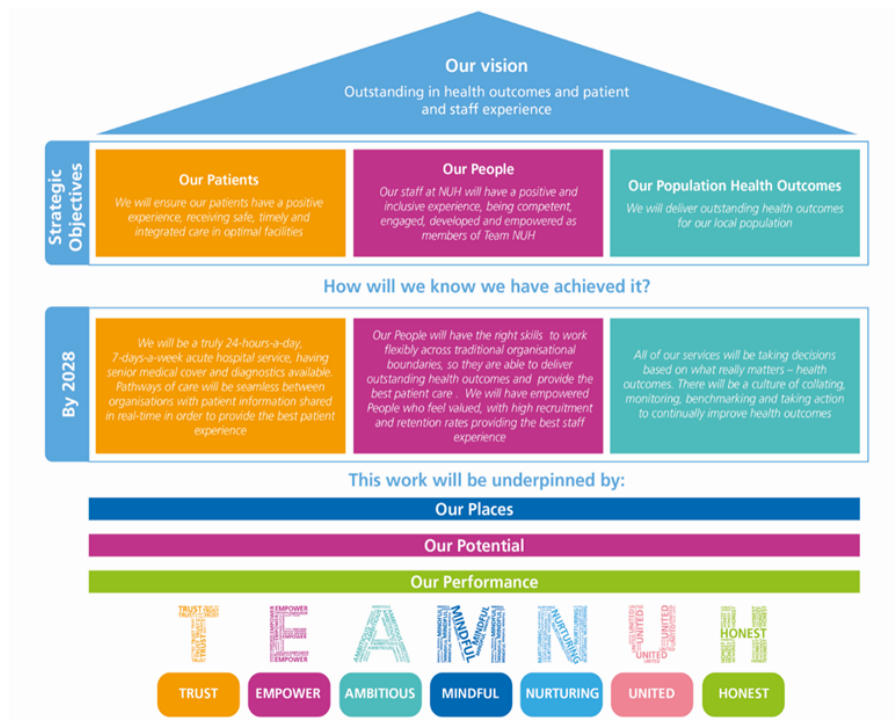
The creation and implementation of Green Plan is mandated¹ and through the Public Health Outcomes Framework it is an indicator in the Health Protection domain which is linked to the core services the Trust delivers.

Since the establishment of Nottingham University Hospitals NHS Trusts (NUH) in 2006, the ethos of sustainability has been a foundation stone for supporting the Trusts' service delivery. This is achieved through the effective alignment of business priorities, social, economic and environmental benefits; enabling quality improvements, positive patient experiences and exemplar social citizenship.

Trust Strategic Context

The Trust has set out a compelling vision for the future to become “outstanding in health outcomes and patient and staff experience”, underpinned by leading edge research and teaching, with “Team NUH” taking pride in achieving this. To deliver this vision and aims, the Trust Board has committed to three strategic objectives that are underpinned by 3 additional promises that form the basis of the plans over the next 10 years. The Trust will achieve its vision and realise its mission through the strategic objectives outlined below:

¹ NHS Standard Contract - Service Conditions – SC15 Services Environment and Equipment



Strategic Context Background

The Estates Strategy approved by Trust Board in March 2018 describes how large areas of the NUH estate have, through life cycle/age, deteriorated into an unsatisfactory condition. The provision of fit for purpose and safe healthcare premises is a key sustainability aim for NUH.

The Estates Strategy outlines the programme of works required to create “Tomorrow’s NUH”. Fundamental to its delivery is the securing of significant capital investment, once secured this will enable the transformation of the NUH estate which will support the delivery of future clinical pathways for both NUH and the wider STP.

This sustainable programme will right size our estate, remove duplication of services and reduce the inefficiencies these cause. This will be achieved through:

- The development of a system wide clinical services strategy, led through the STP leadership and taking into consideration the current configuration and location of services delivered by NUH (QMC, City and Ropewalk House), as well as where these could be best delivered from in the future.
- Reviewing the validity of continued dual-site working for a number of services, including exploring the potential to consolidate and or co-locate some on the same site.
- Exploring opportunities to share estates with our health system partners and other public sector bodies through the ‘One Public Estates’ programme. Therefore, enabling the development and delivery of a divestment strategy for surplus land in accordance with the recommendations of the Naylor Report.

The aforementioned sustainable programme is further supported through the Trusts Long-Term Strategy, approved by the Board in March 2018. This outlines that the QMC Campus should focus on the highest acuity of patients and the City Campus should prioritise ambulatory and less complex workload, as well as long-term condition management.

In shaping the Estate Strategy to support the drive to improve services for patients across these themes, the system is focusing on schemes that fall into two categories:

- **Bridging and Transition** – Immediate schemes to address key service and infrastructure priority issues from the above themes that are also compatible with potential transformed service and estate configurations, and are flexible and scalable with that future.
- **Enabling and Long Term Transformation** – Schemes that enable future service models and deliver the long term vision.

The **NUH Green Plan 2022-2025** continues to build on and further embed NUH's achievements; ensuring continuity of good practice and its delivery of successful initiatives. This strategy is reflective and aligns to local and national policies. Therefore, to ensure successful achievement and delivery of its goals, it has been drafted so its action plan is flexible and therefore able to adapt for future strategic or legislative changes as will be covered in the following sections.

Aims and objectives – what we need to do

Delivering our Strategic Objectives requires significant and focused financial investment in our infrastructure. The NUH Green Plan's main goal is to ensure that these key infrastructure investment decisions are future proofed in terms of sustainable efficiency. This means less wastage of resources, time and money through prioritising relevant areas of focus, with the following Sustainability Vision:

- By 2040 the Trust will have achieved a Net Zero carbon operation for all its emissions from heating and energy use and 80% reduction of its Carbon Footprint Plus (indirect emissions including procurement).
- Access to Trust services will be low carbon via telemedicine and by ensuring the Trust has good quality facilities to incentivise active travel, electric vehicle use and excellent public transport links.
- The Trust will manage an estate upgraded to minimise energy demand which will be provided by low/zero carbon energy sources.

Green Plan 2022-2025 vision horizon

- By 2025 the Trust will continue connecting buildings at the City Hospital to the new LTHW network delivered under the CEP Project. The Trust will take initial steps in de-steaming the QMC Campus by installing a ground source heat pump and making improvements to the building insulation.
- By 2025 the Trust will have in place an Energy Strategy to net zero which informs the Engineering Strategy and hence the Estate Strategy for each campus.
- The Trust will see the installation of new facilities to maximise sustainable access to health services through the established telemedicine platform.
- By 2025 the Trust will have made foundation steps to ensure the core of its supply chain has net zero carbon plans and internal projects aiming to reduce wastage of resources.

Key actions and outputs – how we will get there

To aid the achievement of the sustainable objectives, nine “Areas of Focus” were identified for priority action. The following key actions in each of the Focus Areas are:

- **Workforce and system Leadership:** This area sets out our approach to engaging and developing our workforce and system partners in defining and delivering carbon reduction initiatives. Our efforts will be around ensuring we have a Green Plan Champion appointed in the Trust Board and that all staff are trained on carbon and sustainability awareness.
- **Sustainable models of care:** Embedding net zero principles across all clinical services is critical, within this section it considers carbon reduction opportunities in the way care is delivered. Actions include supporting the further development of telemedicine services and reduce resources intensity by digitising patient records.
- **Digital transformation:** The direct alignments between the digital transformation agenda and a net zero NHS are clear. This section seeks to focus on ways to harness existing digital technology and systems to streamline NUH service delivery, supporting functions while improving the associated use of resources and reducing carbon emissions. Actions include creating and delivering solutions that minimise the need for commute (staff, outpatients, etc.) and digital patient records.
- **Travel and transport:** This area of focus outlines plans to reduce the carbon emissions arising from the travel and transport associated with the Trust. Most of the actions are associated with the complementary NUH Travel Plan which sets the ambitions to decarbonise commute and travel to our sites.
- **Estates and facilities:** This area of focus explores reducing the carbon emissions arising from the Estate by implementing the 4-steps approach suggested by NHSEI in the November 2021 guideline. The actions include the optimisation of our building systems to ensure we minimise energy demand.

- **Medicines:** This area of focus examines the key opportunities to reduce the carbon emissions related to the Trust's prescribing use of medicines and medical products. The focus is the reduction of medicine wastage.
- **Supply chain and procurement:** The NHS supply chain accounts for approximately 62% of total carbon emissions and is a clear priority area for focus in every Green Plan. This area of focus considers the approach to mitigate carbon emissions: embed the need for net zero plans amongst our biggest contracts and focus on resources efficiency.
- **Food and nutrition:** This area of focus considers ways to reduce the carbon emissions from the food made, processed and/or served within the Trust. The Trust already has a number of initiatives in place as part of its sustainable food procurement programme. The Trust is committed to continue implementing this programme and expand where opportunities arise (e.g. plastic items minimisation, etc.)
- **Adaptation:** This section summarises the Trust's approach to mitigate the risks or effects of climate change and severe weather conditions on our business and functions. It sets the creation of an adaptation plan as its key action.

Monitoring and Review

In addition to the currently mandated reporting requirements for annual carbon emissions, as accurate data becomes available to show progress against the actions of the Green Plan NUH's sustainable reporting data will be expanded to include areas such as travel, transport and supplier emissions.

Following approval of the Green Plan by the Trust Board, the Trust Board will be kept informed annually of progress against the Strategies goals. The monitoring of the Strategy's Action Plan (section 6) will be reported to Management Board on a quarterly basis.

The Action Plan will be a live document, which will be reviewed and updated to align with relevant local or national strategies and or legislation when required.

1. Introduction

The Nottingham University Hospitals NHS Trust (NUH) is one of the largest acute teaching hospitals in England. NUH was established on 1 April 2006 following the merger of Nottingham City Hospital and Queen's Medical Centre (QMC). With a budget of just under £1billion, we are one of the largest employers in the region, employing circa 17,000 people at QMC, City Hospital, Ropewalk House and the Nottingham Treatment Centre plus multiple satellite services within the community.

We have circa 90 wards and around 1,700 beds across three main sites:

- QMC is where our Emergency Department (ED), Major Trauma Centre and the Nottingham Children's Hospital are based. QMC is also home to the University of Nottingham's School of Nursing and Medical School and the Nottingham Treatment Centre acquired in 2019.
- Nottingham City Hospital is our planned care site, where our Cancer Centre, Heart Centre and main Stroke services are based.
- Ropewalk House is where we provide a range of outpatient services, including hearing services.

We deliver services to 2.5 million residents of Nottingham, Nottinghamshire and its surrounding communities. We also provide 92 specialised services to 4-5 million people from across the East Midlands region, including Derbyshire, Lincolnshire, Leicestershire, and nationally for a handful of services. We are the only hospital in England to provide some highly-specialised services (e.g. adult Lymphangiomyomatosis, paediatric Ataxia-Telangiectasia).

Since its creation, sustainability has been at the core of NUH's activities bringing social, economic and environmental benefits in line with its business priorities.

The Trust uses the definition of Sustainable Development used by the United Nations World Commission on Environment and Development: *"development that meets the needs of the present generations without compromising the ability of future generations to meet their own needs"*. It meets the equilibrium point between our Planet's capacities to provide resources and the social and economic needs required to sustain our survival. A sustainable operation is one that can adapt and endure challenges to continue providing a positive outcome to society.

