

s p a c e s

Net Zero Carbon Building Resilience

Thursday 23rd June 2022

De Montfort University

Our sponsors



Net Zero Carbon is the biggest challenge we've ever faced in our working lives, and if ever there was a time to pull together, share knowledge and experiences through professional networking and training, it must be now. Collaboration is essential to save our planet for future generations.

But the task is challenging, set in an environment of escalating costs, a public sector finance model that focuses on capital, rather than whole life costs, and we have a skills and materials shortage. So it's not surprising that so many of us feel overwhelmed.

Through the support of our amazing sponsors, speakers and exhibitors, we are able to return to De Montfort University for our National Study day and support you.

We have an inspirational set of speakers who are going to share their experiences and knowledge with you, through presentations, workshops as well as a 'Roundtable' discussion, so we can all move forward with more confidence, more ideas and greater certainty of delivering successful NZC outcomes. We are not going to get everything right first time, so we need to learn from each other and keep refining our approaches and be armed with data and facts to reduce risk and deliver success.

Thank you for supporting SPACES, the only society that focuses on delivering better outcomes for the public sector estate rather than on individuals professions. We have to work together to deliver.

Once again thank you to our sponsors this year [Atkins](#), [Bauder Roofing](#), [Faithful+Gould](#), [Norse Consulting](#), [Pick Everard](#) and [Willmott Dixon](#).

Study Day – Net Zero Carbon – Building Resilience

Thursday 23rd June 2022, De Montfort University



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Study Day – Net Zero Carbon – Building Resilience

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9:00am President's address

Jackie Lowe, SPACES President

Jackie Lowe BSc Hons MCIOB APMP is an Architectural Engineer who has worked for both Local Authorities and Central Government for over 15 years delivering a variety of Public schemes and large Education programmes. She has also worked for a main contractor Design Managing new build offices and retail within the London market.

Four years ago she moved to the consultancy Arcadis where she now leads a client based Design Management team within the Mission Critical sector delivering Data Centres across Europe as well as being a founding lead for the Arcadis Design Practice. In her years as President through the pandemic she has been keen to prove that networking and learning opportunities can continue to be valuable via virtual technology whilst continuing to challenge the Zero Carbon agenda.

Collaborative working is at the heart of everything Jackie aims to achieve and encourage hence her passion for SPACES as a society and their importance of place within our sector.

Jackie has previously chaired the panel for the SPACES and Civic Building of the Year Awards and remains an active member on the panel to this day, keen to see that Publicly funded projects regularly get the recognition they deserve.

9:05am Welcome from De Montfort University

School of Engineering & Sustainable Development

The School of Engineering and Sustainable Development is a research-active school with state-of-the-art facilities to deliver premium mainstream undergraduate and postgraduate engineering courses. Our graduates develop carefully-balanced core knowledge and transferable skills needed to engage with solving burning societal issues. The School is also well positioned to support postgraduate research students (PhD and MPhil) working on leading-edge engineering research projects.

Our programmes and related facilities are grouped into four broad areas: mechanical engineering, electronic engineering, aerospace and energy and sustainable development, and include power electronics, embedded systems, communication systems laboratories, statics and dynamics, energy engineering and thermodynamics, through CAD/CAM and 3D-printing to our full-motion flight simulator.

Most of our staff are engaged in either research or commercial consultancy in partnership with engineering firms throughout the UK. Our research and enterprise activities are facilitated within two research institutes: the [Institute of Energy and Sustainable Development](#) and the [Institute of Engineering Sciences](#). The School's research and enterprise activity and our lab provision allow students to spend a minimum of 50% of their time in a practical setting, developing hands-on skills and engaging with real-world engineering problems. We are proud members of Engineers Without Borders UK and were delighted with our [students' success](#) in coming second out of all UK teams at their annual competition in 2019/20.

The school supports several student societies. Our student-led Formula Student team design, construct and build a race car to compete in the prestigious Formula Student international competition, coming 17th in 2021. DMU Flyers, formed in 2020, are looking forward to participating in the IMechE UAS challenge in 2022.

