

SUSTAINABLE HEALTHCARE BY DESIGN



INTERNATIONAL SYMPOSIUM

THE KING'S FUND, LONDON | 14 SEPTEMBER 2023

FINAL PROGRAMME

DESIGNING CLIMATE-RESILIENT HEALTH SYSTEMS AND INFRASTRUCTURE

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Delivering healthier outcomes

Dear colleagues,

The climate emergency is a health emergency¹. Amid a growing risk of infectious disease spread, threats to public health and health equity are rising, increasing the burden on healthcare. Moreover, the sector is a major contributor to the climate crisis, producing 4.4 per cent of global net emissions².

Around the world, health system leaders are seeking to mitigate the causes of climate instability while building resilience to its destructive impacts. Clinical services, supplies and logistics, as well as buildings and infrastructure, must be redesigned. In the UK, the NHS has committed to be the first national health system to achieve net-zero emissions³. Action is focused in two key areas: a) direct interventions in estates and facilities; travel and transport; and supply chain and medicines; and b) enabling actions in new models of care; workforce; networks and leadership; and funding and finance.

At the same time, the Government has launched a major capital investment programme to deliver 48 new hospitals. It's an opportunity to set new global standards and methodologies for well-designed, sustainable development based on the NHS Net Zero Building Standard⁴. But even if fully delivered, the New Hospital Programme represents less than a fifth of the NHS estate, meaning that net-zero targets will fall short without significant interventions in the existing estate. In the drive to create well-designed, net-zero hospitals while simultaneously improving patient care, what can international health systems learn from each other? Can we co-create a whole-life carbon roadmap to net zero?

Under this overarching goal sits a range of objectives. What are the best strategies for reducing operational building energy demands, embodied carbon linked to construction, and the whole-life carbon costs of building elements? What role will local renewable energy generation, grid decarbonisation, and offsetting play? How do we apply the lean, clean and green design approach? What role might modern methods of construction and prefabrication play? How can nature-based solutions be applied and what role can bio-based materials play? How are sustainability requirements balanced against service priorities, including infection control? How do we mitigate against unintended consequences and how do we finance this investment?

Net-zero construction and operation of hospital buildings is, however, only part of the story. We also need intelligent design of healthcare delivery – in the best place, at the best time, and aided by advances in digital technology. Such approaches, combined with greater focus on population health, can significantly reduce healthcare's climate footprint through reduced travel and journey times while also enhancing the quality and accessibility of care.

Organised by European Healthcare Design and streamed on SALUS TV in collaboration with leading international partners, the inaugural Sustainable Healthcare Design 2023 International Symposium aims to share knowledge and successful net-zero design and investment strategies. It will explore how to develop transition plans to decarbonise healthcare services and estates across the value chain, while ensuring high-quality care and patient experience remain integral.

1 Costello, A, Abbas, M, Allen, A, Ball, S, Bell, S, Bellamy, R, et al. Managing the health effects of climate change. *The Lancet*, 2009; 373(9676): 1693-1733.

2 Healthcare's climate footprint: How the healthcare sector contributes to the global climate crisis and opportunities for action. *Health Care Without Harm and Arup*, 2019.

3 'Delivering a net-zero National Health Service'. NHS England and NHS Improvement, London, updated July 2022.

4 NHS Net-Zero Building Standard. NHS England, London, February 2023.



SUNAND PRASAD

Programme director,
European Healthcare Design



MARC SANSON

Director,
SALUS Global Knowledge Exchange

Dear colleagues,

In anticipation of COP28 and the soon to be published Global Stocktake, charting the progress made over the past two years in slowing down climate change across the world, WSP is responding by spearheading a global conversation on how different countries, their healthcare providers and industry are making headway on their individual decarbonisation journeys.