The NHS is re-assessing the way it delivers its services to the community. Guidance has been issued to help NHS bodies to address budgetary problems and increase

quality of services (*Carter Review*²). In 2020 the scope of the sustainability agenda for the Trust was redefined setting a new ambitious goal. The “*Delivering a ‘Net Zero’ Healthcare System*”³ report refocused the realm of action to the ambitious goal of achieving a net zero carbon footprint in the next decade.

In line with the above, NUH is therefore going through a transformational process seeking to address these new challenges. Sustainability is a core principle NUH must keep permeating through the whole organisation and it must inform (and be aligned with) the wider organisational strategy aiming to address these new challenges.

The NUH Green Plan 2022-2025 builds on previous NUH achievements ensuring good practice and successful initiatives have continuity. The strategy also re-focuses NUH’s efforts in response to the changes in both the local and the national policies.

The structure of this strategy identifies the main drivers, themes and action plan for NUH to achieve the main goals of its sustainability agenda.

Section 2 presents the main drivers for sustainability as some aspects of the agenda are mandated.

Section 3 of this document presents the Strategic Context in which this strategy is framed. The Net Zero goal for the Trust must be aligned with other key NUH’s strategies.

Section 4 describes the Areas of Action which this Green Plan focuses on.

Section 5 describes the managerial arrangements for monitoring the delivery of this strategy.

Section 6 contains the actions under the Green Plan. Any Trust Board updates on implementation of this strategy will be directly linked to the implementation of this list of actions.

² Operational productivity and performance in English NHS acute hospitals: Unwarranted variations (2016), Lord Carter of Coles

³ <https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf>

2. Drivers for Sustainability

2.1 National Policy

Energy cost and carbon taxation

The Climate Change Act 2008 is the world's first ever legally binding framework to tackle the dangers of climate change, specifying targets for climate change mitigation and adaptation.

In regards to the mitigation objectives, the Act imposes carbon budgets for the nation, setting a requirement of the reduction of greenhouse gas emissions of 80 percent by 2050. This is the foundation of the NHS ambition to achieve a Net Zero carbon footprint by 2040.

The national instruments to address such a reduction include increasing energy and carbon taxation as incentives to reduce energy consumption and decarbonise power utilisation. The changed taxation environment inevitably will place financial pressures on NUH, as a result of possessing a very large in the main a poor carbon intensive estate with physical assets that show a poor energy performance. It must be noted that in 2021 the price of carbon achieved the highest levels on record.

National Adaptation Programme

Led by the Department Environment, Food & Rural Affairs, the National Adaptation Programme sets what the Government, businesses and society are doing to become more climate-ready. This is aligned with the Climate Change Act 2008 adaptation target. The expectations for organisations are that they will:

- Contribute to the local planning arrangements for adapting to climate change.
- Understand the risks to the organisation from climate change and develop appropriate action plans (as part of a Green Plan).
- Report adaptation plan progress in the organisation's annual report.

In response to this requirement, the NHS Standard Contract includes a requirement for NHS Trusts to have a Trust Board-approved Climate Change Adaptation Plan (Service Condition 18).

This opportunity allows NUH to maximise the efficiency of its resources in a way that is socially, financially and environmentally responsible should such incidents occur.

2.2 Healthcare Policy

NHS England Green Plan

NHS England has set a sustainability agenda with a strong emphasis on climate change action and resources efficiency improvement to ensure the sustainability of the NHS in delivering its services to society. A Green Plan is required to comply with

the terms of the NHS Standard Contract - Service Conditions – SC18 Services Environment and Equipment – that requires all providers to:

- Take all reasonable steps to minimise their adverse impact on the environment
- Demonstrate their progress on climate change adaptation, mitigation and sustainable development, including performance against Green Plans/Trust must also provide a summary of that progress in their annual report (www.england.nhs.uk/nhs-standard-contract/).

3. Strategic context

The NHS is facing its most testing time. People are living longer, consequentially spending more of their life in ill-health, and therefore their need for health and care support is growing. We have significant operational pressures due to the demand on services and national workforce shortages in key professions and specialties. This is all taking place at a time when our collective resources are increasingly limited and we are challenged to operate in an efficient, more sustainable way to support our population, and to do so quickly.

A number of key reports such as the *Carter Review* highlight the need to drive efficiency in the NHS in multiple areas from clinical pathways to the optimisation of its Estate. Therefore, to achieve a sustainable operation, NUH must embed sustainability in all: culture, process, policies, strategies and investment decisions.

True sustainability comes from the alignment of the key facets of organisational sustainability, namely; clinical and corporate strategies, financial sustainability plans, workforce strategy and an enabling estates strategy. It must also be embedded within the ethos and culture of the organisation to truly be effective.

NUH's sustainability vision will be embedded through the existing corporate governance and business processes inclusive of Annual Plans and the Five Year Forward View.

The Programme Business Case (PBC) will be the blue print for "Tomorrow's NUH". This will be in connection with the key strategic aims of the Nottingham and Nottinghamshire ICS. This framework will help align Trust systems of work for a more efficient and sustainable operation. The Tomorrow's NUH Programme Business Case will be followed by a series of major business cases aiming to reconfigure services and activities.

Under this panorama the NUH Sustainable Development Strategy goals will inform the Programme Business Case, which will be the main strategic focus over the next 10 years.

3.1 Our Vision, Mission and Our Promises

The Trust has set out a compelling vision for the future to become “outstanding in health outcomes and patient and staff experience”, underpinned by leading edge research and teaching with “Team NUH” taking pride in achieving this.

To deliver this vision and aims, the Trust Board has committed to three strategic objectives that are underpinned by 3 additional promises that form the basis of the plans over the next 10 years. The Trust will achieve its vision and realise its mission through the strategic objectives outlined below:

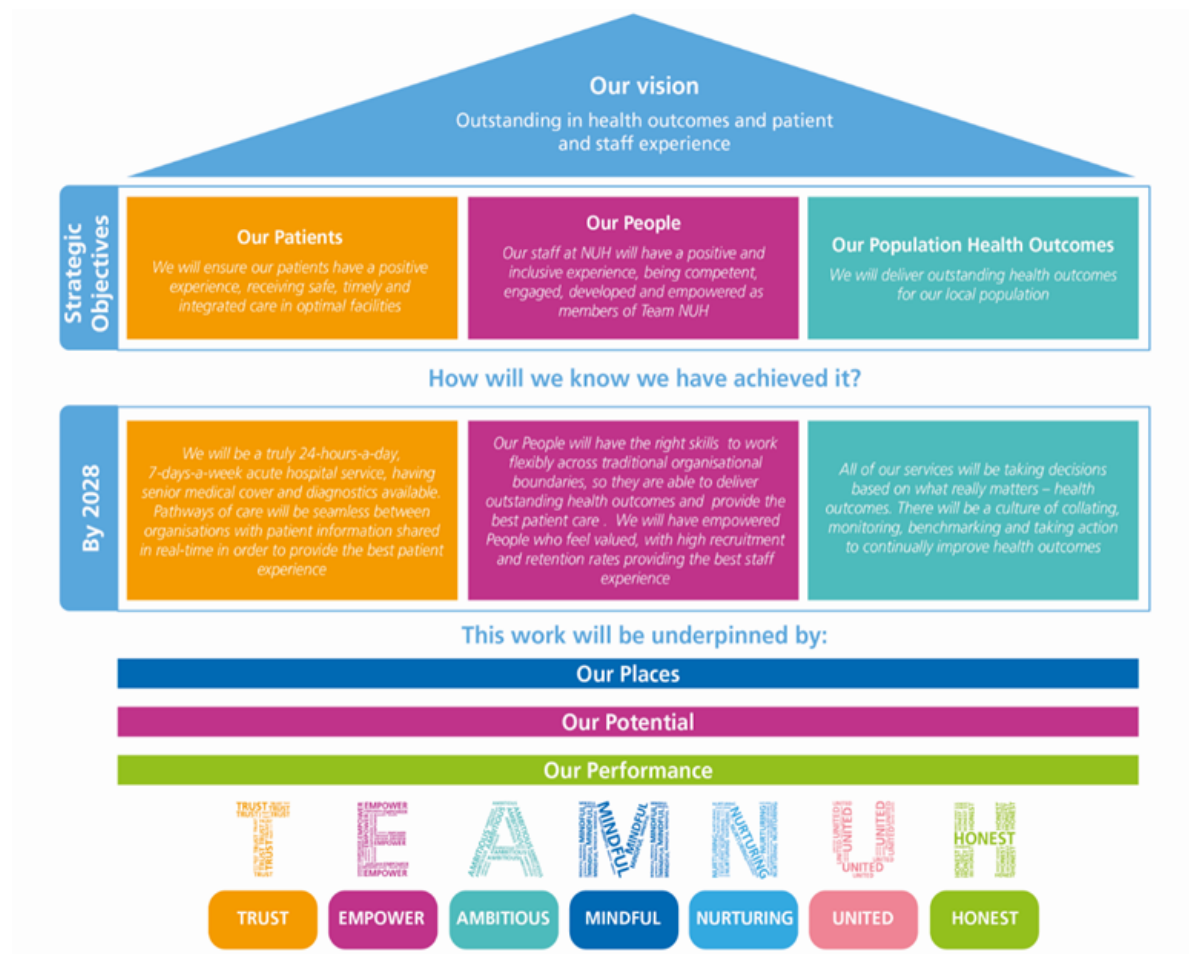


Figure 3-1 NUH Vision

3.2 Nottingham and Nottinghamshire Integrated Care System (ICS)

In order to improve health and care in England, NHS England and local authorities developed partnerships in 44 areas. The purpose is for local partners to work together to better tackle the challenges of the health and care sector via cooperation and not competition. The ICSs are designed around the needs of the whole area and not just individual organisations. NUH is an active partner of the Nottingham and Nottinghamshire ICS.

There are different layers to the ICS and NUH are actively working with partners at:

- ICS – working with all partners to understand the needs of the local population and set strategic direction.
- Place Based Partnership (PBPs) – working with partners at a local level to understand citizen need and shape community service provision for population cohorts of circa 250,000.
- Primary Care Networks – working with individual neighbourhoods across 20 PCNs.

3.3 Trust Clinical Strategy

As part of the NUH Trust Strategy implementation, a Clinical Service Strategy has been developed to provide a foundation to enable NUH to achieve the Vision of being “outstanding in health outcomes and patient and staff experience”, contributing to the delivery of the strategic objectives specifically around Patients. The Clinical Service Strategy is a paradigm shift towards focusing on population health outcomes and holistic patient-centred care.

The Clinical Service Strategy sits within the wider strategic context of our Nottingham and Nottinghamshire ICS which has set out a Clinical and Community Services Strategy for developing new models of care to deliver enhanced population health outcomes. The ICS have also developed a System Level Outcomes Framework. Through the five principles our Clinical Service Strategy supports the delivery of several of the system level outcomes including increase in life expectancy, increase in healthy life expectancy and reduction in illness and disease prevalence.

To respond to the population health challenges, NUH has established five planning principles for services to adopt as they transform over the next 5-10 years in order to support the Trust’s vision.