9:10am Key Note Podcast

Lord Rupert Redesdale Founder of the Energy Managers Association (EMA), Carbon Management Association (CMA) and Low Energy Company (LEC)

Lord Redesdale was the Energy Spokesman for the Liberal Democrats for the House of Lords 2000-2008 during which time he introduced a number of private members bills in the area of energy and conservation. As Vice Chair of the All Party Parliamentary Climate Change Group he has worked to spread the message about the carbon costs of energy especially computing.

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In 2009 Lord Redesdale founded the Anaerobic Digestion and Biogas Association (ADBA) which now has over 260 member companies. In 2012 he was awarded the accolade of Environmental Parliamentarian of the year by the Chartered Institute of Water and Environmental Management.

Lord Redesdale is the Founder of The Energy Managers Association (EMA), Carbon Management Association (CMA) and Low Energy Company (LEC). The EMA aims to promote the development of energy management and the career structure of Energy Managers in the British economy. The CMA is the EMA's sister organisation which sets up standards for energy management training courses to all companies to reduce their energy and CRC bill. The LEC scheme was launched in October 2013 and aims at driving the energy efficiency agenda by auditing companies by their commitment to energy management. The recognition of energy costs and energy reduction through energy efficient measures is a matter of the utmost importance and overarching key driver for all three companies.

9:40am Building and living in a passivhaus

John Thornberry, Pick Everard

John will be discussing his experiences of building and living in a passivhaus, and will cover:

- Basic introduction to Passivhaus principles. (headlines only)
- Existing site & funding constraints.
- Concept Design
- Planning Process
- Technical Design and construction method selection.
- Realising the 'Dream'
- Remaining rigorous during Brexit & COVID periods.
- Living in a passive house.
- Would I do it again ?

John is currently a Sustainability Consultant for Pick Everard and Founding Director of John Thornberry Architecture, a Chartered Architect and RIBA Client Adviser consultancy.

His experience covers 30 years promoting Sustainable Design, providing advice on strategic and applied sustainable building design and innovation. As an Education design specialist, he assists the SPACES working group and the Association for Learning Environments (A4LE) leadership team.

Following 2 years as Head of Development living 'off-grid' and designing sustainable schools in Zambia, Central Africa, John designed the first UK pathfinder sustainable school in 1997 at AHMM Architects and first Zero Carbon school in 2002, going on to assist the development of BREEAM Schools for the DfE.

Formerly as the Operations Director of NPS Property Consultants and Managing Director of Barron+Smith Architects, he devised and led transformational business change within Publicly owned design consultancies, evolving their sustainability and Passivhaus practice from 2010.

John established his own Consultancy in 2018 providing strategic and project leadership as Demco Interiors- Managing Director and WF Education- Group Head of Projects, developing education projects worldwide. He has carried out strategic monitoring assessment of the design and delivery of multi-billion Euro national education building programmes across Spain, Portugal, Greece and Romania, as the European Investment Bank's (EIB) specialist technical consultant.

At Pick Everard he has a companywide Sustainability Consultant role, inputting into projects and implementing sustainability training, culture and processes across their 700 staff and 13 offices.

Having been involved in the design of 150 Passivhaus buildings utilising 6 forms of construction, including the RIBA Stirling Prize shortlisted Carrowbreck Meadows development, during 'COVID lockdown' John took on the challenge of designing and self-building his own contemporary passive house using MMC.

John is a RIBA Professional Practice External Examiner for the University of Westminster and UWE, Bristol.

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Outside of work, he is an enthusiastic 1965 Jaguar E-type owner and leads voluntary teams building community projects across sub-Saharan Africa (both noted as relatively high carbon, but worthy activities).

10:20am Zooming Out: Net zero and the need for systems thinking

Ron Lang Technical Director - DfMA, Atkins

Drawing on his experience, Ron will set out the need for the construction sector to 'Zoom Out'; adopting a systems-engineering approach to decision-making in the built environment to drive better, more informed, more outcome-based decisions. If we are to successfully navigate some of the biggest challenges in history, Ron argues that we must begin to think like built environment professionals rather than project-focused, discipline-oriented construction practitioners.

Ron has spent the last 10 years working across the industrial research and innovation landscape, with a particular focus on industrialised construction and value-based decision-making. Ron held a number of roles within the Government-funded Construction Innovation Hub programme - most recently as Chief Technical Officer - playing an instrumental role in projects such as the Value Toolkit and Platform Programme.