It's impossible to miss the numerous statistics and predictions warning of the destructive impact of climate change and its threat to health and wellbeing. One such authority is the European Environment Agency, which forecasts that heatwaves could lead to the annual deaths of 90,000 Europeans by the end of the century. And the outcomes of climate change are all too stark when we view the media; reports of extreme weather events are now a common, almost daily, occurrence, and all parts of the world are now seeing the effects.

If linking climate change to extreme weather events were not enough, the World Economic Forum clearly delineates a link between the impact of climate change on human health, ranging from asthma to cholera, malnutrition to death. This is reflected, too, in the 2019 Clean Air Strategy, where it's anticipated that by 2035, the health and social care costs of air pollution in England to the NHS could reach £5.3bn and closer to £18.6bn if other climate-related illnesses are included. In the UK, we have seen the first pollution-related death of a young child, the first in the world where air pollution was listed as one of the principal causes of death.

The motivation is clear and countless actions are being undertaken worldwide, not least in the UK, where the Clean Air (Human Rights) Bill is currently going through parliament. The healthcare sector alone is responsible for almost 5 per cent of global greenhouse gas emissions.

Acknowledging this fact, the Sustainable Healthcare Design International Symposium is an opportunity to bring together international policymakers, healthcare providers and industry leads to share lessons learned and best practice in how to progress along the journey of achieving net-zero healthcare facilities and services.

Just as the need for decarbonisation is a universal global issue for healthcare providers the world over, so too is the need for a cross-border international response.



ANISHA MAYOR

Director, UK head of healthcare,
WSP

Platinum Health Leader



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PROGRAMME AGENDA

All sessions to be held in the Burdett Suite other than Session 3B, which will be held in the Edwards Room.

08.00 Registration open – coffee and networking



Opening keynote session: Delivering net zero
Chair: Sunand Prasad, Chair, UK Green Building Council;
Programme director, European Healthcare Design, UK

Platinum Health Leader



09.00 Welcome and introduction

Sunand Prasad, chair, UK Green Building Council; programme director, European Healthcare Design, UK

09.10 Platinum Health Leader address

Anisha Mayor, director, UK head of healthcare, WSP, UK

09.15 The path to a net-zero NHS

Dr Nick Watts, chief sustainability officer, NHS England, UK

09.35 Transforming major project delivery to deliver economic, environmental and societal benefits

Dr Jo Jolly, deputy director, Infrastructure and Projects Authority, UK

09.55 Delivering a net-zero NHS estate: Strategies and actions

Fiona Daly, national deputy director of estates, NHS England, UK

10.15 Panel discussion

10.45 Coffee and networking – in the Orangery



Session 2:
Strategies and action for climate resilience and decarbonisation
Chair: Richard Darch, Executive chairman, Archus, UK

Gold Design Leader



11.15 “Climate resilience – within and beyond our four walls”

Matthew Tulley, redevelopment director, Imperial College Healthcare NHS Trust, UK

11.35 The NHS Net Zero Carbon Building Standard – what does it mean for healthcare design?

Andrew Rolf, EUNA health sector technical advisory lead, Mott MacDonald, UK

11.55 Moving the dial on hospital decarbonisation: Exploring international strategies

Anisha Mayor, director, UK head of healthcare, WSP, UK

12.15 Panel discussion

12.45 Lunch and networking – in the Orangery

Room: Burdett Suite

**Session 3A: Project exemplars**

Chair: Chris Shaw, Consultant;
Founder, Medical Architecture, UK

14.00 Circular healthcare: Redeveloping the Joseph Bracops Hospital in Brussels and the interregional development of the HELORA hospital network in Wallonia

Coen Van Den Wijngaert, engineer architect, executive partner; Laurent Grisay, civil engineer architect, executive partner; Maarten Lambrechts, architect, archipelago, Belgium

14.20 Leeds Hospital of the Future: Delivering net zero

Mike Bacon, programme director, Building the Leeds Way Programme, Leeds Teaching Hospitals NHS Trust, UK; Mark Rowe, managing principal, architecture, Perkins&Will, UK; Asif Din, sustainability director, Perkins&Will, UK