Figure 3-2 NUH Planning Principles

3.4 NUH Estates Strategy

With a focus on the delivery of several milestones of “Our Places” promise, the Estates Strategy approved by the Trust Board in March 2018 describes how large areas of our estate are in poor condition which is impacting on our ability to ensure safe, effective, responsive and efficient care. The strategy describes that we have commenced a programme of work to create “Tomorrow’s NUH”, which will involve securing significant capital investment to transform our estate and support the delivery of future clinical models for both NUH and the wider STP in the years to come. Through this programme we aim to right size our estate, remove duplication of services and reduce the inefficiencies that this causes, as outlined below:

- The development of a system wide clinical services strategy is being led through the STP leadership and will consider the current configuration and location of services delivered by NUH (QMC, City and Ropewalk House) and Sherwood Forest Hospitals (SFH), and where these could be best delivered from in the future.
- We will review the validity of continued dual-site working for a number of services, which includes exploring the potential to consolidate some services on one site and co-locating ambulatory, routine procedures, operations and long-term condition management on the same site.
- We will explore opportunities to share estates with our health system partners and other public sector bodies through the ‘One Public Estates’ programme and develop a divestment strategy for surplus land in accordance with the recommendations of the Naylor Report.

The Trust Strategy also approved by the Board in March 2018 describes that the QMC Campus should focus on the highest acuity of patients and the City Campus should prioritise ambulatory and less complex workload, as well as long-term condition management.

In shaping the Estate Strategy to support the drive to improve services for patients across these themes, the system is focusing on schemes that fall into two categories:

- **Bridging and Transition** – Immediate schemes to address key service and infrastructure priority issues from the above themes that are also compatible with potential transformed service and estate configurations, and are flexible and scalable with that future.
- **Enabling and Long Term Transformation** – Schemes that enable future service models and deliver the long term vision.

The first major development in our long term plan is for an Urgent and Emergency Care Centre at QMC which would include ED, Theatres, Critical care, assessment beds, supporting services and infrastructure. This would be followed by further phases to redevelop the existing blocks at QMC allowing us to strengthen our Women’s and Children’s services and relocate services from the City Campus, in

particular Stroke, Respiratory and Burns services. Given the size and complexity of these developments, the earliest that these would result in migration of significant volumes of inpatient services away from the City Campus is 10 years from now.

Through 'Tomorrow's NUH' programme, the implementation of our Estates Strategy and Development Control Plan we will right size our estate, remove duplication of services and reduce the inefficiencies that this causes. In the intervening period, we must continue to deliver safe, effective clinical services and to support this we will implement our estates strategy improving buildings and infrastructure resilience and reducing critical infrastructure risk.

3.5 Tomorrow NUH

Our Trust vision is for our hospitals to become 'outstanding in health outcomes and patient and staff experience'. To achieve that vision, we need to develop a more digitally advanced, research intensive, innovative and greener hospital which is fully integrated with the wider health and care system.

NUH is one of the Trusts identified in the Department of Health and Social Care's Health Infrastructure Plan, a rolling programme of investment in new hospitals over the next decade. This significant investment will allow us to redevelop our QMC and City hospital sites, including constructing some new buildings and carrying out major refurbishment work. Tomorrow's NUH will lead to major improvements both in health outcomes, and in people's experience of using our services, as well as a reduction in health inequalities. This major investment in our hospitals will be critical to the delivery of the ambition to deliver net zero carbon.

Currently, we have some duplication of services across our two large hospital sites, and have services that should ideally be co-located, situated on opposite sides of the city. Our ageing estate makes it difficult for us to deliver modern healthcare in the way we would like – the buildings were designed at a different time to care for fewer patients with different needs than those of today. Through Tomorrow's NUH we have a once in a lifetime opportunity to address those issues.

The programme business case is being developed around a reconfigured clinical model with QMC being our main hot site for our emergency activity and women's and children's services with City Hospital being our main cold elective site with other specialist services there. This model will increase the demand on the QMC site and reduce demand at City hospital. Once our initial plans are approved in 22/23 we will complete the Outline Business and Full Business Cases for this major capital investment and plan to commence construction in April 2025.

3.6 Previous Work – Our Sustainable Development Strategy 2018-2023

In 2018 the Trust Board approved the NUH Sustainable Development Strategy 2018-2023. This strategy followed the model of "*Sustainable Development Plans*" from the

NHS Sustainable Development Unit. This document was built around the carbon reduction and sustainability targets set in 2009 and 2016 for the NHS. It had four underpinning areas of action:

1. Climate Change mitigation
2. Climate Change adaptation
3. Sustainable Use of Resources
4. Sustainable Travel

The NUH Green Plan 2022-2025 builds upon the work and achievements of the Trust under its Sustainable Development Strategy and updates its targets and actions.

The following table shows some of the key milestones achieved:

- **Implementation of the City Hospital Energy Project (CEP) to replace the coal-fired boiler house.** This cornerstone project was commenced in February 2021 when the Trust signed an energy performance contract that saw the construction of a new energy centre and decommissioning of the coal fired boiler house. Other deliverables under the contract includes the installation of air source heat pumps and photovoltaic panels (PV), the installation of a new low temperature hot water main and the replacement of low efficiency lights with LEDs. Once completed, the project will deliver a reduction of 14,000 of CO₂eq in the carbon footprint of the Trust compared to the normal operation of the coal-fired boiler house. This project also paves the way forward for the de-steaming of the City Hospital which is necessary to achieve a net zero carbon operation.
- **Creation of a Climate Change Adaptation Plan for NUH.** The Trust created a draft Climate Change Adaptation Plan to be approved in 2022.
- **Reduction in wastage of pharmaceuticals.** The Trust implemented a scheme to maximise the recovery of unused pharmaceuticals. This is currently saving circa £50,000 per year. This is equivalent to 130 tCO₂/year.
- **Introduction of food waste separation at NUH.** This was successfully implemented at the QMC and City Hospital its full implementation was slowed down by the COVID pandemic.
- **Implementation of the NUH Travel Plan.** Along with the Sustainability Strategy the NUH Travel Plan was approved by the Trust Board. Since then a number of initiatives have been successfully funded such as the New City Hospital Cycling compound that is schedule to finalise construction in March 2022. This initiative will see more than 100 new parking spaces and additional facilities being built for the convenience of our staff. In addition, the Trust keeps promoting its Travel to Work Scheme which includes discounted transport passes. This scheme currently has circa 1,700 subscribers (December 2021) (10% of NUH workforce).

The achievements of the Sustainability Strategy are a solid foundation to further decarbonise our operations.

3.7 Local initiatives

At a local level, the Trust closest partners include the Nottingham City Council and Nottinghamshire County Council.

Nottingham City Council

Nottingham City Council (NCC) goal is clear and simple: “Nottingham is aiming to become a carbon neutral city by 2028, meeting this target by reducing all carbon dioxide emission from direct and indirect energy use to net-zero.” The published “Nottingham 2028 Carbon Neutral Charter⁴” sets the pathway to achieve this by focusing on the decarbonisation of electricity, transport, heating and cooling, reducing energy demand, improving energy efficiency for housing and commercial buildings. These initiatives are detailed in the published “Carbon Neutral Nottingham 2020-2028 action plan⁵”.

Nottingham Green House Gas Emissions footprint is 3,333,613 tCO₂yr split as follows: 25% scope 1, 13% scope 2 and 62% scope 3. The Trust carbon footprint is approximately 9% of the Nottingham City Carbon Footprint. As such NUH is a key partner in helping the City achieve its net zero carbon ambition.

The Trust is part of the Nottingham Green Partnership which is a group with representation from key stakeholders in the City with the common goal to advance the decarbonisation agenda of the City.

Nottinghamshire County Council

Nottinghamshire County Council (NottsCC) is a signatory of the Universities for Nottingham Civil Agreement⁶. More recently in May 2021 the council passed a motion formally agreeing to declare a Climate Emergency and committing to achieve carbon neutrality in all its activities by 2030. The Council is working now on a strategy to deliver this ambitious goal.

3.8 NUH Sustainability Vision

In setting the Trust vision, we must understand what are the most important environmental, financial and social issues to the people we serve. There is a clear

⁴ <https://www.nottinghamcity.gov.uk/media/2620252/nottinghams-2028-carbon-neutral-charter-3.pdf>

⁵ <https://www.nottinghamcity.gov.uk/media/2619917/2028-carbon-neutral-action-plan-v2-160620.pdf>

⁶ [Universities for Nottingham Civic Agreement 2020.pdf \(universitiesfornottingham.ac.uk\)](https://www.universitiesfornottingham.ac.uk/Universities_for_Nottingham_Civic_Agreement_2020.pdf)

awareness of the need to contribute to the net zero agenda of the City, County and the NHS, particularly in the operation of our facilities (e.g. energy use and material utilisation) and travel requirements. These two dimensions have an impact on the air quality of the City which in turn impacts the health of our population and the demand of access to our services. There is also an urgent call to decarbonise procurement activities and one of the forms to achieve this is to source locally as many products and services as possible. This will subsequently improve the local economy.

In line with the above narrative, the Trust sets its Sustainability vision as follows:

Long term vision

- By 2040 the Trust will have achieved a Net Zero carbon operation for all its emissions from heating and energy use and 80% reduction of its Carbon Footprint Plus (indirect emissions including procurement).
- Access to Trust services will be allowed to be zero carbon via telemedicine and by ensuring the Trust has good quality facilities to incentivise active travel, Electrical vehicle use and excellent public transport links.
- The Trust will manage an estate upgraded to minimise energy demand which will be provided by net zero carbon energy sources.

Green Plan 2022-2025 horizon

- By 2025 the Trust will continue connecting buildings at City Hospital to the new LTHW network delivered under the CEP Project. The Trust will take initial steps in de-steaming the QMC Campus by installing a ground source heat and making improvements to the building insulation.
- The Trust will see the installation of new facilities to maximise sustainable access to the Trust and will push towards easier access to our services with a new established telemedicine platform.
- By 2025 the Trust will take foundation steps to ensure the core of its supply chain has net zero carbon plans and internal projects aiming to reduce wastage of resources.

4. Areas of focus to achieve Net Zero carbon emissions

The NUH Green Plan is built around the NHS commitment of becoming the first healthcare sector to achieve a net zero carbon operation. As such NUH mirrors as its target the national initiative of achieving a Net Zero Carbon goal. To express this clearly, the NUH Green Plan Goals are described below:

- Trust will achieve a net zero carbon footprint (scopes 1 and 2) by 2040 with an 80% reduction by 2032.
- The trust will achieve an 80% reduction of its Carbon Footprint Plus (Scope 3: procurement) by 2045.

The NHS Green Plan provides a roadmap to achieve a net zero carbon operation. It focuses on nine areas of action. This section presents the Trust's approach to deliver its net zero goals by setting clear and measurable goals in these areas. The areas are:

- **Workforce and system Leadership:** This chapter sets out our approach to engaging and developing our workforce and system partners in defining and delivering carbon reduction initiatives.
- **Sustainable models of care:** Embedding net zero principles across all clinical services is critical, with this section considering carbon reduction opportunities in the way care is delivered
- **Digital transformation:** The direct alignments between the digital transformation agenda and a net zero NHS are clear. This section seeks to focus on ways to harness existing digital technology and systems to streamline your service delivery and supporting functions while improving the associated use of resources and reducing carbon emissions.
- **Travel and transport:** This chapter outlines plans to reduce the carbon emissions arising from the travel and transport associated with the Trust.
- **Estates and facilities:** The chapter focuses on reducing the carbon emissions arising from our Estates operations aiming to decarbonise heating and power used in our buildings.
- **Medicines:** This chapter examines the key opportunities to reduce the carbon emissions related to the Trust's prescribing and use of medicines and medical products.
- **Supply chain and procurement:** The NHS supply chain accounts for approximately 62% of total carbon emissions and is a clear priority area for focus in every Green Plan. This chapter should consider how NHS organisations may use their individual or collective purchasing power and decisions to reduce carbon embedded in their supply chains
- **Food and nutrition:** This chapter considers ways to reduce the carbon emissions from the food made, processed or served within the Trust.