Ron joined Atkins' infrastructure division in 2021, with responsibility for driving Design for Manufacture and Assembly (DfMA) across the business. He also remains actively involved with the Construction Innovation Hub, most recently as technical author for the Product Platform Rulebook.

11:00am Refreshments and Networking

11:20am Creating a low carbon skills economy

Marina Robertson, Norse Group

Marina is a public sector leader with over 20 years' experience at a senior level in local government and consultancy, assisting local authorities derive enhanced value out of their services amidst a constantly changing world.

Before joining the Norse Group, Marina led public sector services in areas such as regeneration, asset transformation, capital delivery, and housing for several London local authorities and Essex County Council.

Although Marina has worked on projects such as the new Wembley Stadium and Olympic Legacy, one of her proudest achievements is leading the team that won the London Councils' award for best campaign to support local trade for 'Love Your High Street'.

Marina joined the Group in 2016 as an Operations Director for NPS London and in 2019 took up the Senior Director role within NPS which, along with NPS London, also has an overview of NPS Norwich, NPS Peterborough and the Group's Strategic Consultancy Team.

Marina is a passionate advocate of diversity in leadership, affordability in housing and of social and environmental sustainability.

In her spare time Marina is studying for an MBA, supports West Ham United, has set up a mentoring scheme for females in Waltham Forest and is Vice Chair of Waltham Forest Housing Association.

Marina is a regular speaker at conferences on housing, social value and diversity.

12:00pm Identifying energy and carbon savings in flat roof refurbishment projects

Tom Raftery, Product manager – Solar PV / Environment Lead, Bauder Roofing

Learning outcomes:

- How advanced roof diagnostics can help you make the best choice for your buildings
- Selecting the most efficient solutions that fit your budget and resources
- How to achieve optimum thermal performance through the most cost-effective approach

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- How incorporating solar PV into your roof refurbishment projects can maximise both financial and carbon savings

12:40pm Lunch and Networking

13:30pm Decarbonising heating and use of heat pumps

Dr Andrew Wright and Prof Raffaella Villa, DMU

Dr Andrew Wright is a Reader and joined the Institute in September 2004. He is Subject Group Leader for teaching of Energy and Sustainable Development. Research interests include low energy buildings, energy in industry, and renewable energy in the developing world.

Following a degree in Applied Maths at Sheffield, he took an MSc in Atmospheric Physics at Imperial College, London, and for his PhD investigated computer modelling of the thermal performance of industrial buildings. Before coming to De Montfort, Andrew was the Programme Manager of a distance learning MSc course in Sustainable Electrical Building Services at UMIST (now University of Manchester), where he was also a researcher in the Tyndall (North) Centre for Climate Change Research. He has previously worked for the UK Electricity Industry at EA Technology Ltd near Chester; Newcastle University; and the Building Design Partnership in Manchester.

He has written many journal papers relating to energy use in buildings, and numerous reports for EA Technology ranging from the energy impacts of teleworking, to the effect of distributed generation on the electricity network. Andrew is a Fellow of the Chartered Institute of Building Services Engineers, and a member of the Energy Institute. He has contributed to the design guides on Environmental Design (Volume A) and Weather (Volume J), and is a member of the Schools Design Group. He has also contributed to reports for Ofgem, DECC and the Department of Health.

Professor Raffaella Villa joined De Montfort University in 2019 as Reader in Environmental Engineering. Prior to that she worked at Cranfield, Stirling, Exeter and the University of Milan (Italy).

Raffaella has worked on microbial bioengineering for the last 20 years. Her major contributions relate to the delivery of the next generation biotechnological processes that combine protection and production for a more circular bioeconomy, such as bioremediation and high-value products from waste. This is achieved by understanding the common science in the two areas (protection and production) on how to control and enhance specific functions of microbial communities by manipulating operative conditions to increase process yields and stability, with increasing emphasis on the concept of the “waste biorefinery”.

Raffaella has published over 60 research papers, books and conference proceedings with substantive contributions to waste biotransformations, bioremediation and anaerobic digestion.

