BURO HAPPOLD

Global Sustainability Report

2021

Contents

Cover
Betsiboka River, Madagascar

There is no clearer signal that the climate and biodiversity crisis is happening now, than the catastrophic erosion suffered by the Betsiboka River in Madagascar. Removal of the surrounding native forest has led to massive soil losses approaching 250 metric tonnes per hectare, the largest amount recorded anywhere in the world. **Betsiboka River**

IMAGE: Elen11 / Getty Images

1.1 Foreword

James Bruce
CEO

Human-induced climate change is happening. Extreme floods, punishing heatwaves, severe droughts and major storms are increasing in both severity and frequency. The social, environmental and economic implications of these cannot be ignored and must be addressed now, by all of us.

At Buro Happold, we believe collective action is the best way to address the climate and biodiversity crisis. It is our responsibility to design and create environments that are sustainable and fair. Every engineer, consultant and advisor must put the environment at the heart of their work.

Since our last report, I am pleased to tell you that Buro Happold reached its first net zero goal for 2020/21 by setting Science Based Targets to reduce carbon emissions and by offsetting residual emissions. Now, we aim to:

1. Reduce our own operational carbon emissions by 21% by 2025.
2. Design all new build projects to be net zero carbon in operation by 2030.
3. Reduce embodied carbon intensity of all new buildings, major retrofits and infrastructure projects by 50% by 2030.

Buro Happold remains committed to reporting and holding ourselves accountable to our people and the wider industry, and this 2021 Global Sustainability Report outlines clearly how we are progressing along our sustainability journey.

We need to act now

There is hope; it is still possible to change course. If we make major reductions in greenhouse gas emissions, we can limit global warming to 1.5 degrees. This will mean environmental justice for all.

Tackling the climate and biodiversity crisis is both our greatest challenge and our greatest opportunity. By working together, our people have the courage and the skills to make real and lasting change. The time for talk is over. We must all take collective action, now.

Joined the

RACE TO ZERO

Business Ambition for 1.5°C

Reduce embodied carbon intensity of all new buildings, major retrofits and infrastructure projects by

50%

by 2030

Design all new build projects to be

net zero carbon

in operation by

2030

> **It is unequivocal that human influence has warmed the atmosphere, ocean and land...”**
>
> UN IPCC Sixth Assessment Report

Collective climate ACTION

IMAGE: Allain Siddiqui / Unsplash

1.2 Executive summary

Duncan Price
Partner
Sustainability and Climate Change

This report is being written at a pivotal moment. The publication of the UN IPCC Sixth Assessment Report, the COP26 climate summit and the associated Race to Zero campaign have shifted the political narrative, catalysing client commitments like never before.

This, in turn, is driving the supply chain. Initiatives like the RIBA Built Environment Summit, UKGBC Net Zero Whole Life Carbon Routemap and the global Built Environment Declares campaign are bringing a coherent voice to the sector with a single message; we must act now on climate change, and the built environment sector is ready to deliver.

The last 12 months has seen a remarkable rise in ESG investment. There is a wall of money looking for a home and many of our clients are impatient to demonstrate positive social, economic and environmental outcomes. Businesses across all sectors are creating and embedding both strategies and targets into their portfolios and projects.

We seem to have reached a tipping point in public consciousness of the impact of climate change. Most people now understand that it is real, happening now and poses systemic risk to real assets, cities and communities. As we begin to emerge from Covid and look to the future, we have learnt a lot about the way we engage with the built environment. Hybrid working models and the development of 15-minute neighbourhoods are just two ways in which our design work is changing.

Sustainability leadership

Buro Happold is clear in its mission to be recognised as a leader in sustainability. We have, once again, benchmarked our sustainability performance though the UKGBC 360 Leading the Way report. This ensures we remain comprehensive in our approach to setting sustainability goals, hardwiring these into our systems and processes and measuring performance across our operations and our projects.

This year, we are programme partners for a range of important initiatives, including Advancing Net Zero, Resilience and Nature-Based Solutions, Circular Economy and Social Value. We are programme partners for the World Green Building Council Better Places for People, including the Beyond the Business Case task group report being launched at COP26.