14.40 The power of design: From Clock View Hospital to the Cavell Centres

Bob Wills, director, Medical Architecture, UK

15.00 Panel discussion

15.30 Coffee and networking – in The Orangery

Room: Edwards Room

**Session 3B: Project exemplars**

Chair: John Cooper, Director, JCA, UK

14.00 The New University Hospital Monklands: A legacy for sustainable healthcare design in Scotland

Suzanne Tighe, architect and associate, Keppie Design, UK

14.20 Velindre Cancer Centre: How bio-based construction can catalyse the NHS Net Zero Standard

Anna Lisa McSweeney, architect, White Arkitekter, UK; Michael Woodford, director, White Arkitekter, UK

14.40 Rising to the heat decarbonisation challenge: Key considerations and learnings from Birmingham Women's and Children's NHS Foundation Trust

Fiona Leslie, director of cost management, Lexica, UK; Shaun Jackson, director of estates, Birmingham Women's and Children's NHS Foundation Trust, UK

15.00 Panel discussion

**Session 4: Expert panel: Climate-resilient health systems: Backing declaration with delivery**

Chair: Sunand Prasad, Chair, UK Green Building Council;
Programme director, European Healthcare Design, UK

- 16.00** These are challenging times for delivering the far-reaching, evidence-based action needed to avoid catastrophic damage to the habitat that we share with millions of other species within a mutually supportive ecosystem. On the one hand, the evidence of harm is everywhere; on the other, actions towards sustainability that once attracted cross-party consensus are now fodder for culture wars. Genuine financial concerns mix with understandable incomprehension and un-enlightened self-interest. The scale of change needed can appear daunting. Healthcare design is central to meeting the challenge of the climate and nature emergency. The declared and detailed ambitions for a net-zero NHS are a great example of setting out a convincing path to sustainability. The challenge around the world is to back declaration with delivery. Where should we focus our energies? How much can we rely on technology? Are we being open about the short-term costs of the long-term project of climate recovery? What are the respective roles of central government, local government and the private sector, and how should they work together? And how can we build capacity in the industry to meet targets?
- Smith Mordak, chief executive, UK Green Building Council, UK

Closing session

- 16.50–17.00** Sunand Prasad, chair, UK Green Building Council; programme director, European Healthcare Design, UK



Dr Nick Watts (UK)

Chief sustainability officer,
NHS England

The path to a net-zero NHS

The NHS was founded to provide high-quality care for all, now, and for future generations. Understanding that climate change and human health are inextricably linked, in October 2020, it became the first in the world to commit to delivering a net-zero national health system. And in July 2022, the NHS became the first health system to embed net zero into legislation, through the Health and Care Act 2022.

This commitment means improving healthcare while reducing harmful carbon emissions, and investing in efforts that remove greenhouse gases from the atmosphere.

Published in July 2022, the 'Delivering a Net Zero National Health Service' report is now issued as statutory guidance. It sets out the considerable advances that the NHS has already made in improving its carbon footprint and reducing the environmental impact of its services. Laying out the direction, scale and pace of change, the report describes an iterative and adaptive approach, which will periodically review progress and aims to increase the level of ambition over time.

Dr Nick Watts is the chief sustainability officer of the NHS, responsible for its commitment to deliver a world-class net zero emission health service. Based in London, he leads the Greener NHS team across the country, which focuses on improving the health of patients and the public through a robust and accelerated response to climate change and the broader sustainability agenda.

Transforming major project delivery to deliver economic, environmental and societal benefits

If we are to play our part in tackling the nature and climate emergency, we urgently need to rethink our approach to project delivery. As a profession, we need to make more significant, far-reaching and influential changes. And at pace. We can, and we must, transform project delivery to meet the challenge.