- **Adaptation:** This section should summarise your organisation's plans to mitigate the risks or effects of climate change and severe weather conditions on its business and functions.

4.1 Current Position – NUH Carbon Footprint in 2020.

The purpose of this section is to set a starting point for the Trust in its journey to Net Zero Carbon. The unit to measure the emission of greenhouse gases is “tonnage of carbon dioxide equivalent (tCO_{2eq})”, this is because carbon dioxide is the most common stable greenhouse gas in the atmosphere. The effect of all other greenhouse gases is measured in terms of equivalent warming potential to carbon dioxide. The aggregate greenhouse gases emission in one year is NUH's “Annual carbon footprint”.

NUH's Carbon Footprint is made up of three scopes described below.

- Scope 1: Carbon emissions from burning fuels to provide heating and hot water.
- Scope 2: Carbon emissions from electricity purchased from the grid.
- Scope 3: Carbon emissions from other sources (procurement, travel).

Scopes 1 and 2 represent the Trust's Direct Carbon Footprint and Scope 3 represents the Trust's Carbon Footprint Plus

The Table 4-1a presents a breakdown of direct carbon footprint and Table 4-1b presents the carbon footprint plus.

To achieve its Net Zero carbon emissions (direct emissions), the Trust will have to reduce its annual direct carbon emissions by 48,390 tCO_{2eq} by 2040.

To achieve 80% reduction or its carbon footprint plus, the Trust will have to reduce its procurement and travel emissions by 215,409 tCO_{2eq} (269,261 x 80% = 215,409) by 2045.

Table 4-1a NUH Direct Carbon Footprint

Scope	What is included	Volume	Carbon factors [kgCO _{2eq} /unit]	Carbon Footprint [tCO _{2eq}]
Scope 1: Use of Fuels	• Natural Gas (kwh) ^{1,2}	215,340,1	0.18486	39,808
	• Gasoil (litre) ¹	94	2.75776	1,059
	• Diesel (litre) ¹	384,131	2.54603	125
		49,114		
Scope 2: Electricity	Imported electricity (kwh) ¹	31,730,364	0.23314	7,398
Direct Carbon Footprint (tCO_{2eq}) =				48,390

¹ NUH Sustainability Report 2020/21 ² A proportion of Gas is used to generate electricity via a Combined Heat and Power Unit.

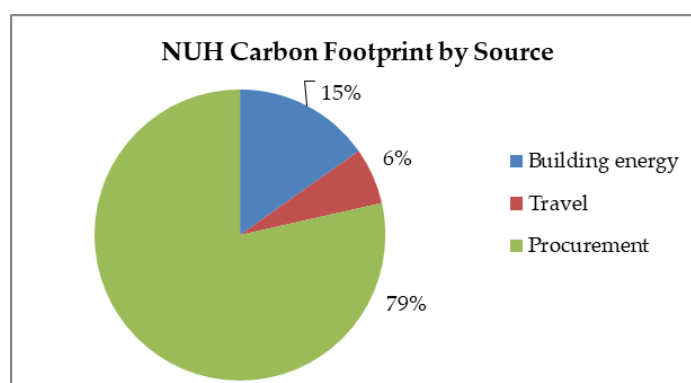
Table 4-1b NUH Direct Carbon Footprint

Scope	What is included	Volume	Carbon factors [kgCO _{2eq} /unit]	Carbon Footprint [tCO _{2eq}]
Scope 3: Procurement	Embedded Carbon in all procured products and services (£) ²	419,568,858	varies	249,790
Scope 3: Travel	• Staff commute (mile)³ • Outpatients travel (mile)³ • Business Travel Car (mile)¹ • Business Travel Rail (mile)¹ • Business Travel Air (mile)¹	61,999,932 20,282,827 495,742 8,767 63,656	0.213380 0.300300 0.267750 0.059436 0.250248	13,230 6,091 133 1 16
Total Carbon Footprint Plus (tCO_{2eq})=				269,261

¹ NUH Sustainability Report 2020/21 ² NUH Sustainability Report 2014/15 ³ November 2021 calculation

The Figure 4-1 presents the current position of the Trust split between common themes: travel, procurement and energy consumption.

Figure 4-1 NUH Carbon Footprint by Source



4.2 Workforce and system Leadership

The success of some of the initiatives in this Green Plan relies on staff engaging and joining the aggregate effort. This is particularly important for those actions linked to reducing scope 3 emissions such as the improvement in stock control.

We must link a strong communication campaign for the internal promotion of our Green Plans focused around empowerment and awareness of positive action. In this way the Trust will create a direct link of staff day to day decision making to the aggregated decarbonisation goal. For this we need to provide smart information such as embedded carbon emissions in local procurement action. NHS England is creating a training module for all NHS bodies on active engagement and the Trust must implement it as part of its goal to deliver its green plan.

Keeping the momentum alive is also a priority. The Trust must organise periodic events aiming to keep staff informed about the aggregate effect of their work.

Actions to implement

- Include statement on Green NHS in Job Descriptions.
- Ongoing communication campaign and events on the Green Plan with emphasis on getting staff on board and involved in positive action initiatives
- Roll out of NHS sustainability training module when available.
- Further promote and incentivise the use of public transport, cycling and car sharing (when Covid measures permit).
- Promote the meat free daily menu options available in the restaurants
- Introduce Green Action programme to provide guidance on good practice and capture action amongst NUH staff.
- Continue to develop more on-line training to prevent travel to courses.
- Introduce green agenda awareness as part of induction information.
- Removal of paper payslips where possible.
- Review Trust processes involving physical paperwork to develop electronic solutions.

4.3 Sustainable models of care

The Trust has always strived to continually improve its clinical operations to maximise the outcome of its services focused on maximising the healing process of our patients, centring our clinical pathways on being efficient while making sure the health of our patients is the number one priority.

The Climate Emergency we are experiencing requires a call to embed a less carbon intensive operation in our clinical pathways.

Our clinical pathways are the core of our financial model. A lot of research and resources have gone to fine tuning our performance. However we recognise there are areas of opportunity and as a Trust we strive to reduce inefficiencies and increase the quality of our health outcomes.

The Trust will embed carbon reduction principles in our clinical pathways and clinical processes. The carbon intensity of our clinical operation depends on the following:

1. **Energy used to deliver clinical activities.** This includes the use of specialised machinery. As long as the Trust uses low or zero carbon energy, the focus would then be in ensuring both, our equipment and the way we use it, are energy efficient.
2. **Communication of information and patient records.** As patients move across our clinical pathways, a wealth of information is produced which is necessary to ensure the patients have the best care possible and that our processes will be efficient. Currently this process employs numerous physical resources (paperwork) which not only have an embedded carbon footprint for production, but also requires additional carbon emission to manage its storage and retrieval offsite. In addition, reliance on physical paperwork makes processes less efficient. As such moving to a digital patient records system would save the Trust resources and will reduce the carbon emissions from our clinical pathways.
3. **Clinical treatment resource intensity.** In the past the Trust tendency (along the NHS's) favoured single use clinical items (usually plastic) as means to improve the clinical output efficiency. This of course would be in most cases more carbon intensive. This gradual change to single use equipment also obeyed the need to improve resilience of our operations. If reusable equipment were to get faulty or not become available, it could impact the effectiveness of our clinical activities and our financial model. As such there are two particular work streams associated with reducing our carbon intensity:
 - a. Where possible, reevaluate single use equipment, ensuring clinical pathways efficiencies wouldn't be affected negatively (and where possible looking for efficiency improvements).
 - b. Where phasing out single-use equipment is not possible, ensure we manage this equipment efficiently preventing unnecessary wastage.
4. **Telemedicine initiative.** Telemedicine is a win-win action when it comes to increasing the efficiency of our outpatient activities (it is less likely for patients

to miss their appointments) and reduce carbon emissions as a result of avoided commute to our hospitals.

A trial Between October 2020 and September 2021 circa 264,000 appointments were done in a form of remote appointments. This resulted in 5,563,000 miles saved (round trip) with an associated **1,670 tCO₂** emissions eliminated. Telemedicine appointments increased five times while reducing emissions by four times.

The Trust has now set goals to expand and generalise its telemedicine programmes across all its outpatient services. The current goal is for 25% of new appointments and 40% of follow up appointments to be done via telemedicine.

5. **Flexible Clinical Pathways.** As we develop our Estates, we need to make sure future clinical space is built to be flexible and allow re-dedication for a different clinical purpose which could reduce the need for major future refurbishments.

Actions

- Continue working to accelerate the introduction of Patient Digital Records.
- Work with Operational Managers to identify opportunities for the introduction of reusable equipment and improve the management of single use resources as part of the Quality and Improvement Wastage Reduction Programme.
- Expand Telemedicine activities to meet the Trust's goal of 25% of new appointments and 40% follow ups.
- Specify future service developments to be flexible space.
- Build a green impact assessment into policy development.

4.4 Digital transformation

Like in many other industries, the advent of new digital technology is opening to the healthcare sector a plethora of opportunities to be more efficient and productive. From improving communication to storing information digitally, the opportunities are truly limited only by our own imagination and restrictions around some legacy systems.

The NHS Long Term Plan set a number of critical priorities to support digital transformation, seeking to mainstream digitally-enabled care across all areas of the NHS.

NHS England predicts that the changes to achieve the ultimate goal will require significant infrastructure, and an associated increase in carbon emissions, with the supply chain currently estimated to emit 456 ktCO₂e from information and communications technology (ICT). While energy efficiency is improving all the time, a rapid growth in data demand and digital equipment has the potential to add to these emissions unless we specify lower carbon digital products and services.

The actions that NHS England is working on include:

- Expanding the Reach of Telemedicine.
- Developing a blueprint for 'What Good Looks Like' for low carbon digital care, across the system.
- Building Net Zero into the digital maturity framework.
- Issuing policy advice to ensure NHS data centres and companies providing these Services support the drive to reach Net Zero.
- Utilising levers, including local spend controls for technology, to incentivise a shift to Net Zero.
- Supporting front-line digitisation of clinical records, clinical and operational workflow and communications, aided by digital messaging and electronic.

Future opportunities for Net Zero identified as part of digital transformation include: digitising the estate and smart hospitals; ensuring large-scale adoption of 'multi-cloud' technologies and where appropriate migration of trust systems into the hyper-scale cloud; and reducing the need for the storage of large volumes of data.

In line with the above threads, the Trust is striving to further push telemedicine services and digitising clinical records.

Actions

- Continue developing Smart Working and remote mobility solutions.
- Electronic Patient Records (EPR), e-Prescribing & Medicines administration (targeting efficiency, safety and drugs wastage).
- Continue development and usage of Telemedicine (Digital Outpatients) initiatives.
- Digital patient and GP letters.

- Reduce use of desktop phones by migrating to Unified Communications software.
- Centralise emergency response with EVERBRIDGE.
- Patient facing digital solutions (reduced travel).
- Robotic Process Automation (improved efficiency).
- Continued deployment of hyper-converged 'cloud' and virtualised systems with improved energy efficiency ratings.

4.5 Travel and transport

Sustainable Travel is a core element of the Green Plan as circa 19,500 tCO₂ emissions are linked to travel, primarily from visitors and staff's commute. However there are other drivers linked to the reduction of single occupancy vehicles commute:

- The need to promote a more active lifestyle via active travel.
- The need to reduce traffic and pressure to NUH car parking.
- The need to improve air quality around our hospitals.