We have worked closely with C40 Cities on their Clean Construction programme, helping six cities in different continents assess how to transform their construction sectors to adopt the clean construction hierarchy. We've also supported another 25 to develop building-related policies and programmes that help to meet the goals of the Paris agreement.

From Battery Park City to Deutzen Hafen district, Santa Monica City Hall to the Aviva sustainable design programme, this report shows how we are supporting major investors, developers, asset owners and occupiers across the world to set and embed realistic and achievable ESG goals at every scale.

What Buro Happold is going to do

As we look beyond COP26, we will be scaling up and accelerating action on sustainability and climate change right across the Practice. We are pleased to launch our ESG consulting service, where we bring together the very best of our global talent to offer strategic insights and technical delivery that allows our clients to turn commitment into genuine action. Our approach to net zero carbon is now mainstream, with the embedment of systems, processes, data and dashboards to capture performance across our portfolio of projects,

benchmark best practice and use data science to accelerate learning for clients and collaborators.

Nature-based solutions, the circular economy and the importance of social value are increasingly part of our clients' agendas, and we continue to invest in these areas.

We know that managing risk is vital. Our role at Buro Happold is to understand, assess and manage the systemic risk posed by climate change, to ensure our clients' assets and the communities that use them are resilient for the future.

We are pleased with the progress we have made, but are under no illusion that the challenge ahead is far greater. We must focus on realising a sustainable and equitable built environment, delivered with the power of collective action across our industry.

Key achievements in 2021

Set near-term science based targets covering Scopes **1, 2, 3**

Setting and embedding **ESG targets** for clients

Offset **operational emissions** for 2019/20 and 2020/21

Set a **net zero target** in line with a 1.5°C future

Taken a **leading position** in the industry

2. Climate change

Smith
Director of Sustainability and Physics

Sara Kingman
Senior Sustainability Consultant

Another year has passed, and we have clearly not resolved the climate crisis. From US wildfires to extreme flooding in Belgium, Germany, Sydney, New York, and China's Henan Province, unprecedented snowfall in Spain to cyclones in Fiji and Indonesia, communities are being harmed at a rapidly increasing rate, increasing pressure and risk to food security, access to medicines, and changing disease patterns[1]. Not to mention the habitat and biodiversity loss as a result of these extreme weather events is destroying ecosystems.

Current policies in place around the world are projected to result in about 2.9°C warming above pre-industrial levels. Even if all current Paris agreement climate pledges are met, the world is expected to experience a temperature rise of about 2.4°C by the end of the century[2]. We have reached the point where we must not only continue to fight climate change, but must accept that natural disasters will occur with increasing frequency. Resilient design must be incorporated into climate action strategies in every instance.

"It is unequivocal that human influence has warmed the atmosphere, ocean and land… Unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach."

UN IPCC Sixth Assessment Report

What needs to happen?

We have the intelligence and the technologies necessary to correct this now. Decarbonising our buildings, infrastructure, and energy supply must be achieved in a manner that provides all communities equal access to affordable and clean energy. So what can we do?

Consider whole-life carbon

Decarbonisation must take into account the embodied energy in our construction materials and processes, in addition to the operational energy used to power our buildings. Embodied energy is still not fully incorporated into the design process, and we must all 'wake up' to the fact that the best way to avoid emitting embodied carbon is to make better use of our existing building stock and reuse existing materials; this should be an established step in early design stages.

When new materials cannot be avoided, designers must prioritize specification of products and materials that have third-party verified Environmental Product Declarations (EPDs), which disclose the amount of embodied carbon emitted in the manufacturing of the product.

Lower energy demand, then decarbonise it

Do we really need to use this much energy? The first step must be to lower energy demand in our buildings as much as possible, and then decarbonise the fuel sources. However, full decarbonisation will not be achieved working in silos. We must urge research institutions to explore emerging technologies jointly, encourage manufacturers to develop equipment such as heat pumps, and push for policies that encourage and support these new technologies.