Project delivery has vast potential to contribute to multiple economic, environmental and societal benefits far beyond the original stated goals of a project – nature recovery and net zero being our most urgent. The link between project delivery and tackling the nature and climate emergency is actually far greater than it might initially appear. The nature and climate emergency is a systemic problem requiring a systemic solution, and there are few things more systemic than project delivery.

However, as evidenced by multiple studies, the project delivery profession, as a whole, and wider industry are being slow to modernise and failing to learn quickly enough from experience. This is why the Infrastructure and Projects Authority is driving hard to embed the core principles of 'Transforming Infrastructure Performance' (TIP) into business-as-usual by 2025, and using this momentum to adopt these best-practice principles across wider project delivery.

By galvanising the project delivery community to make better and more sustainable choices every day, and collaborating on a scale not yet seen, we will make the best difference possible for the economy, the environment, and society as a whole.



Dr Jo Jolly (UK)

Deputy director,
Infrastructure and
Projects Authority



Fiona Daly (UK)

National deputy
director of estates,
NHS England

Delivering a net-zero NHS estate: Strategies and actions

In 2020, the NHS became the first health system in the world to commit to achieving net-zero emissions across all three of its scopes. For the NHS estate, this commitment was accelerated with an ambition to be net zero by 2040, with 80 per cent of that reduction delivered by 2032.

In this talk, Fiona will set out the strategic framework her team has established to deliver a net-zero NHS estate, alongside the practical steps they have taken so far to achieve these ambitions. She will also talk through the innovations and approaches they are exploring in preparation for achieving net zero.

“Climate resilience – within and beyond our four walls”

Following the publication of the Net Zero National Health Service plan in October 2020, there has been a growing focus on how the NHS meets its obligations to be a net-zero carbon healthcare provider by 2040. Following the adoption of this plan, the New Hospital Programme made net-zero carbon one of the four key priorities for new hospital infrastructure.

As a capital programme, much attention, rightly so, is paid to the embodied carbon of the new facilities and the energy efficiency in use, and all design teams are now well versed in the need for net-zero design.

The planning of these new assets also creates the opportunity for a thoughtful analysis of how and where services are delivered so that new hospitals are right-sized in the first place, where possible, reducing the embodied carbon demand in the first place. Looking at services in this holistic way and setting ambitious targets for out-of-hospital care will support the New Hospital Programme’s goal of net-zero carbon hospitals and the NHS’ overall net-zero ambitions.



Matthew Tulley (UK)

Redevelopment director,
Imperial College Healthcare
NHS Trust



Andrew Rolf (UK)

EUNA health sector
technical advisory lead,
Mott MacDonald

The NHS Net Zero Carbon Building Standard – what does it mean for healthcare design?

The need to respond to the challenges of a changing climate are clear, and the connections to health and the healthcare estate are being felt more frequently.

The NHS has recently published the new Net Zero Carbon Building Standard to consider the whole-life carbon implications of the healthcare estate in England. This ground-breaking, first-of-a-kind, healthcare standard sets specific project targets for performance, energy consumption and embodied carbon.

The standard sets out the aspirations for operational and embodied carbon within NHS England healthcare projects, providing guidance on approaches to achieve project-specific targets.

To meet the aspirations of the standard, clients, designers and advisors will need to embed 'carbon thinking' into a project, whether new-build or refurbishment.

But what does this mean practically?

Achieving a low-carbon design will need us to think differently about the way we procure, design, and construct building projects. Traditional approaches will need to be challenged, embedding holistic design from the outset and setting clear key performance indicators for the future construction phase.

Early engagement is crucial – ensuring the right people are at the table to make data-driven decisions, supported by better modelling of the proposals made.

Suppliers will need to provide better information on their environmental credentials to support specification and procurement.

And all of this comes in the context of supporting and competing drivers of digitisation, social value, modern methods of construction, and, of course, excellent clinical service delivery.