Sustainable Travel is linked to the minimisation of private car usage and elimination of emissions from motor vehicles by moving to emissions free vehicles. This is achieved by removing barriers to access to NUH premises sustainably.

Staff Commute

Table 4-2 presents the profile of travel choice from the NUH Work Place Travel Survey conducted in 2020 pre and post the COVID-19 pandemic. The large majority of staff commute to work using one form of single occupancy vehicle travel.

Table 4-2 NUH Staff Travel Choice

Category	Mode of Travel	Post-COVID	Pre-COVID
Single occupancy vehicle	Car, on you own	51.15%	46.34%
	Motorbike/moped	0.24%	0.54%
Car Sharing	Car Sharing	3.50%	3.72%
Public Transport	Bus	11.46%	17.53%
	Medilink Bus	3.74%	5.46%
	Tram	4.05%	7.02%
	Train and Bus	0.30%	0.66%
Active travel	Cycle	9.84%	11.16%
	Walk, run/jog	5.56%	5.52%
	E-bike/scooter	0.54%	0.60%
Other		2.36%	1.44%
Working from Home		7.25%	

Source: Nottingham University Hospitals NHS NUH: Workplace Travel Survey 2020

Figure 4-2 overleaf shows the calculated carbon emissions from staff commute per transport mode as per the 2020 Staff Travel to Work Survey. As it can be seen, 85% of travel emissions come from car users, while only 10% come from public transport users.

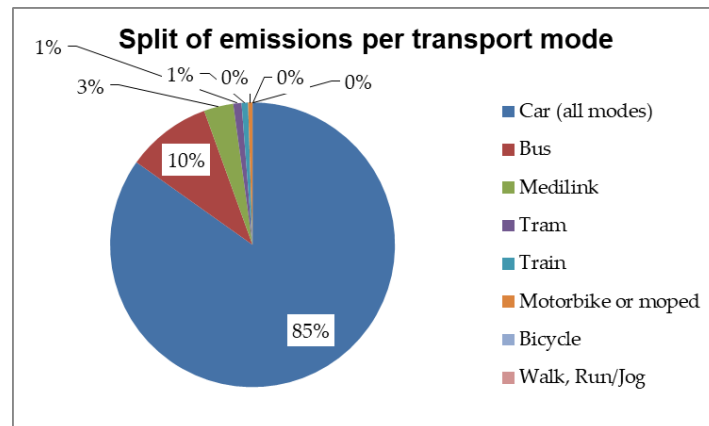


Figure 4-2 Staff Commute: split of emissions per transport mode

In relation to staff travel, the Trust's goal is to keep the staff's pre-COVID proportion of single occupancy car commute (46.34%) as the maximum allowed and promote its reduction, while enabling infrastructure for zero emissions vehicles.

This goal will be achieved via:

- Elimination/reduction of the need to travel (from home or across campus) via Smart Working/Work From Home initiatives.
- The investment and promotion in active travel schemes,
- The continuation of schemes that promote public transport and car sharing (NUH Travel to work scheme)
- The revision of the Trust Car Parking Permit system
- Provision of electric vehicle charging points

The NUH Travel Plan makes emphasis in removing barriers that prevent people from accessing NUH via means other than non-zero emission single occupancy vehicle. Examples are presented in

Table 4-3.

Emissions from single use vehicles are expected to drop as Electric Vehicles are introduced across the country. The government has set ambitious targets for this such as a ban on sales of non-EV new vehicles in 2030⁷. The Trust must do as

⁷ Government takes historic step towards net-zero with end of sale of new petrol and diesel cars by 2030 - GOV.UK (www.gov.uk)

much as possible to accelerate this transition locally by enabling the infrastructure required such as EV charging points.

Table 4-3 Common barriers to sustainable travel and mitigating actions

Area	Barrier	Mitigation
Smart Work/Work From Home	Type of work	Maximise the opportunity to work from home
Active Travel	Limited number of changing facilities	Improve management of existing facilities Invest in new facilities
	No access to training for cycling, etc.	Partnership with relevant local organisations
	Lack of means to purchase a bike	Cycle to Work Scheme
	More two wheeled transport storage provision.	Invest in new compounds and lockers.
Public Transport	Cost	Travel to Work Scheme
	Commute time/convenience	Partnership with travel operators to provide new access services.
Car Sharing	Lack of a system to connect potential car sharers	Introduce an IT-based car sharing scheme
	No facilities in place for car sharers	Introduction of car sharing bays in car parks for the use of car sharers
EV Cars	Cost	Salary Sacrifice scheme to procure new vehicle
	Charging needs	Create a EV Charging Strategy and rollout
All	Information on alternatives	Sustainable Travel Campaign
	Single Occupancy vehicle more convenient	Introduce cap to number of car parking permits.

Visitors and Patients Commute

A travel analysis of patients in 2019 was used to calculate the carbon footprint of this travel and to set the starting point in the journey to decarbonisation. At that time only about 48,500 appointments (or 5.5% of all appointments) were done by telephone or telemedicine which saved 440 tCO₂e emissions. This was 1.5% of new appointments and 7.5% of follow ups. The carbon footprint of the remaining appointments was determined to be circa 6,090 tCO₂.

As a response to the COVID-19 pandemic, the Trust introduced a pilot programme during 2020 to enable virtual clinics.

Between October 2020 and September 2021 circa 264,000 appointments were done in a form of remote appointment. This resulted in 5,563,000 miles saved (round trip) with an associated **1,670 tCO₂** emissions eliminated. Telemedicine appointments increased five times and emissions reduced four fold.

As such the Trust has taken the first steps to eliminate the need for commute to attend a clinical appointment. The Trust has now set goals to expand and generalise its telemedicine programmes across all its outpatient services. The current goal is for 25% of new appointments and 40% of follow up appointments to be done via telemedicine.

Business Travel

With only 150 tCO₂e emissions, Business Travel is not a significant source of carbon emissions compared to regular staff commute. The advent of the use of messaging and videoconferencing software such as MS Teams will minimise this travel where possible. Government goals to introduce EVs in roads will also help mitigate the impact from travel. Ultimately the Trust must consider the introduction of pool electric vehicles for services carried out in the community as opposed to the current model where staff is compensated financially from using their own vehicles.

NUH Fleet

The impact of the Trust fleet is circa 130 tCO₂/yr. However unlike the other types of travel, the Trust has direct control on these journeys. The trust operates circa 30 vehicles, which range between small passenger vehicles to large transport vehicles used for different purposes including the movement of goods, food and waste. For smaller vehicles the Trust must introduce infrastructure to allow these to be Electric Vehicles. For larger vehicles the Trust must explore the replacement of Diesel Lorries to Liquefied Natural Gas Lorries or Electric.

Delivery of Goods and Services

Currently this impact is unquantified. It is however expected that the Trust is likely to have a large carbon footprint associated to the delivery of goods and services to our sites. The Trust could influence the emissions from goods delivered as part of our Procurement Policies. Clauses specifying the need for Zero Carbon deliveries could be included in contracts requiring frequent deliveries to the Trust (e.g. NHS Supply Chain, courier services, etc.).

Actions

- Continue Supporting and implementing the Trust Travel Plan's key actions.
- Expand Telemedicine activities to meet the Trust's goal of 25% of new appointments and 40% follow ups.
- Create an Electric Vehicle Charging Strategy and implement to achieve 5% of visitors and staff parking spaces by 2025.

- Transfer all NUH vehicles to Low carbon vehicles. Phase out the use of diesel by 2025.
- Introduce contract clauses for the delivery of goods to the Trust in zero carbon vehicles from 2025.

4.6 Estates and facilities

Estates and Facilities is an area of action extremely important give more than 80% of our carbon footprint is linked to the operation of our building assets to provide heat and power needed by our clinical services.

Where are we?

NUH's main energy requirements are in the form of (a) electrical power to operate buildings, clinical and office equipment and (b) heat to regulate building temperature to provide a comfortable healing environment for patients and adequate working conditions for staff. Since 2021/22, the QMC and City Hospital have adopted a similar approach on energy provision built around the strategy of maximising the economies of scale.

QMC's energy centre supplies all the heating requirements of the site and about half of the electricity demand. The energy centre has a number of dual fuel boilers and a 4.5 MW_e combined heat and power unit (CHP) installed in 1997 and upgraded in 2015. The main fuel used in the QMC is natural gas which is used to produce steam and electrical power for the hospital. The energy centre also supplies heat and power to the Medical School, which contributes between 20% and 25% of the total energy demand of the campus.

City Hospital campus has an energy centre built in 2021/22 with three gas boilers and two CHPs that provide up to 80% of the electricity required by the campus. The main fuel used in the City Hospital is natural gas which is used to produce steam, hot water and from 2022 electrical power (via CHP) for the campus. Two energy distribution systems are in place at City Hospital: a refurbished steam distribution system and a new low temperature hot water system built in 2021/22. A number of buildings around the site are heated independently with their own gas boilers. All electricity imported is supplied from the National Grid.

Details on NUH's energy demand and carbon footprint can be seen in Table 4-4. It excludes the carbon emissions from the energy used by NUH's tenants

Table 4-4 NUH Scopes 1 and 2 Carbon Footprint per campus 2020-21
(excludes third parties and tenants)

Campus	Energy/ Fuel	Notes	Annual Demand	Carbon Footprint	Campus footprint t
QMC + Ropewalk + Treatment Centre	Electricity	Grid Electricity	8,017 MWh	1,869 tCO ₂	30,826
	Gas	For heating & electricity	150,913 MWh	27,898 tCO ₂	
	Gasoil	Resilience fuel	4,210 MWh	1,059 tCO ₂	
	Total		163,140 MWh		
City Hospital¹	Electricity	Grid Electricity	23,712 MWh	5,528 tCO ₂	17,438
	Gas	For heating & electricity	64,426 MWh	11,910 tCO ₂	
	Total		88,139 MWh		
NUH			251,279 MWh		48,264

¹Prior to the completion of the City Hospital Energy Project (CEP)

NUH has set in its Energy Management Policy the requirement for new buildings and refurbishments to achieve a minimal standard of energy performance. NUH has also implemented projects aiming to reduce its energy demand and decarbonising its energy consumption. Since 2017, the City Hospital “backup gas boiler house” became the lead central boiler, relegating backup duty to the coal-powered boiler house and in 2021/22 a new energy centre was built under the City Energy Project, completely phasing out coal use in the campus. This has reduced the campus carbon footprint by circa 8,000 tCO₂. The installation of a Combined Heat and Power Unit in 1998 (and refreshed in 2015) at the QMC also helped make major reductions in the carbon footprint of the Trust.

Other projects include the erection of BREEAM-Excellent standard buildings and the refurbishment of energy systems for high efficient technology.

NUH has also benefited from the gradual decarbonisation of the National Grid.

How to achieve Net Zero

NHS England published in November 2021 the guide “Estates ‘Net Zero’ Carbon” which indicates smart investment in our buildings as a key priority. This is instructed in four incremental steps. The aim is to reduce energy demand prior to migrating to lower carbon sources for heating and power to prevent affecting the Trust’s energy budget. The steps to follow are set in Table 4-5.

Table 4-5 Estates Steps for Decarbonisation

Step	Description
1. Make every kWh and m3 count	This step is focus in ensuring our estate minimises energy demand by investing to save energy.
2. Prepare buildings for electrically lead heating	This relates to improving the thermal properties of our buildings (building envelope) to further reduce the need of heating in preparation to offset emissions with non-fossil fuel heating.
3. Switch to non-fossil fuel heating	This step focuses on moving to low or zero carbon power and taking advantage of technologies such as Heat Pumps and emerging hydrogen as a fuel.
4. Increase on-site renewables	Maximise on site renewable energy utilisation to minimise power import.