14:10pm MMC and achieving low carbon outcomes

Raynee De Zoysa, Strategic Growth Manager, Collida

Raynee De Zoysa is the Strategic Growth Manager for Collida, focussed on delivering net zero buildings with integrity. Pushing the boundaries by building new partnerships and sourcing opportunities to further establish the importance of creating enriched spaces for local communities.

Having started her career on the ground as a site engineer, where she worked on the London Olympic White Water Rafting Canoeing Centre, Raynee has since taken on roles in delivery, pre-construction, residential and education projects, where she has amassed an extensive skillset.

Leveraging the unique lessons she has experienced from her varied roles in the built environment – Raynee is passionate about STEM, sustainability and placemaking. She is especially inspired to mentor young professionals take their careers - and themselves - to unprecedented levels.

When not growing a sustainable construction to a wider audience, Raynee can be found on an exercise bike, spinning to vibrate disco beats at the gym!

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14:50pm Refreshments

3:00pm Main stage – Roundtable: Road to Net Zero

Facilitated by Alex Gee, Norse Consulting

We have legislation, standards, commitments and strategies, but there is not a one size fits all solution to the biggest challenge we have faced *the road to net zero carbon*.

Listen whilst our panellists, facilitated by Alex, discuss how their organisations are walking the tightrope of technologies, tools, targets, predicted and actual performance against a backdrop of escalating costs, skills gaps and materials shortages and how they can help you navigate *the road to net zero carbon*.

[Alex](#) joined the NPS Group in June 2013 having worked in the public, private and international sectors.

Prior to this, Alex was Head of Project Co-Ordination for UNEP-WCMC, leading on the commercial viability of international environmental projects that ranged from preserving International Protected Areas to Climate Change, working across Institutions such as the UN, the EU and International NGOs.

Since joining the NPS Group, Alex has had responsibility for managing Group Quality and Compliance and has had operational responsibility for NPS Archaeology prior to becoming Operations Director for NPS Peterborough, running the Estates and Asset Management joint venture with Peterborough City Council.

In addition to his responsibilities in Peterborough, Alex has spent the last 12 months as Interim Head of Property at Cambridgeshire County Council, working closely with the Energy Investment Unit supporting the implementation of zero carbon projects.

Alex specialises in delivering strategic projects that require multi-partner collaborations to facilitate change, and building high performing teams that focus on delivering commercial benefits.

Panellists are:

Dr Eric Roberts, Business Development Manager, IES

Dr Eric Roberts is a Chartered Engineer, having accumulated 30+ years of industry experience, with 20+ years of experience in the field of building energy modelling and simulation. A Chartered Engineer (CEng) and a Fellow of the Chartered Institution of Building Services Engineers (FCIBSE). With targeted capabilities in the field of Building and HVAC system modelling, simulation and low energy building design. Has worked within a variety of specialist engineering consultancies both in the UK and in the USA. Eric has a particular passion for the implementation of and the correct use of computer simulation in the design and assessment of low energy buildings.

[John Thornberry, Pick Everard](#)

[Marina Robertson, Norse Group](#)

[Raynee De Zoysa, Strategic Growth Manager, Collida](#)

[Tom Raftery, Product manager – Solar PV / Environment Lead, Bauder Roofing](#)

4:00pm President's Closing Remarks

Jackie Lowe, SPACES President

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Atkins

[Atkins](#) is one of the world's most respected design, engineering and project management consultancies.

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We build long-term trusted partnerships to create a world where lives are enriched through the implementation of our ideas.

Our lived environment is facing rapid change; to face these challenges, we are radically transforming the way infrastructure is designed, delivered and operated. Our aim is to help create a world that is diverse, sustainable, full of thriving communities and working better for all.

Bauder Roofing

[Bauder Roofing's](#) focus is centred on providing a waterproofing system, green roof or photovoltaic array that fully understands all the individual issues of the project and answers the needs of the client. All our systems are installed by Bauder approved contractors, ensuring that we deliver high quality installations. Bauder's expert technical managers can also deliver bespoke CPD seminars helping clients enhance their knowledge of our systems and their application.

Faithful+Gould

[Faithful+Gould](#) is a world-leading integrated project and programme management consultancy.