Put resilience at the heart of design

Risk from flooding, storms and other natural disasters has increased, even in regions where it wasn't an issue in the past. Our engineers must offer clients the most resilient strategies and encourage them to invest in these solutions. The standards to which we must design have changed and mitigating the increasing risk from natural disaster must be a core driver in design decisions.

Above all this, we must continue to place local communities at the forefront of our design decisions. All humans feel the impact of climate change, and everyone must be considered and involved in the solutions.

Developed climate action plans for

26

cities

Advancing

net zero carbon

programme partners

1. https://www.who.int/news-room/fact-sheets/detail biodiversity-and-health
2. https://climateactiontracker.org/global/temperatures/

IMAGE: Maksym Tymchyk / Unsplash

Advised on net zero carbon strategies for over

£100bn assets

under development or management

What are we doing about it?

At Buro Happold, it is our responsibility to advocate for the most sustainable, resilient, and low carbon option in all projects. While we are willing to admit that the absolute best solution is not always taken forward, we recognise that it is always our responsibility to advocate for the best.

With COP26 being held in Glasgow this year, we are engaged in a number of industry initiatives that demonstrate how the built environment can be a transformational force in addressing the climate and biodiversity emergency.

Industry initiatives

- **World GBC's Beyond the Business Case**
  Aimed at the global real estate sector, this report aims to drive investment in sustainable buildings. Buro Happold is a project partner and task group member for this narrative that illustrates the implementation of sustainability strategies from actors across the value chain, demonstrating a range of geographies, typologies and industry stakeholders. Due to launch at COP26.
- **UKGBC's Net Zero Whole Life Carbon Roadmap**
  Buro Happold sits on the steering group and task groups of the UKGBC's Net Zero Whole Life Carbon Roadmap. The report, also due for launch at COP26, aims to establish clear sector-based carbon allowances, targets and actions as well as build widespread industry buy-in to the pathway laid out.
- **RIBA and Architects Declare's Built for the Environment and the Built Environment Summit**
  A message from the international built environment sector to governments. Built for the Environment, written by Buro Happold on behalf of RIBA and Architects Declare will be presented at COP26 and at RIBA's Built Environment Summit.

  Endorsed by over 200 organisations including C40 Cities, the Global Alliance of Buildings and Construction, and the World Green Building Council, the report proposes that by looking at the built environment as a system, and by leveraging the ability of governments to provide not only regulation but also infrastructure and support, we can unlock the sector's complex and interdependent systems, and facilitate the change required to meet our collective 1.5°C target.
- **SEC Campus and Clyde Mission Masterplan**
  The Scottish Event Campus (SEC) is a key host venue for COP26. Buro Happold has carried out its zero carbon energy strategy that includes district heating/ ambient loop, heat pumps, and modifications to existing building systems. We are also delivering the masterplan for renewable and low carbon energy projects in the wider Clyde Mission area.

Projects that put sustainability first

Over the past year, Buro Happold has advocated for the most sustainable solutions wherever possible. Here's a selection of some of our most transformative projects:

- **C40 Cities – Clean Construction Deep Dives**
  The first in a series of Clean Construction deep dives. These studies support cities in delivering the transition to resource-efficient, whole-life, net zero building, and zero emissions construction sites. Toronto is the first in a series of six cities that is providing local, actionable advice to help its city leaders make the case for clean construction, as well as offering guidance to other cities around the world.
- **C40 Cities — Buildings Technical Support**
  Technical support to inform the development of 26 cities' Climate Action Plans across Asia, Africa and South America. This work focused on decarbonisation policies and programmes for new and existing buildings, driving urban action that reduces greenhouse gas emissions and climate risks, while increasing the health, wellbeing and economic opportunities of urban citizens.
- **C40 Cities — Guide to Writing a Paris Agreement Compliant Climate Action Plan**
  A guidance document for writing climate action plans compliant with the Paris Agreement. The guide provides cities and communities with essential support, covering technical content, stakeholder engagement, structure and key messaging.
- **Los Angeles County Climate Vulnerability Assessment**
  The Los Angeles County Climate Vulnerability Assessment identifies the people, systems, infrastructure, and places that are most vulnerable to the increasing impacts of climate change. The assessment will serve as the foundation for future adaptation planning, advocacy, and community resilience efforts across Los Angeles County.
- **CommuniHeat**
  CommuniHeat's ambition is for Barcombe to become the first net zero village in the UK. This pilot project is a model for how rural communities in the UK can take ownership of their energy and switch to a low-carbon heating system over the next 10 years, in a way that ensures comfort, affordability and a smooth transition for all. A partnership between Barcombe, local energy group Ovesco, Buro Happold and UK Power Networks.
- **Royal London Asset Management**
  We are working with RLAM as strategic consultants to develop a robust sustainability framework and strategy for their new-build and refurbishment real estate development funds. We are devising solutions to track and review developments in a visual way and to ensure a robust reporting system is put in place to challenge and drive continual improvements. New guidelines, actions, and procedures help design teams understand and implement the standards. By reviewing developments in construction, we are showcasing best practice as well as reporting sustainability performance through industry-recognised benchmarking schemes.
- **BHoM LCA-Toolkit**
  A key step towards addressing the whole-life carbon of our buildings is to understand the amount of embodied carbon in our existing buildings and that associated with all new construction and major renovation projects. To better allow designers to quantify the embodied carbon of our designs, we developed an LCA-toolkit within Buro Happold's own Building and Habitats objects Model (BHoM), an open-source platform for code collaboration and co-creation for the AEC industry.

  The LCA-toolkit provides a flexible structure for performing LCA by linking open-source LCA data with high-fidelity BIM information, helping the user calculate embodied carbon with ease. Currently supporting Rhino and Revit geometry input, the tool is useful for early comparative design studies, as well as approved for submission for ILFI programs including Net Zero Carbon and the Living Building Challenge. Notably, the LCA-Toolkit project won the AIA Technology in Architectural Practice (TAP) Innovation Award in 2020.
- **Cold Climate Electrification**
  US policy has moved at a rapid pace to increase Renewable Portfolio Standards state by state. Buro Happold has examined and analysed decarbonisation through building electrification in order to reduce operational carbon. Conversations with manufacturers demonstrated the necessity of improving heat pump technologies across cold climates, further providing solutions for fossil fuel-free heating. Continuing relationships with the Rocky Mountain Institute, the Illinois Clean Energy Trust and the Massachusetts Department of Energy Resources (DOER) focused our climate policy knowledge into project implementation, notably One Boston Wharf Road in the Boston Seaport, a 3 million ft² mixed-used development near Kendall Square in Cambridge, MA, plus other confidential office and laboratory projects.
- **Building Energy Decarbonisation Plans**
  Greater Manchester's public sector organisations are making progress with decarbonising their estate. GM partners received £78m Salix's Public Sector Decarbonisation Scheme 1 (PSDS 1), to fund energy interventions that will decarbonise over 150 public sector buildings. GMCA realised that the partners were lacking an evidence-backed action plan to achieve carbon neutrality by 2038. Buro Happold was commissioned by GMCA to create Building Energy Decarbonisation Plans (BEDP) for the PSDS 1 public sector partners. The Plans provide partners with the necessary data insights and tools as well as setting out a standardised approach that could be replicated across partners, which puts us in a much stronger position for collaborative working. Each BEDP describes how the partner intends to replace fossil fuel reliant systems with low carbon alternatives. The Plans come with a toolkit that provides users with the ability to define their own decarbonisation pathway together with the impact of cost and carbon savings. Once implemented with the recommended carbon pathway, GMCA public sectors will be on track to meet carbon neutrality targets by 2038.

C40 CITIES — CLEAN CONSTRUCTION DEEP DIVES
Toronto is the first in a series of six cities across six continents, each providing local, actionable advice to help city leaders make the case for clean construction and offering guidance for other cities around the world.

Unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach.”

UN IPCC Sixth Assessment Report

Collective climate ACTION

IMAGE: Brian Wangenheim / Unsplash

3. Biodiversity

Sam Holliday
Head of Ecology and Biodiversity Management

Jenny Ross
Senior Ecologist

MAYFIELD DEVELOPMENT
Manchester, UK

Walking to work beside a babbling river, the sound of birdsong replacing the thrum of traffic. Breathing fresh air while surrounded by nature, but only being five minutes on foot from the city centre. This could not sound further from the everyday experience of city living, but Buro Happold is paving the way to make this dream a reality.