In line with this approach, the Trust will focus on taking progressive steps during the first iteration of its green plan.

Step 1 – Make every unit of energy count

There is a major piece of work to be done to make our buildings more energy efficient. The initial areas of opportunity are listed below.

- 1. Create and implement an LED Replacement Strategy** – the Trust has recently replaced circa 6000 lamps for LED equivalents at City Hospital. There are a large number of LED lamps at QMC in need of replacement,

primarily in clinical areas. Aim to replace 5000 lamps per year between 2022 and 2025 across the Trust.

2. **BMS Upgrade and management** – The Trust will upgrade the aged BMS systems of City and QMC Campuses by 2025 aiming to refresh equipment and optimise the use of the assets controlled. The Trust will implement a new control regime aiming to improve coordination between different stakeholders of the BMS system to prevent loss of optimisation.
3. **Upgrade the High Voltage Supply and Network to the Hospital** – There are both clinical and sustainability reasons to do this. Our main campuses are currently operating close to its maximum capacity both in terms of power supply to the sites and their internal High Voltage rings. It is estimated both campuses will require increasing three to five times their current HV infrastructure capacity to satisfy both future expansions of the Estate and the movement to electrical heating.
4. **De-steaming the heating system** – In order to use Heat Pump technology is necessary to have a de-steaming strategy in place. The integration of a Low Temperature Hot Water Distribution system is a complex task in a live hospital. City Hospital has taken the first steps to achieve this and a similar approach must be implemented at the QMC. Even if Hydrogen technology becomes available, LTHW systems are more efficient than steam systems. Future developments at the City Hospital to be linked to the new LTHW network.
5. **Upgrade HVAC systems** – This is particularly important at QMC given the HVAC system is aged and inefficient. This is likely to be addressed as part of the New Hospital Programme (Tomorrow NUH's), but it is necessary to specify high levels of efficiency and control to make a long lasting change..
6. **Energy Management System** – The Trust will invest in a modern energy management system to provide more information on energy demand at each site. This is key to understanding the efficiency of our assets as well as identifying and correcting abnormal operations.
7. **Air Conditioning** – QMC currently operates steam chillers that take the advantage of the steam availability during summer due to the CHP operation on the site. However in line with a de steaming strategy the Trust has to migrate to other technology such as electric chillers or heat pumps that utilises both cooling and heat extracted.

Step 2 - Prepare buildings for electrically led heating

1. The Trust will create a building fabric improvement strategy focused first on those buildings expected to be retained as part of the New Hospital Programme.
2. The trust will move to remove poorly insulated buildings from the City Hospital site and replace them with high efficiency buildings.

3. All new buildings and fabric refurbishments will be designed with levels of insulation that allow the use of heat pump technology.
4. The Trust will seek to replace all windows and fabric of the QMC campus as a major driver to reduce energy demand via external grant funding (Public Sector Decarbonisation Schemes).

Step 3 - Switch to non-fossil fuel heating

The Trust has two energy centres managed via energy performance contracts (EPCs). The QMC EPC runs from 2015 to 2030 and the City Hospital EPC from 2022 to 2037.

1. The Trust has to embed the strategies mentioned in Steps 1 and 2 to inform the new solution for the sites. In the meanwhile, the Trust will use its existing EPCs to enable early implementation of those strategies.

Step 4 - Increase on-site renewables

The Trust has taken some steps towards the implementation of renewable technology at the City Hospital. The City Energy Project is to deliver 330 KWE installation of Photovoltaics in 2021/22.

1. The Trust is to create an onsite Renewables Strategy, particularly PV and GSHP technology.

Effect of NUH Estates Strategy and Tomorrow NUH Programme

In line with the NUH Estates Strategy, the reconfiguration of services from the City Hospital to the QMC will require the construction of a new hospital block on the QMC campus grounds. This will result in an increase of energy consumption on the site. Given that building regulations and NUH Energy Policy requires new buildings to be more energy efficient, the new block will have a better energy rating compared to other buildings.

The new block will provide the opportunity to relocate services from the existing QMC areas so that as the areas are vacated they could be fully refurbished to the highest energy standard.

During the refurbishment programme, NUH has a unique opportunity to future-proof its activities against higher carbon reduction targets by specifying a high standard of energy performance which could be achieved via:

- High levels of thermal insulation in the building's walls and windows,
- Maximising solar gains during the heating season and reducing solar gains during the summer,
- Implementing passive heating strategies where possible, for example installing materials that absorb and store heat in strategic areas),

- Installing Photovoltaic technology in the envelope of the building.

It is estimated that by year 10 the City Hospital might have reduced by 50% its gross area and energy demand. The campus's carbon footprint would reduce in a similar manner.

The NUH Estates Strategy considers the construction of a new building at the QMC campus to allow for the creation of a new emergency centre. The new building will have an area of circa 30,000 m². If built to have a good practice performance⁸ and net zero operation, QMC energy demand would increase by circa 2,200 MWh_e⁹ and 14,900 MWh_{th}¹⁰ with nil impact to the carbon footprint.

In addition to the above, in line with NUH Estates Strategy, the refurbishment of the QMC (part of the services reconfiguration works) could be done in a way that improves the thermal and energy performance. By achieving a good practice standard, QMC will reduce thermal demand by 10,100 MWh_{th}

⁸ CIBSE Guide F: Energy Efficiency in buildings. Energy Benchmark for acute and maternity hospitals: 74 kWh/m²-yr electricity and 422 kWh/m²-yr heat

⁹ MWh_e = Megawatt hour - electricity

¹⁰ MWh_{th} = Megawatt hour – thermal

4.7 Medicines

Medicines and medical devices represent about 25% of the NHS's carbon footprint where 20% is due to the inherent supply chain associated with them. Anaesthetic gases and inhalers account for the remaining 5% of emissions.

At NUH medicines account for the largest proportion of our Procurement footprint, between 30% and 50% which in 2014 accounted for circa 68,000 tCO₂e.

Reducing medicines wastage has always been high on the pharmacy agenda where in 2018 the Trust introduced a scheme to recover unused medicines which otherwise would have been disposed as wastage. Pharmacy returns bins were placed in clinical areas across both main campuses and all divisions, targeting areas most likely to have reusable medicines.

Pharmacy staff regularly visited these bins and assessed the medicines returned within them for suitability before returning them to Pharmacy for reuse. This saved the Trust £41,000 per year and circa 81 tCO₂e.

The Trust must continue to ensure that medicines are properly used to minimise wastage by;

- Maintaining and reviewing stock control measures of medicines on wards and departments to prevent medicines reaching their expiration date.
- Improving practices around administering medicines to patients with the aim of reducing the use of disposable plastic ancillaries.
- Encouraging suppliers to reduce the carbon intensity of medicine deliveries.
- Considering recycling schemes for patients own medicines e.g. inhaler canisters, empty blister packs

Medicines linked to direct emissions

Anaesthetic gases and inhalers account for about 5% of emissions. Using the 2014 figure this amounts to 3,400 tCO₂ in the Trust. Due to the nature of their use, they can be considered Scope 1 emissions as the Trust could have direct control for their use.

The anaesthetic gas desflurane has a very high global warming potential compared to other anaesthetics. The Trust's anaesthetists have looked at reducing the use of desflurane and have succeeded in halving its use from 15% of overall volatile anaesthetic gases volume in 2019/20 to 7% in 2020/21. This is below the 10% target set in the 2021/22 NHS Standard Contract.

The use of nitrous oxide containing gases when used for anaesthesia or for pain relief in for example labour suites will be reviewed in terms of clinical need and the mechanical robustness of the estates infrastructure that supplies the gases. Technology for disposing of the gases in an environmentally friendly way by breaking it down into its constituents is currently being investigated.

Inhalers are used in a variety of respiratory conditions, ranging from asthma to chronic obstructive pulmonary disease. The majority of the emissions come from the propellant in metered-dose inhalers (MDIs) used to deliver the medicine, rather than

the medicine itself. Dry-powder inhalers (DPI) have significantly lower carbon emissions. The Trust will work with primary care colleagues to look at ways of safely reducing the use of MDI's.

4.8 Supply chain and procurement

The procurement of products and services is our largest contributor to our carbon footprint. Due to the nature of our operations as an Acute Teaching Hospital, we procure a large range of products and services to deliver our services through our wards, clinics, operation theatres, etc. for the benefit of the local population. These services and products range is wide and includes medicines, medical equipment, food, ICT equipment, cleaning products, office supplies, etc.

The carbon intensity of products and services varies depending on the industry that they originated them. For goods and services procured in UK, the government published carbon factors (expressed as units of carbon emitted by pound spent) for source industries. In 2014 we carried out the latest measurement of our Procurement carbon footprint using these industry factors. As per this assessment the Trust Procurement footprint was measured as circa 250,000 tCO₂ which at the time was about five times as large as our Scopes 1 and 2 together. This carbon footprint was split across more than 4,000 suppliers the Trust had at the time.

The path to Net Zero in Procurement

There are two ways to tackle our procurement carbon footprint: via direct and indirect interventions.

Direct interventions

The intensity in the use services and products is linked to our own methods of works and practices. We can directly reduce the need to procure products and services if we become leaner with our operation at high level (e.g. clinical pathways) and low levels (e.g. management of stock in a department, reusing equipment where possible, etc.). Increasing the efficiency of our activities and reducing wastage of supplies and equipment are direct interventions. The less products and services we procure, the lower is our Procurement carbon footprint.

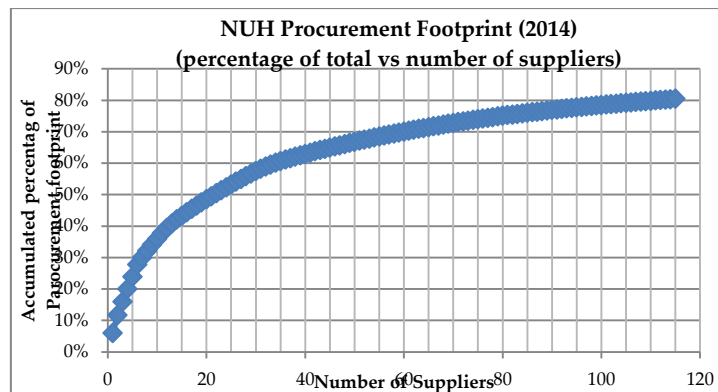
The Trust has in place a Quality Improvement Wastage Reduction programme built around being leaner in our processes. This programme must be influenced to achieve desirable procurement interventions linked to the reduction of plastic items procured and discourage single use items by favouring reusable ones and local sourcing.

Indirect interventions

Indirect interventions reduce the carbon intensity of the products and services that we have to procure. This is achieved through procurement policy that actively encourages suppliers to reduce the carbon footprint of their operation. An example of such policies is the inclusion in the specification for contracts above a certain value a clause requiring suppliers to have a Net Zero Carbon plan with clear goals and report progress on these in their annual report.

Figure 4-3 shows the accumulated percentage of the total carbon footprint of the 2014 versus the number of suppliers responsible for them. It can be seen that 80% of the carbon footprint came from only 115 suppliers. Each of these suppliers had one or more contracts with the Trust with an annual value of £500,000 and above. As such, contracts with these annual values should be subject to decarbonisation clauses.