Moving the dial on hospital decarbonisation: Exploring international strategies

Among the largest emitters of carbon are healthcare facilities, which are paradoxically treating the populations experiencing the effects of climate change. There is an opportunity, however, for hospitals to lead in the response to the climate crisis by reducing the carbon emissions associated with their operation. To that end, healthcare organisations can benefit from international guidance and support when considering the following questions:

- What can be done to further decarbonise a healthcare estate?
- How are policies, the economy, the industry and the environment working against reaching a carbon emission target?
- How are policies, the economy, the industry and the environment expediting reaching a carbon emission target?

Method: To gain a global view of how countries are responding to the decarbonisation challenge, we've collated answers to these questions from exemplar facilities in multiple countries. These facilities are new-build, district general hospitals treating acute inpatients and are assessed against seven criteria: operational carbon; embodied carbon; energy use intensity; water intensity; accessibility / active travel; energy source; and indoor environmental quality.

Convergent and divergent trends of our exemplar projects were analysed and supported by national benchmarking data. To further our analysis, we explore how our exemplar hospitals could be transformed into net-zero carbon facilities and how the introduction of smart healthcare can expedite decarbonisation.

Solution(s): Delegates will learn about the opportunities and constraints of decarbonising hospitals. Insights will be shared into how current regulations, as well as economic, industrial and environmental conditions in a particular country, can affect the level and speed at which decarbonisation of healthcare facilities can be achieved.

Conclusion: Thinking about redundancy, operational energy, costs and digital technologies, how can we understand the best routes to decarbonisation? With varying policies and practices in place around the world, what can we learn from each other? Examining the carbon emissions associated with hospitals across multiple global regions, while also considering environmental, economic, industrial and political perspectives, equips healthcare providers with additional knowledge and further empowers them to make informed decisions on how to decarbonise their healthcare estates.



Anisha Mayor (UK)

Director, UK head of healthcare,
WSP



Antoni Paleshi (Canada)

Technical lead, energy & carbon
analysis,
WSP



Coen Van Den Wijngaart
(Belgium)

Engineer architect,
executive partner,
archipelago



Laurent Grisy (Belgium)

Civil engineer architect,
executive partner,
archipelago



Maarten Lambrechts
(Belgium)

Architect,
archipelago

Circular healthcare: Redeveloping the Joseph Bracops Hospital in Brussels and the interregional development of the HELORA hospital network in Wallonia

In a dense urban context, the Joseph Bracops Hospital in Brussels is designed according to circular economy principles: sustainable urbanism; adaptable and reversible structures; local and healthy materials; net zero-energy use; and thoughtful prefabrication. The masterplan offers a smooth transition from public areas, via distinct circulation flows, to the closed care units; a central circulation scheme designed for functionality; and possible future expansion.

The HELORA network has an ambition to build five new hospitals and become the first integrated hospital network in Wallonia. Each hospital will be part of the care network, with the project bringing these different sites together by promoting synergies and integrating the particularities of each place.

The Bracops hospital is (re-)developed along a central axis that organises a clear distribution of activities, connected to both the open ground floor and vertical circulation for each separate unit. This allows the building to evolve over time, despite a complex urban site, and adapt to the wishes of patients and staff, connecting to the neighbourhood community.

An open typology that offers the qualities of an organic, expandable and evolving structure. Based on a set of standardised modules that can be assembled according to the context of each site, the new hospitals will have an identifiable appearance. The network will result in the creation of local hospitals that are progressive, human in scale, and sustainably integrated into their context. They will also:

- embody a strong commitment to sustainable development, with a zero-emission objective;
- ensure careful monitoring of energy distribution (and storage) through a smart grid;
- feature performance-based design for optimal use of natural energy for heating, cooling, ventilation and lighting;
- deliver a 67-per-cent reduction in CO₂ compared with standard hospital projects;
- instil nature at their heart, creating a total healing environment with focus on local biodiversity; and
- provide added value to the environment.

The hospital of tomorrow will be a resilient infrastructure that allows for different programmes to evolve and adapt to the future needs of patients, staff, the neighbouring community, and a wider region – putting wide-scale prevention over cure to enhance public health.