In 2019, alongside the Climate Emergency, a Biodiversity Emergency was declared to bring to the fore the rapid loss of species and decline in habitat and ecosystem conditions globally. There is an inextricable link between both emergencies, and one cannot be considered without the other.

Increasingly, the role that ecosystems play in sustaining the environment on which humans depend is being recognised, as is the need to retain, sustain and repair these systems to maintain the services they provide. Biodiversity loss is known to disrupt the functioning of these ecosystems, making them more vulnerable to other environmental changes exacerbated by climate change, and less able to provide the services we rely on.

In the UK, Biodiversity Net Gain is due to be brought into legislation. This means that all actions that may cause a change in land use – such as development and/or changes in land management – will need to demonstrate that they will leave biodiversity in a measurably better state than it was beforehand, using the quantifiable Biodiversity Metric 3.0.

While it is recognised that this is not a panacea to all things biodiversity-related in the UK planning system, it is an important step in bringing biodiversity issues into mainstream consciousness. The legislation will also hold companies responsible for demonstrating that biodiversity has been proactively considered in the development process.

Likewise, globally, the need to integrate environmental requirements into project design has become ever-more important as companies become increasingly aware of their environmental and social governance responsibilities. However, there is still a long way to go before biodiversity planning and management is truly integrated into all stages of project design and management.

Embedding biodiversity into the planning process

Protecting and enhancing the natural environment should be at the forefront of all development planning to ensure that a truly sustainable approach is taken towards a better and greener future.

Biodiversity and ecosystems need to be considered at the earliest possible opportunity to identify where actions may cause adverse impacts to biodiversity and seek avoidance and protection measures at the outset. This should also include an assessment of the additional ecosystem function of habitats, such as soil stability, ground water infiltration, potential to reduce the urban heat island effect, providing access to nature for people, and climate change adaptation and resilience.

Wider implications of project impacts in relation to biodiversity should also be examined more fully than they currently are. Most consideration around biodiversity relates to the ecology of a project site and its zone of influence. However, the need to look at the origin of construction material, and the potential impact on biodiversity from related extraction and manufacturing activities (i.e. the wider ecological footprint) is not yet integrated into the planning process.

No Net Loss is no longer enough

In the face of the Climate and Biodiversity Emergencies, the principle of No Net Loss is no longer acceptable. Instead, all development should be mandated to provide a biodiversity net gain.

While it is recognised that biodiversity net gain metrics are in their infancy and continue to be developed, we would like to see a system in place that takes a more holistic, ecosystem-based approach to planning. Consideration of species lifecycles and the habitats that support different life-stages, ecosystem function and services, climate mitigation potential, and the ecological footprint of a development, should be central to the planning and assessment process.

Promoting biodiversity best practice

Buro Happold's Ecology and Biodiversity Management team are working to push the boundaries of best practice in this area. Together, we:

- Strive to incorporate biodiversity considerations into every stage of the planning and development process – from pre-planning strategic assessments through to the design, construction and operational phases
- Work on the basis that early intervention, and integration through collaboration, are key
- Follow recognised global best practice by actively seeking to adhere to the Mitigation Hierarchy of first avoiding impacts, before going on to minimise and finally mitigate and offset them, at each stage of every project we work on
- Consistently challenge traditional thought processes and look for innovative solutions to complex multidisciplinary issues.

We believe a shared understanding creates shared passion."

All UK projects to seek to deliver a biodiversity net gain of **10%** by end 2021

Applying these principles to projects

On our Middle Eastern projects, where we have been engaged to look at biodiversity enhancement opportunities, we are examining the principle of net gain differently. Instead of approaching it simply in terms of replacement of habitats on a geographical scale, we endeavour to answer important scientific questions.

What does it take to create a net gain for a threatened species over time? What are the important habitats for that species over its life cycle? Can we conserve/enhance these habitats while removing/minimising other threats to the population?