The best people in the business collaborate to bring all of their core services expertise of Cost and Commercial Management, Project Management, Programme Management, Asset Management and Project Controls to every environment and every sector.

We support clients with the construction and management of their key assets, important projects and programmes with an integral focus on improving social benefit to our communities in which we all live and work - it's in our DNA and another example of Constructive Expertise.

Norse Consulting

[Norse Consulting](#) is the parent company for building consultancy services within the Norse Group with a primary purpose to improve people's lives.

Everything we do is centred around a clear and ethical purpose; we understand the needs of our clients and we personalise what we do to fit their strategic aims. Together we deliver solutions to better support local communities, maintaining a purpose-driven approach to improving the places where people live, work, receive health and care.

We offer a broad range of building consultancy services as stand-alone or integrated packages, incorporating multi-disciplinary expertise. Through this we bring together Hamson Barron Smith, NPS Property Consultants and the various NPS joint venture partnerships across the country.

Formerly working as NPS Group and with our wealth of experience supporting local government, housing sectors, education academies and health and care trusts, we understand that it takes collaboration to deliver the best results and make a truly positive impact creating purposeful community environments.

Pick Everard

[Pick Everard](#) provides the complete consultancy service needed to deliver property and construction projects. Delivered through 13 UK offices, the firm employs over 600 staff, and has operated for over 150 years within the UK property market.

Our aim is clear; to be the Most Highly Regarded Consultant in the Property and Construction Industry. We believe the industry can do better – delivering programme and project more efficiently, more collaboratively and with better outcomes for clients, their stakeholders and communities.

Our collaborative ethos, range of technical expertise and early adoption of innovation sets us apart in the market and ensures we deliver value for money for our clients and positively contribute to the industry as a whole.

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Willmott Dixon

[Willmott Dixon](#) is a privately-owned contracting and interior fit-out group. Founded in 1852, we have a purpose beyond profit to leave a positive legacy in our communities and environment.

We create value for customers, stakeholders and communities by taking a leadership role in the built environment, working in a sustainable and responsible way and by making a positive impact in the lives of people in the UK.

In September 2020, we launched our new sustainability strategy, 'Now or Never', with a series of ambitious targets to achieve by 2030.

SUMMER AND AUTUMN PROGRAMME

Our programme of webinars will shortly be on our [website](#) with details on how to register. The webinars will be running on webinarjam. Videos will be available on our [YouTube channel](#). Details will also be emailed in our e-newsletters and you can register to receive them [here](#).

1:00pm, Wednesday 20th July - Schools and ventilation

Hershil Patel, Head of Energy, Department for Education and Henry Burridge, Senior Lecturer in Fluid Mechanics, Imperial College

[Hershil Patel](#), is an Engineer and Head of Energy at the Department for Education. His role is to address the climate change in the educational estates through reducing actual carbon emission in the educational estate and assessing the long term impact of climate change in the estate.

Henry Burridge is a Senior Lecturer in the [Fluid Mechanics section](#) in the department of Civil and Environmental Engineering at Imperial College London. Henry co-leads the [Low-Energy Ventilation Network](#) which was funded by the [EPSRC](#) via the [UK Fluids Network as a Special Interest Group](#), is a Co-Investigator for the [Tackling Air Pollution At Schools \(TAPAS\) network](#) and the [Future Urban Ventilation Network \(FUVN\): the Breathing City](#) (both funded under the [NERC](#) funded [SPF Clean Air Programme](#)). In response to the pandemic, he was ventilation lead within Task 7 of the Royal Society's '[Rapid Assistance in Modelling the Pandemic \(RAMP\)](#)' and is the ventilation lead for the [COVID-19 National Core Studies \(NCS\)](#) programme [PROTECT](#) funded by the [HSE](#) to manage transmission in workplaces.

He is a Co-Investigator on the [EPSRC](#) funded project [CO-TRACE](#) investigating COVID-19 transmission in schools and he led the formation of [CoSchools](#) in order to ensure long-term benefits for staff and pupils from investments driven by the desire to reduce COVID transmission in schools. Henry is joint Principal-Investigator of the [Department for Education](#)'s pilot project investigating the 'Changes In the Ventilation Of Schools when monitoring CO2 (CIVOS-CO2)' which has received funding from the [Department of Health and Social Care](#).