Leeds Hospital of the Future: Delivering net zero

This presentation will describe the processes and outcomes of the early design development phase of one of the country's largest New Hospital Programme schemes. Leeds Hospitals of the Future will provide a new home for Leeds Children's Hospital, additional capacity for adult acute services, resolving several wider circulatory issues, and establishing the new healthcare facilities at the centre of a new Innovation Village.

The Trust board embraced the NHS Net Zero Building Standard while still in its earliest beta form and thus informed the development of the design from those early stages. Although others were grappling with that same nebulous draft advice and its interface with concurrent regulatory and advisory guidance – for instance, around modern methods of construction or evolving building regulations – few had to contend with the challenges of doing so for such a tall building on an extremely constrained city centre site.

This is a particularly important typology, given that such an urban location addresses the many secondary sustainability issues around staff, patient and visitor transportation to and from hospitals that will necessarily inform sustainable practice for the NHS as it transitions to a low-carbon future. City centre locations can also attract a higher degree of scrutiny in terms of massing, appearance and material quality, so it becomes imperative to meet the demands of the standard without detriment to architectural ambition.

We will seek to articulate the lessons that we've learnt through this journey, not only to help others embarking on similar paths but also to raise some wider and important questions about the evolution of the Net Zero Building Standard through its forthcoming, self-mandated revisions.



Mike Bacon (UK)

Programme director, Building the Leeds Way Programme, Leeds Teaching Hospitals NHS Trust



Mark Rowe (UK)

Managing principal, architecture, Perkins&Will



Asif Din (UK)

Sustainability director, Perkins&Will





Bob Wills (UK)

Director,
Medical Architecture

The power of design: From Clock View Hospital to the Cavell Centres

In 2005, Mersey Care NHS Foundation Trust embarked on a ten-year plan to transform poor-quality mental health infrastructure into a community-based, de-stigmatising service, which would bring long-lasting improvements. It created a design board – with design champion Beatrice Fraenkel to lead it. She set a new high standard from the start, first commissioning landscape architects and arts co-ordinators to set the right tone in quality, followed by Medical Architecture – known to be a leading expert in the design of therapeutic mental health facilities.

Standardisation was embedded into the design from the start, so that service specialisms, gender mixes and demographic responses could be implemented throughout the life of the building. Light, air, wide open views, and easy access to a beautiful outdoor space are the key ingredients to Clock View's success, which has become a much-loved catalyst for community regeneration. Mersey Care's participation in the 2011 Technology Strategy Board's Design for Future Climate pilot programme informed the design for long-term sustainability and affordability. Since then, standards have evolved and strengthened, and we now have the NHS Net Zero Carbon Building Standard with which to comply.

Clock View completed in 2014 and has since become an exemplar of mental health design quality. The need for community-based wellbeing centres that are both small-scale yet repeatable remains urgent, and was the driver of NHSE's Cavell Programme for the proposed renewal of primary care wellbeing hubs. Medical Architecture worked collaboratively with Architype on the largest of six pilot projects to advance this agenda to the next level.

Through Passivhaus accreditation and optimised structural and component standardisation, any facility can be designed to be enduringly flexible, low-energy and highly valued throughout its long life. And let's not forget where this story started – with the power of good, well-researched design that can help shape a better world.



The New University Hospital Monklands: A legacy for sustainable healthcare design in Scotland

The Monklands Replacement Project (MRP) is NHS Lanarkshire's exciting and positive vision for University Hospital Monklands and the local and wider community it serves, proposing a major investment in Lanarkshire's hospital estate by rebuilding the hospital on a new site. The existing Monklands Hospital is now more than 40 years old and will struggle to adapt to the rapidly changing needs of the future healthcare environment and its associated infrastructure. NHS Lanarkshire aspires to deliver a sustainable design for the new hospital, minimising negative impacts on the environment and improving the health and safety of all building occupants.