This kind of thinking looks at the wider ecosystem relationships of species and habitats, as well as taking a life-cycle approach to examining biodiversity net gain rather than a simple quantitative habitat assessment and replacement approach.

In the UK, we are implementing a more holistic approach to nature-based solutions assessments. By combining this with other considerations, such as social equity, health and wellbeing, and future UK policy reforms, we can ensure that our recommended approach stands the test of time and tackles multiple issues faced by government authorities in future land-use planning.

Working together for a better future

We believe a shared understanding creates shared passion, and that this is what is needed to continually push the boundaries of best practice.

Central to this ethos is collaboration. We work with globally recognised scientists, and species and habitat experts to ensure that we are providing the latest and most robust scientific advice to conserve important biodiversity, as well as creating a transparent approach to the decision-making process on developments.

We also collaborate across the project team – with clients, architects, engineers and contractors – to ensure that everyone has a joint understanding of the ecological sensitivities involved. This allows us to facilitate an integrated approach to dealing with these through sensitive development throughout a project's lifecycle.

This year, to further our in-house expertise, Buro Happold is funding a PhD which aims to better understand the ecological footprint of new build initiatives through the development and testing of ecosystem-based sustainability criteria.

98%

of our employees feel that they have a responsibility in creating an inclusive culture

IMAGE: Renee Fisher / Unsplash

4. Health, wellbeing and equity

Heidi Creighton
Associate Principal, Sustainability

Lucy Miller
Global Head of Inclusion, Diversity and Engagement

The people paying the greatest price for climate change are those with the least amounts of resources to combat it. Rising temperatures, flooding, wildfires, pandemics, and other shocks and stresses disproportionately impact vulnerable marginalised communities who are less resilient to recover from these events.

As buildings generate nearly 40% of annual global emissions, there are many things that we in the AEC industry can do to address these inequalities. Actions primarily revolve around decarbonising our building stock and providing a platform for those not typically involved in decision-making processes.

We must understand the impact and social value of our work. This means embedding equity in all our projects, amplifying the voices of those most impacted by climate change, and ensuring that critical investment goes to the communities that need it the most.

The AEC community must continue to lead change as we transition towards decarbonisation, strengthening our resolve to make the green recovery healthy, resilient, sustainable and more equitable for all. To achieve this, we aim to:

- Join aligned organisations and support them in their advocacy efforts
- Embed equity into our approach and team makeup when pursuing a project
- Hold an equity workshop during early design phases
- Engage stakeholders meaningfully so they can voice the needs of the community
- Specify materials with consideration, not only for the health of building users, but also for the communities where raw materials are extracted, the manufacturing workers, and the demolition workers who are impacted by our choices.

Designing with a human-centric approach and raising the voices of those affected by our industry will positively impact our designs and will result in more equitable project outcomes. We must all play a key role in advocating and designing with empathy to create a resilient future in which people thrive.

Turning words into actions

In 2018, Buro Happold was appointed by C40 Cities Climate Leadership Group to assist in the development of an Inclusive Climate Action – In Practice report, which outlines how seven cities are taking progressive action to address both social inequality and climate change simultaneously.

We also worked with Liberty Hill Foundation and five 'anchor' community-based organisations (CBOs) to design and implement a stakeholder engagement process to aid the development of OurCounty: The Los Angeles Countywide Sustainability Plan.

Currently, the West Hollywood Climate Action and Adaptation Plan sees us working alongside Pueblo Planning to prioritise equity through QTBIPOC populations, who are most vulnerable to the impacts of the planning process but often left out of consultations.

"We should try to be honest, considerate and trustful in our dealings, refuse to design or deal in things which are hurtful to society, and should not make a profit at the cost of the community."

Sir Ted Happold

Happy people, healthy planet

We need to approach every project with a holistic view on health, wellbeing and social equity. This means understanding the importance of users in the economics of design so we can move beyond first costs to look at the triple bottom line (TBL) of people, planet and profit. Early collaboration among the team, and engagement of stakeholders in both the problem-solving and decision-making process, will enable us to design healthy, high-performance spaces.