Henry is Principal-Investigator of the [SAMHE \(Sammy\) 'School Air quality Monitoring for Health and Education' project](#) which seeks to establish air quality monitoring in around 2,000 UK schools via teacher and pupil engagement. He was an invited author on the [SAGE EMG paper 'Role of ventilation in controlling SARS-CoV-2 transmission'](#) and the [SAGE EMG & SPI-B paper 'Application of CO2 monitoring as an approach to managing ventilation to mitigate SARS-CoV-2 transmission'](#).

2:00pm, Tuesday 27th September – CIPFA Roundtable,

Facilitated by Alex Gee, Norse Consulting

2:00pm, Wednesday 12th October 2022 - [The Construction Playbook](#): HMG response to improving built environment outcomes through smarter procurement

Richard Davidson, Director, Willmott Dixon

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TBC- Edinburgh City's continuing journey to Zero Carbon

Patrick Brown, Head of Sustainable Construction Delivery, City of Edinburgh Council

Patrick has a wide range of experience, at various times leading key aspects of building construction and operation including design, project management, facilities management, energy management, PFI/PPP operational contract management and acted as the Senior Responsible Officer (SRO) for a strategic outsourcing initiative, which reached preferred bidder stage, for all the Council's property related technical functions

Patrick currently heads the delivery of the design and project management service for CEC's (non- housing) Operational Estate.

Following the closure of the Council's (PFI) PPP1 education estate in 2016, as a consequence of a structural failure, he had a lead role in addressing the technical response to reopening the 17 schools impacted. In addition, he led the development and implementation of the Council's response to de-risking the wider Operational Estate with regard to these issues identified in the PPP1 estate failure. He also developed and implemented the response to the construction quality recommendations of Professor Cole's report which the City of Edinburgh Council had commissioned.

Patrick has a long- standing interest in energy and sustainability with a current focus on addressing construction quality issues, the emerging energy 'performance gap' and Net Zero. This interest resulted in making the case for the adoption of Passivhaus for new build projects which is now the City of Edinburgh Council's approach across its Operational Estate.

Patrick has established an informal Passivhaus Delivery Forum currently attended by eight Local Authorities across Scotland who are delivering projects to Certified Passivhaus standard. Some Authorities are now at very advanced stages of Passivhaus project delivery.

In response to the Net Zero challenge Patrick led on a pilot study examining the implications of deep fabric retrofit to enable the deployment of heat pumps (this being the current available low/zero carbon primary heating technology for many buildings at this time). In an extension to the above mentioned Passivhaus Delivery Forum collaborative effort, this feasibility approach is being considered by three other Scottish Local Authorities with a view to pooling the findings.

TBC - Decarbonisation, net zero and funding sources

David Gilbey, Faithful+Gould

TBC - Radically reducing operational energy: Harris Academy Sutton

Christian Dimpleby, Associate & Chartered Engineer, Archtype

Harris Academy Sutton is the first secondary school in the UK to meet the Passivhaus standard, delivering a beautiful learning environment and a focus on health and wellbeing.

The award-winning sustainable school in Sutton was the winner of the SPACES Awards 2021 – Civic Building of the Year and Sustainability Category and RIBA London's Sustainability Award 2022 among other accolades.

In his talk, Christian will explore how Archtype took lessons learnt from more than 10 years of Passivhaus projects to push the boundaries of scale and design.

His presentation will cover working with contractor and client to upskill and educate, simplifying complexity and detailing for contractors, as well as favouring low-carbon and biophilic materials to create a truly exemplar green space – a blueprint for a new generation of schools.

Christian is a dual-qualified Architect and CIBSE Chartered Engineer, since joining Archtype, he has developed a specialism of delivering radically low energy in-use and truly sustainable educational projects – from early years to university buildings.

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He has delivered some of the studio's most ambitious and complex designs, including The Enterprise Centre at the UEA - featured in COP26 Virtual Pavilion; and the Passivhaus Plus Hackbridge Primary School - 'The UK's first net zero school'. Christian is currently advising a number of leading organisations to help them monitor and meet their sustainability goals in the face of the climate emergency.

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