On a national level, in line with policy drivers and the Scottish Government's Net Zero Public Sector Building (NZPSB) Standard, and recognising the valuable link between sustainable development and health and wellbeing, NHS Scotland has identified, through the Sustainable Design and Construction (SDaC) Guide, priority themes that aim to positively influence the future development of healthcare facilities in Scotland.

"The relationship between building design, green and blue infrastructure, and wellbeing is one that is well documented and recognised as having significant impact on an individual's health and wellbeing. For a development to be considered truly sustainable, the health and wellbeing of all users should be prioritised and considered alongside the environmental and economic impacts." – *SHTN 02-01: Sustainable Design and Construction (SDaC) Guide*

This presentation outlines the people-focused placemaking principles driving the New University Hospital Monklands design concept and which support the aspiration of NHS Lanarkshire to operate an estate that is considerate to and prioritises the wellbeing of users through the creation of comfortable, inclusive, and healthy internal and external places.



Suzanne Tighe (UK)

Architect and associate,
Keppie Design



Anna Lisa McSweeney
(UK)

Architect,
White Arkitekter



Michael Woodford (UK)

Director,
White Arkitekter

Velindre Cancer Centre: How bio-based construction can catalyse the NHS Net Zero Standard

The new Velindre Cancer Centre (nVCC), a 36,000sqm new-build facility outside of Cardiff, aims to be the 'UK's greenest hospital'. Within the context of the Wellbeing of Future Generations Act, and the new NHS Net Zero Standard, the Velindre University NHS Trust's design brief stated the importance of nature to the project. This gave opportunity to explore the use of bio-based materials to help achieve embodied carbon targets and environmental outcomes in a hospital environment, and in doing so, identified shortfalls within current NHS HBNs' best-practice design guidance.

Framework: To identify the suitable application of bio-based materials in hospital environments. The project references the following research into natural materials: biophilia's impact on wellbeing; inherent beneficial properties for indoor environmental health; potential reduction in use of chemicals in cleaning; whole-life carbon impact; and building performance, energy and services demand reduction.

Practical application: The process for natural materials specification has involved: review of complementary research into natural materials and health; comparison of EPD and health certificates for available products and potential alternatives to compile a 'best in market' specification database; development of hygiene classes criteria and zoning principles, using nVCC as a case study; interviews and workshops with NHS IPC (infection prevention and control) and FM (facilities management) teams; and engagement with manufacturers and suppliers to meet the Trust's requirements.

Outcomes: Learnings from the process of implementing natural materials in a hospital setting include: strengths and weaknesses of natural materials in healthcare; limitations of HBN-0010 guidance for NHS Net Zero Standard targets; recommendations for decision-making on material finishes with new metrics and target values; and learnings for future NHS design briefs.

Implications: The implications on how building with bio-based materials can address climate, local economy, biodiversity, and health include: post-occupancy evaluation to provide data for building and user performance outcomes; application of material specification in other sectors, eg, residential and education; potential savings to the NHS of healthier internal environments; potential carbon savings benchmarking against NHS Net Zero Standard and RIBA LETI; and the potential benefit to the local economy.



Rising to the heat decarbonisation challenge: Key considerations and learnings from Birmingham Women's and Children's NHS Foundation Trust

Energy consumed for heating and cooling in healthcare estates accounts for 40 per cent of all direct carbon emissions – making it one of the greatest challenges facing the healthcare sector in meeting its net-zero ambitions.

Heat decarbonisation plans are deliverable, solutions-focused strategies being implemented by the healthcare sector to transition from fossil fuel heating systems to low-carbon alternatives – but how do you make these strategies practical with an ageing estate, while ensuring clinical compliance, delivering operational and carbon efficiencies in the long term, and doing so under a constrained financial regime?