Given that we spend 90% of our time indoors, we should feel confident that our surroundings support our health, wellbeing and quality of life. Proper ventilation and air filtration can eliminate odours, allergens and viruses that inhibit cognitive function or cause illness. Other critical areas of focus include **water quality**, green cleaning, access to nature, inspiring movement, comfort, and disposal of waste.

Designing for everyone

At Buro Happold, we believe that great design is inclusive from the start. This year, our inclusive design team has grown and we now have eight specialists providing design advisory services for high-profile projects such as the **Future Olympia** theatre development, **Moorfields Eye Hospital and UCL Institute of Ophthamology** and new facilities for the **Guide Dogs Association**.

The team is also expanding its consultancy offer to provide a trusted advisor service to an increasing list of clients. This role involves providing best practice advice, as well as writing policy documents and external guidance for public sector organisations. To date, we have contributed content to the **BSI COVID-19 Safe Working Guidelines** and undertaken technical authorship of **PAS 6463: Design for the Mind: Neurodiversity and the Built Environment**, a new British standard providing design and management guidance to reduce sensory overload for people with sensory processing differences.

The guidance is out for public consultation until early November and will be published in its final format in Spring 2022.

> **We are all multi-dimensional, there is no one-size-fits-all.**
>
> **Jean Hewitt**
> **Senior Inclusive Design Consultant**
>
> **Giving your workforce choices is at the heart of true inclusion**

Change comes from within

As we learn how to navigate our way through the effects of the pandemic, Buro Happold's internal practices continue to focus on our inclusion efforts through an **equity lens**.

Our commitment to **Equity Above All Else** remains strong. We are proud to see the collective efforts of our employees come to life through our project work, and the benefit this brings to the communities we serve.

As a global business, we have concentrated on ensuring that each of our regions has a clear plan of action as outlined in their regional equity plans. Within these plans are metrics that highlight improved representation of minority groups, more complete demographic data collection, gender pay gap reductions and insights into retention.

By adopting a model of **continual listening**, we will use data to help us better understand the employee experience, which allows us to measure inclusion at Buro Happold. We are dedicated to monitoring our progress and holding ourselves accountable through improved people analytics. Analysing and publishing our **UK Ethnicity Pay Gap** for the first time is an example of this.

In response to the findings of our externally led **Inclusion Audit**, we are looking at ways to enhance our supplier diversity. Engaging with **minority or women-owned business collaborators** is a priority for us. Moreover, we are helping all those we engage with on their inclusion aims where possible.

In partnership with trusted organisations and leading institutions, we are continuing to work to **reduce barriers** into entering the architecture, engineering and construction (AEC) industry. In addition, we are engaging with mentoring and internship programmes such as **#10,000 Black Interns**, the **ACE Mentor Program**, **The Intern Project**, and the **RAE Engineering Leaders Scholarships** scheme. In turn, we are increasing the breadth of our talent pipeline through ensuring opportunities to enter the profession are available to everyone, including marginalised communities.

Building on the work we have done over the past 12 months on **inclusive behaviours and leadership**, we have chosen allyship as our 2022 focus. We recognise that this is a life-long process of building relationships based on trust. Therefore, we are equipping ourselves with the knowledge and tools to actively promote and advance inclusion at Buro Happold and within the AEC industry as a whole.

Our 2021 Culture Survey revealed that 98% of employees feel that they have a **responsibility for creating an inclusive culture**. Our next step is ensuring that everyone has the tools and confidence to do this comfortably. Creating psychologically safe spaces for employees will be key to our success.

We are excited to be working and learning as one collective global practice. Together, we are shaping a more inclusive and equitable future for ourselves and our communities.

2 REDMAN PLACE, LONDON, UK

The highest sustainability standards at work

Buro Happold was engaged for both BREEAM and WELL for this nine-storey office building in the vibrant International Quarter London (IQL). From design through to construction, health, wellbeing and sustainability were the guiding principles behind this exceptional commercial project.