Figure 4-3 Aggregated NUH Carbon footprint (procurement) vs aggregated number of suppliers (2014)



Actions to Implement

Direct Interventions

1. Update the Quality Improvement and Wastage Reduction programme to specify the need to consider the Trust's carbon footprint, discouraging single use items by favouring reusable ones.
2. Introduce a system to facilitate reusing furniture in the Trust (WARPIT) and update procurement policies to maximise the use of this system prior to procuring new items.
3. Local Sourcing

Indirect Interventions

1. Update NUH Procurement Policy to include the clause below in all contracts with an annual value above £1,000,000. All relevant NUH contract managers must ensure the supplier meets this requirement by requesting annually evidence of compliance (e.g. supplier's annual report).
 - a. *"Green NUH Clause. As per the Trust's Green Plan, the supplier must have a Net Zero Carbon Plan with clear goals and actions to deliver progressive decarbonisation to achieve net zero carbon in its goods and services by 2040 and progress on this must be reported via the supplier's annual report."*

The associated KPI will be the number of contracts in tendered in the financial year with annual values above £5m that include the **Green NUH Clause**.

4.9 Food and nutrition

Good food and nutrition is a vital part of patient recovery when in our care and a cornerstone of our efficiency model. It is estimated food and catering services account for 6% of total emissions cross the NHS.

The Independent Review of NHS Hospital Food 2019 cited NUH as an exemplar site for having our own kitchen, chefs, a sustainable food procurement programme built around seasonal food sourced from local farms and suppliers and the memory menu driven through the multidisciplinary team and governance structure

The Trust was the first recipient of the Bronze medal from the Soil association and since then it has striven to be at the forefront in the industry and are part of the exemplar panel for the implementation of the Review of NHS Hospital Food.

The Trust already offers different menus to ensure we cater for those with special dietary needs and different dietary requirements.

It is also estimated food and catering services account for 6% of total emissions cross the NHS and in this regard, we again find ourselves as an example of good practice across the NHS for the sustainability and environmental impact of the whole supply chain.

Actions to Implement

In terms of concrete actions, the Green Plan will focus on:

- Maintain the locally sourced and seasonal menus high in fruits and vegetables and low in heavily processed foods.
- Ensure all new equipment is energy efficient.
- Order patient food through the electronic meal ordering system on a 'just in time' principle to minimise waste below the national standard of 12%.
- Ensure the food storage systems operate a first in first out principle of stock rotation to ensure food is used up before it goes out of date and our food stocks are regularly audited.
- Serve the right amount of food to patients using the ordering system to identify where smaller portions are requested.
- Reduce the use of single use plastics for reusable containers.
- Engage with staff to ensure they understand the Plan and work in a way to maximise opportunities.
- Meat free day in restaurants.

4.10 Adaptation

Climate Change Adaptation means responding to both the projected and current impacts of climate change and adverse weather events.

Adaptation for the healthcare system is two-fold:

- a. Climate change could negatively impact the physical and mental health and wellbeing of the UK population. The health and care system needs to be prepared for different volumes and patterns of demand.
- b. Climate change could impact the operational delivery of the health and care system. The system infrastructure (e.g. buildings, communications, emergency service vehicles, models of care) and supply chain (e.g. fuel, food and care supplies) need to be prepared for and resilient to weather events and other crises.

According to the UK Climate Change Risk Assessment 5 (UK CCRA 2012), the UK is projected to see an increase in the frequency and intensity of weather-related hazards including heat waves and floods. While winters are projected to become warmer and wetter, cold spells will still occur. The NHS, health and social care organisations must therefore adapt to a range of scenarios so they can be prepared for future climates. The UK CCRA 2012 highlighted several key health risks from climate change including:

- Heat (increased summer temperatures and heat wave events)
- Cold (reduced deaths and illness but with continued risk from cold ‘snaps’)
- Ground level ozone
- Flooding and Storms (resilience and continuity of health and social care services, mental health impacts and injuries)
- Incidence and exposure to marine and freshwater pathogens
- Sunlight (risk due to Ultraviolet light exposure)

Adapting to climate change will reduce the costs and damages of a changing climate in the UK from extreme weather events including floods, droughts, and heat waves.

Effective adaptation encourages better use of resources, can save money and deliver wider health benefits too. For instance, developing green spaces and infrastructure to help prevent overheating can help prevent flooding, save energy and promote biodiversity. It can also encourage people to go outdoors, be more active and promote mental well-being.

For the healthcare system, adaptation is not just about procurement practices and energy supply, but also about higher quality and less wasteful service design. Improved service design with the right care, in the right place, at the right time is good for adaptation and resilience as well as carbon reduction.

Organisations such as NUH are expected to consider three key actions:

- a. Be part of local planning arrangements for adapting to climate change.
- b. Understand risks to the organisation from climate change and develop appropriate action plans (as part of the Green Plan or equivalent).
- c. Report adaptation plan progress in the organisation's annual report.

Currently NUH has emergency preparedness plans in place that consider some of the extreme weather events such as heat waves, etc. these include local and regional plans. NUH also participates in the local Health and Wellbeing Board.

NUH aims to implement as part of its governance protocols a process of systematically reviewing and risk-assessing its preparedness to adapt to changes in climate and produce, maintain, deliver and update an action plan aiming to mitigate the unacceptable risks.

Climate Change Adaptation is about being proactive in dealing with possible changes in weather pattern. However because predictions alone cannot justify major expenditures to deal with the effect of all-weather scenarios, NUH has to implement a risk-based approach to identify areas of action with high priority.

The Environment Agency produced a climate change adaptation protocol (*Climate Ready Adaptation Wizard*¹¹) which establishes a framework to create and implement climate change adaptation plans. The framework includes the following steps:

- a. *Assess the vulnerability to the current climate.* This is achieved by analysing past impact of extreme weather events in NUH operations.
- b. *Assess the vulnerability to future climate.* Using climate change prediction models issued by a competent body identify the likelihood of the occurrence of extreme weather events and risk assess the impact to NUH.
- c. *Identify, assess and implement adaptation options.* Create an action plan that aims to mitigate the highest risks identified in step b.

Strategically, NUH must create its climate change adaptation plan by following this protocol and using the output to inform its planning and decision making process.

Action to implement

- Create a Trust-approved Climate Change Adaptation Plan.

¹¹ https://www.climatelearningplatform.org/sites/default/files/resources/UKCIP_Adaptation_Wizard.pdf

5. Strategy Implementation

5.1 5.1 Senior management support

The NUH Green Plan is supported by NUH Trust Board and its governance structure. This strategy is sponsored by the Director of Estates and Facilities who acts as an enabler, allocating resources for its development, implementation and update.

NUH Trust Board is responsible for approving this document and any future revisions.

The Trust Board will appoint a Net Zero Carbon Champion to support the NUH Green Plan at high level governance groups.

The delivery of the strategy is monitored and updated by the NUH Green Plan Group who will report to NUH's Management Board. Its membership includes representation from all directorates and divisions.

NUH appointed the Environmental and Sustainability Manager who currently is the action plan coordinator. This role's responsibilities include coordinating the execution of the action plan and liaising with external stakeholders and partners for its development.

The Governance Structure for approving, monitoring and updating the sustainable development strategy is shown in Figure 5-1. The Terms of Reference of the NUH Green Plan Group can be found in Appendix A.

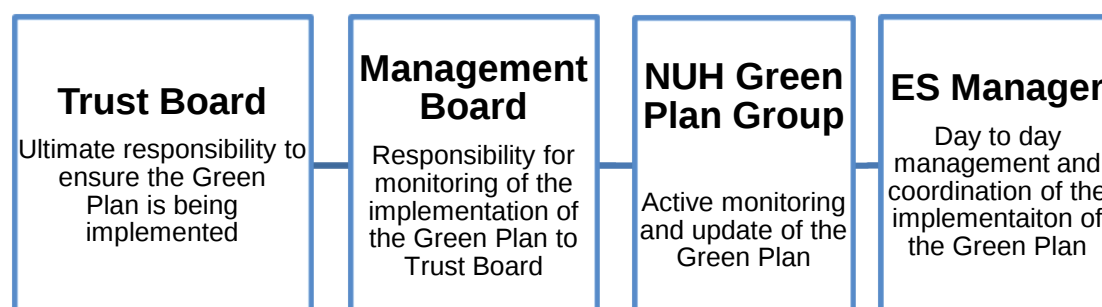


Figure 5-1 Governance Structure for managing travel plan

5.2 Monitoring and Review

NUH will continue to report its own emissions on an annual basis in its annual report, as required, and will report progress through the annual review. It will expand the scope of its reporting to include areas such as travel, transport and supplier emissions as accurate data becomes available.

NUH Trust Board will approve and, thereafter, review annually the progress of the Action Plan (section 6). Works and reporting will be coordinated by the Green Plan

Group which will prepare an annual report to Management Board for approval by Trust Board

The monitoring of the strategy's action plan will be reported to the Management Board on a quarterly basis.

NUH also have to do quarterly reports to NHSEI on progress against Green Plan actions.

6. Action Plan

The table below presents the action plan for implementation. Note: Areas code as per below key:

[WF] Workforce and System Leadership

[SMC] Sustainable Models of Care

[DT] Digital transformation

[TT] Travel and Transport

[A] Adaptation

[EF] Estates and Facilities

[M] Medicines

[SCP] Supply Chain And Procurement

[FN] Food and Nutrition

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
1	[WF]	Assign a Trust Board Lead for the Green Plan	01-Apr-22		Trust Board Chair	Completion of Action
2	[WF]	Job Descriptions to include statement on Green NHS.	31-Aug-22	Leena Patel	Chief People Officer	Completion of Action
3	[WF]	Ongoing communication campaign and events on the Green Plan with emphasis on getting staff on board and involved in positive action initiatives	ongoing	Emily Brookes	Director of Estates and Facilities	Number of events per year
4	[WF]	Roll out of NHS training module when available.		Lucy Taylor	Chief People Officer	Number of staff trained
5	[WF] + [FN]	Promote the meat free daily menu options available in the restaurants	Ongoing	David Preece	Director of Estates and Facilities	Menu published. Patient & Public Involvement. Monitor uptake of dishes especially the meat free alternatives

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
6	[WF]	Introduce Green Action programme to provide guidance on good practice and capture action amongst NUH staff.	Ongoing	Emily Brookes	Director of Estates and Facilities	Introduction of programme
7	[WF]	Continue to develop more on-line training to prevent travel to courses.	Ongoing	Lucy Taylor	Chief People Officer	Percentage of online training programmes vs total
8	[WF]	Introduce green agenda awareness as part of induction information.	01-Apr-23	Lucy Taylor	Chief People Officer	Completion of Action
9	[SMC]	Build a green impact assessment into policy development.	01-Apr-23	Jo Tomlinson /Tracey Wright	Director of Estates and Facilities	Completion of Action
10	[WF]	Removal of paper payslips where possible.	Ongoing	Tracie Thomas	Chief Finance Officer	Reduction in percentage of staff using paper payslips
11	[SMC]	Work with Operational Managers to identify opportunities for introduction of reusable equipment and improve the management of single use resources as part of the Quality Improvement and Wastage Reduction Programme.	Ongoing	Joanna O'Brien	Chief Financial Officer	QIWR Programme output
12	[DT] + [WF] + [TT]	Continue developing Smart Working and remote mobility solutions (Work From Home) and encourage staff to use these where appropriate.	Ongoing	Bel Asher	Chief People Officer	No. Staff working remotely (hrs/week)