Birmingham Women's and Children's NHS Foundation Trust recognises this challenge and is faced with implementing low-carbon solutions for an estate where 65 per cent of the buildings were built before 1974. The Trust has received more than £60m of grant funding and is now part way through ambitious plans to reduce carbon emissions by between 65 and 70 per cent across its three sites by: installing low-carbon enabling infrastructure for heat generation; improving thermal efficiencies to eradicate summer overheating and winter cold; developing environments for better patient outcomes and staff welfare; embedding new skills for the next generation; and creating a cleaner, healthier environment for local economies. Achieving these goals has required commitment and openness from the Trust's stakeholders, a drive to demonstrate innovation adoption can work, and a pragmatic outlook in a complex commercial structure.

Having secured and delivered more than 10 per cent of LCSF3 (Public Sector Low Carbon Skills Fund) funding for clients in 2022, and further success from LCSF4, Lexica will be discussing the challenges, lessons learned, and developments required to enable the healthcare sector to achieve net zero.



Fiona Leslie (UK)

Director of cost management,
Lexica



Shaun Jackson (UK)

Director of estates,
Birmingham Women's and
Children's NHS Foundation Trust

**Sunand Prasad (UK)**

Chair, UK Green Building Council; programme director, European Healthcare Design

**Smith Mordak (UK)**

Chief executive,
UK Green Building Council

Climate-resilient health systems: Backing declaration with delivery

These are challenging times for delivering the far-reaching, evidence-based action needed to avoid catastrophic damage to the habitat that we share with millions of other species within a mutually supportive ecosystem.

On the one hand, the evidence of harm is everywhere; on the other, actions towards sustainability that once attracted cross-party consensus are now fodder for culture wars. Genuine financial concerns mix with understandable incomprehension and unenlightened self-interest. The scale of change needed can appear daunting.

Healthcare design is central to meeting the challenge of the climate and nature emergency. The declared and detailed ambitions for a net-zero NHS are a great example of setting out a convincing path to sustainability. The challenge around the world is to back declaration with delivery. Where should we focus our energies? How much can we rely on technology? Are we being open about the short-term costs of the long-term project of climate recovery? What are the respective roles of central government, local government and the private sector, and how should they work together? And how can we build capacity in the industry to meet targets?

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Keynote speakers:



Sir Michael Marmot
Professor, director,
UCL Institute of Health
Equity, UK



Dr Nathalie Roebbel
Unit head – urban health,
World Health Organization,
Switzerland



Kieron Boyle
Chief executive,
Impact Investing
Institute, UK

Registration open

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healthycitydesign.global

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European Healthcare Design Congress

Coming up to its tenth year, the annual European Healthcare Design Congress, Exhibition and Awards brings together interdisciplinary researchers, practitioners and policy thinkers from across the fields of health system and service design, technology and infrastructure.

Held every June at the Royal College of Physicians in London, the theme of the world's leading healthcare design forum in 2023 was 'Fault lines and front lines: Strengthening health system resilience'. Featuring 200 talks, workshops and video posters, up to 1000 delegates from 40 countries attended in-person and virtually over two days of conference activity, followed by a day of study visits to benchmark new projects around the country.

All attendees attending in-person and virtually also receive access, via the event platform and mobile app, to the video recordings of all the talks for two months after the event. The Call for Papers for the 2024 Congress, being held 10-12 June, will launch in September.



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SALUS Global Knowledge Exchange

SALUS is an entrepreneurial global media, research, publishing, events and training organisation with a vision to improve human and planetary health through the global exchange of knowledge. Our mission is to create, share and disseminate knowledge concerning the relationship between human health and the natural, built, social and technological environments.

Focusing on knowledge exchange at the intersection of science and technology, architecture, lifestyle, urbanism, and sustainable development (SALUS), we support the UN's Sustainable Development Goals by building interdisciplinary professional communities that facilitate global collaborations. We do this through a range of knowledge-based activities that promote the application and interaction of art, science, culture and innovation.



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Nicola Evans
Global marketing lead –
Property & Buildings

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