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
13	[DT] + [SMC]	Electronic Patient Records (EPR) and e-Prescribing & Medicines administration (targeting efficiency, safety and drugs wastage)		Matt Howden	Director of Digital Services	Completion of Action
14	[DT] + [SMC] + [TT]	Continue development and usage of Telemedicine (Digital Outpatients) initiatives.	01-Apr-23	Matt Howden	Director of Digital Services	Uptake of telemedicine for outpatients.
15	[DT] + [SMC]	Digital patient and GP letters	01-Apr-23	Matt Howden	Director of Digital Services	Completion of Action
16	[DT]	Reduce use of desktop phones by migrating to Unified Communications software (MS Teams / Office365).	01-Apr-23	Matt Howden	Director of Digital Services	Completion of Action
17	[DT]	Centralise emergency response with EVERBRIDGE.	01-Apr-23	Matt Howden	Director of Digital Services	Completion of Action
18	[DT]	Robotic Process Automation (improved efficiency)	01-Apr-23	Matt Howden	Director of Digital Services	Completion of Action
19	[DT]	Continued deployment of hyper-converged 'cloud' and virtualised systems with improved energy efficiency ratings	01-Apr-23	Matt Howden	Director of Digital Services	Completion of Action
20	[TT] + [WF]	Continue Supporting and implementing the Trust Travel Plan's key actions to promote active travel and public transport use.	01-Apr-23	Emily Brookes	Director of Estates and Facilities	reduction of ratio of staff commuting by car (via Travel to Work Survey)
21	[TT] + [WF]	Create an Electric Vehicle Charging Strategy and implement to achieve 5% of visitors and staff parking spaces by 2025.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
22	[TT]	Transfer all NUH vehicles to Low carbon vehicles. Phase out the use of diesel by 2025	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
23	[TT]	Introduce contract clauses for the delivery of goods to the Trust in zero carbon vehicles from 2025.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
24	[EF]	Create and implement an LED Replacement Strategy aiming to replace 5000 lamps per year between 2022 and 2025 across the Trust.	01-Apr-23	John A'Court	Director of Estates and Facilities	lamps replaced per year
25	[EF]	The Trust will upgrade the aged BMS systems of City and QMC Campuses by 2025 aiming to refresh equipment and optimise the use of the assets controlled. The Trust will implement a new control regime aiming to improve coordination between different stakeholders of the BMS system to prevent loss of optimisation.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
26	[EF]	Upgrade the High Voltage Supply and Network to the Hospital by 2025 to projected levels.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
27	[EF]	Create a de-steaming strategy for QMC aiming to completely de-steam by 2035.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
28	[EF]	Ensure the Energy and Engineering Strategy include the upgrade HVAC systems with high standards of efficiency and control.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
29	[EF]	Implement a modern energy management system by 2025 to provide more information on energy demand per campus.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
30	[EF]	Expand the City Hospital's new LTHW network to South corridor and Trust HQ and install an Air Source Heat pump for Maternity.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
31	[EF]	The Trust will create a building fabric improvement strategy focused first on those buildings expected to be retained as part of the New Hospital Programme.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
32	[EF]	The trust will move to remove light buildings from the City Hospital site and replace them with high efficiency buildings.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
33	[EF]	All new buildings and fabric refurbishments will be designed with levels of insulation that allow the use of heat pump technology.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
34	[EF]	The Trust will seek to replace all windows and fabric of the QMC campus as a major driver to reduce energy demand via external grant funding (Public Sector Decarbonisation Schemes).	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
35	[EF]	The Trust has to embed the strategies mention in Steps 1 and 2 to inform the new solution for the campuses. In the meanwhile, the Trust will use its existing EPCs to enable early implementation of those strategies.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
36	[EF]	The Trust is to create an onsite Renewables Strategy, particularly PV and GSHP technology.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
37	[EF]	Specify high standard of insulation for future buildings as part of the Tomorrow NUH Programme.	01-Apr-23	John A'Court	Director of Estates and Facilities	Completion of Action
38	[M]	Maintaining and reviewing stock control measures of medicines on wards and departments to prevent medicines reaching their expiration date.	01-Apr-23	Nicola Bird	Director of Clinical Support	Completion of Action
39	[M]	Improving practices around administering medicines to patients with the aim of reducing the use of disposable plastic ancillaries.	01-Apr-23	Nicola Bird	Director of Clinical Support	Completion of Action

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
40	[M]	Encouraging suppliers to reduce the carbon intensity of medicine deliveries.	01-Apr-23	Nicola Bird	Director of Clinical Support	Completion of Action
41	[M]	Considering recycling schemes for patients own medicines e.g. inhaler canisters, empty blister packs	01-Apr-23	Nicola Bird	Director of Clinical Support	Completion of Action
42	[SCP]	Update the Quality Improvement and Wastage Reduction programme to specify the need to consider the Trust's carbon footprint, discouraging single use items by favouring reusable ones.	01-Apr-23	Joanna O'Brien	Chief Financial Officer	Completion of Action
43	[SCP]	Introduce a system to facilitate reusing furniture in the Trust (WARPIT) and update procurement policies to maximise the use of this system prior to procuring new items. (KPI: completed action).	01-Apr-23	Joe Fowke	Chief Financial Officer	Completion of Action
44	[SCP]	Capture Walking Aids Reuse / recycling data across the Trust	01-Apr-23	Joe Fowke	Chief Financial Officer	Completion of Action
45	[SCP]	Organisations will adopt PPN 06/21 so that all NHS tenders include a minimum 10% net zero and social value weighting	01-Apr-23	Joe Fowke	Chief Financial Officer	Completion of Action
46	[FN]	Maintain the locally sourced and seasonal menus high in fruits and vegetables and low in heavily processed foods	Ongoing development of Memory Menu with MM3 at printers	David Preece	Director of Estates and Facilities	Menu published. Patient & Public Involvement. Monitor uptake of dishes especially the meat free alternatives

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
47	[FN]	Ensure all new catering equipment is energy efficient	Ongoing	David Preece	Director of Estates and Facilities	Monitored through the Quality Improvement and Waste Reduction Meetings
48	[FN]	Order patient food through the electronic meal ordering system on a 'just in time' principle to minimise waste below the national standard of 12%	Complete			Completion of Action
49	[FN]	Ensure the food storage systems operate a first in first out principle of stock rotation to ensure food is used up before it goes out of date and our food stocks are regularly audited	Complete and ongoing			Completion of Action
50	[FN]	Serve the right amount of food to patients using the ordering system to identify where smaller portions are requested	Apr-22	David Preece	Director of Estates and Facilities	Volume of food waste produced (kg/month)
51	[FN]	Reduce the use of single use plastics for reusable containers	Apr-22 as part of NUH's plastic reduction pledge	David Preece	Director of Estates and Facilities	Percentage reduction of single use containers used vs previous period
52	[FN]	Engage with catering staff to ensure they understand the Plan and work in a way to maximise opportunities	Ongoing engagement through Tool Box Talks	David Preece	Director of Estates and Facilities	Completion of Action

ID	Area(s)	Title of the scheme	Timescale for delivery	Lead	SRO	Metrics to measure performance
53	[A]	Create A Trust-approved Climate Change Adaptation Plan.	01-Apr-22	Alberto Jaume	Director of Estates and Facilities	Completion of Action
54	[SCP]	Ensure procurement of 100% recycled paper for copier/ desktop printing	01-Apr-22	Joe Fowke	Chief Financial Officer	Completion of Action

7. References

- How to Produce a Green Plan: a three-year strategy towards net zero (2021), NHSEI
- Delivering a 'Net Zero' National Health Service (2020), NHSEI
- NUH Energy Management Policy
- NUH Environmental Management Policy
- NUH Estates Strategy 2018
- NUH Long Term Strategy 2018

Appendix A: Terms of Reference of NUH Green Plan Group

Name of Group	NUH Green Plan Group
Purpose	The Group is a transformation programme within the wider Trust governance and its role is to support, monitor and coordinate the planning and delivery of the Trust Net Zero NHS target. The green plan group is formed to contribute to the creation of the NUH Green Plan in line with the NHS Green Plan guidance. Each member of the group is a “responsible” of an area of action under the plan. Each responsible person is to put forward the agenda of action for the next three years to achieve a Net Zero Carbon operation. The NUH Green Plan will form part of the ICS overarching Nottingham Green Plan. To ensure consistency across the Health Network these Terms of reference align with the ICSs Terms of reference.
Membership	Chair: Head of Property • Representative from Human Resources • Representative from Digital Services • Representative from Soft FM Management • Representative from Business Resilience • Representative from the Medicine Management Group • Representative from Sustainable Development • Representative from Hard FM Management • Representative from Strategy and Transformation • Representative from Finance and Procurement • Representative from Nursing • Representative from Clinicians In attendance: • Representatives of each relevant department when required.
Governance Structure	In line with the superseded NUH Sustainability Strategy (section 5.1), the Green Plan Group is directly accountable to the Trust Management Board (MB). MB is accountable to the Trust Board. The NHS Green Plan Group will work with and link into: • Strategy Department • HR Department • Digital Services Directorate • Estates and Facilities Directorate • Tomorrow NUH Programme

	• Clinical Operational Forums • Medicine Management Group • Finance and Procurement • Nursing and Clinical Services
Responsibilities	Responsibilities include: • Providing coordination for the achievement of the carbon reduction targets against both the NHS Carbon Footprint and the NHS Carbon Footprint Plus, as specified in '<i>Delivering a Net Zero NHS</i>', as well as monitoring progress against expected trajectories; • Agree programme of actions to implement to achieve the Net Zero Carbon targets under the NHS Green Plan • Developing the NUH Green Plan by January 2022 • Ensuring that clear and credible plans are developed maintained, and progress reported to Trust Board. • Where necessary, addressing risks or performance issues, and escalating these through the appropriate channels and supporting recovery actions to ensure timely delivery of commitments; • Ensuring that progress to carbon neutrality is considered in all Trust programmes • Nominated members of the group will also feed into the ICS Green Programme working group and Board in their area of responsibility as needed.
Frequency of meetings	The NUH Green Plan Group will meet formally on a fortnightly basis to conduct its business until completion of the first iteration of the NUH Green Plan and thereafter on a monthly basis.
Required Attendance:	It is expected that core Board members will prioritise these meetings and be available. Exceptionally where this is not possible a Deputy may attend of sufficient seniority to support delivery in a timely manner and to have delegated authority to make decisions on behalf of their area/department or role on the Group in accordance with the objectives set out in these Terms of Reference.
Quorum:	The meeting will be quorate when 70% of core members are present.
Reporting Procedures:	The Trust Management Board will receive quarterly reports on progress against the Green Plan actions and an Annual Report on the Plan from this group. Exceptional items will be escalated as required. An Annual Report once approved by the Management Board will be issued to the Trust Board reporting progress against this plan.
Servicing:	• Draft agendas will be agreed with the Chair and circulated to Group members to contribute items

	• Agreed items for the agenda, to be sent to Management Board, with the relevant paperwork, up to 5 working days before each meeting • The Chair agreeing the final agenda • Papers will be circulated at least 3 working days before each meeting • Additional items for the agenda will be taken by exception with the knowledge and agreement of the Chair in advance of the meeting commencing • The draft actions/notes of each meeting will be circulated within 1 week of the meeting being held and will be approved at the following meeting
Review Date:	These Terms of Reference will be reviewed on a 6 monthly basis to ensure continued fitness for purpose in the light of potential changes to the expectations of national requirements or local issue or additional required support in its core membership.
Date approved:	Management Board November 2021 (TBA)