Sophisticated sustainability elements include rainwater harvesting that saves the equivalent of 4.5 Olympic-sized swimming pools of drinkable water annually, as well as a sizeable biodiversity roof. One of London's largest 'living walls' creates a 2,000m^2 habitat for wildlife, and measures such as triple glazing and solar panels reduce CO_2 emissions by 304 tonnes a year.

From a wellbeing perspective, the air conditioning system provides 100% fresh air, while floor-to-ceiling windows allow natural light to penetrate all sides of the building and offer uninterrupted city views.

Efficient heating and cooling systems keep the internal temperature at a comfortable 22 – 24°C and ambient noise is kept at optimal levels across the building. Showering, changing and storage facilities for 212 bikes also encourages cycling to work. The active staircase invites people to not use the lifts, which saves energy and increases people's fitness. The abundant access to nature is good for people's mental health and the site biodiversity. Finally, the natural materials used in the reception fit out decrease the use of oil based paints and adhesives which reduces the concentration of volatile organic compounds (VOCs) and improves air quality.

Meaningful community engagement and social value was engendered through a number of initiatives. For example, Year 12 students from a local school designed boxes for birds and bats to be installed on the roof, and a progressive approach to the care of construction workers saw mental health becoming a mandatory part of site inductions. Onsite welfare provision incorporated healthy, fresh canteen food and a calm rest space for breaks.

With this project, Buro Happold has demonstrated that it is possible to achieve the highest levels of sustainability and wellbeing by looking at the synergies between these two goals.

The result is a flexible, modern office building equipped to respond to rapidly evolving workplace needs, which also delivers exceedingly high levels of social, economic and environmental sustainability.

94% BREEAM Outstanding
The second highest score in the UK for a commercial building.

WELL Core & Shell Gold Certification
One of an exclusive group of buildings worldwide with this prestigious International WELL Building Standard award.

Client: Lendlease Development
Architect: Rogers Stirk Harbour + Partners

94%
BREEAM
Outstanding

WELL
Core & Shell
GOLD
Certification

IMAGE: Sean Pollock Photography

5. Circular economy and resource efficiency

Georgina Chamberlain
Associate
Sustainability

A stark thought piece from the Ellen MacArthur Foundation[1] noted a renewable energy transition would only address 55% of global greenhouse gas emissions. The remaining 45% is from industry, agriculture and land use, that is, what we consume as an industry, in our workplaces and in our everyday lives.

In addition, more than 90% of biodiversity loss is due to the extraction and processing of natural resources[2]. A paradigm shift to redefine our relationship with resource consumption is clearly needed to restore planetary health.

With the construction industry worldwide responsible for around 60% of material use and 10% of greenhouse gas emissions[3], Buro Happold, together with our clients and collaborators, can truly make a difference.

Buro Happold is proud to have worked in partnership with C40 Cities since the launch of its global Clean Construction Programme in 2019. It has undertaken a series of deep dives into cities around the world to help mega-cities transition to resource-efficient, zero-emission construction, which also delivers healthier buildings and better air quality to millions around the world.

In March 2021, our research, commissioned by the Aldersgate Group, Fostering Prosperity[4], reviewed the role of environmental regulations in driving innovation and creating market opportunities. The research identified potential major systems benefits from an effective transition to a circular economy. These included clean growth and jobs, health and wellbeing and climate resilience. However, more policy on driving collaboration within and across sectors is needed to defragment the supply chain.

This recommendation complements our ongoing support of the UKGBC's Circular Economy Programme. The principal aim is to reinforce the business case for change, examining metrics to measure and drive success, as well as clarifying the co-benefits of embodied carbon reduction and strengthening the link to wider environmental social governance reporting.

We want our clients to have the appetite to push boundaries with us. Our engineers believe strongly that circular economy principles should be integrated into all our projects as the norm, supplemented by the latest thinking and innovation around delivering circular buildings, masterplans and cities. In April 2021, we partnered with consultants Shift Actions to undergo an intense innovation sprint around circular economy to unpack industry readiness and appetite for change. As part of this sprint, we interviewed 24 clients, architects and collaborators. 8% identified circular economy as a business priority, with the remaining group indicating it as an emerging priority. They identified the key barriers to its adoption as:

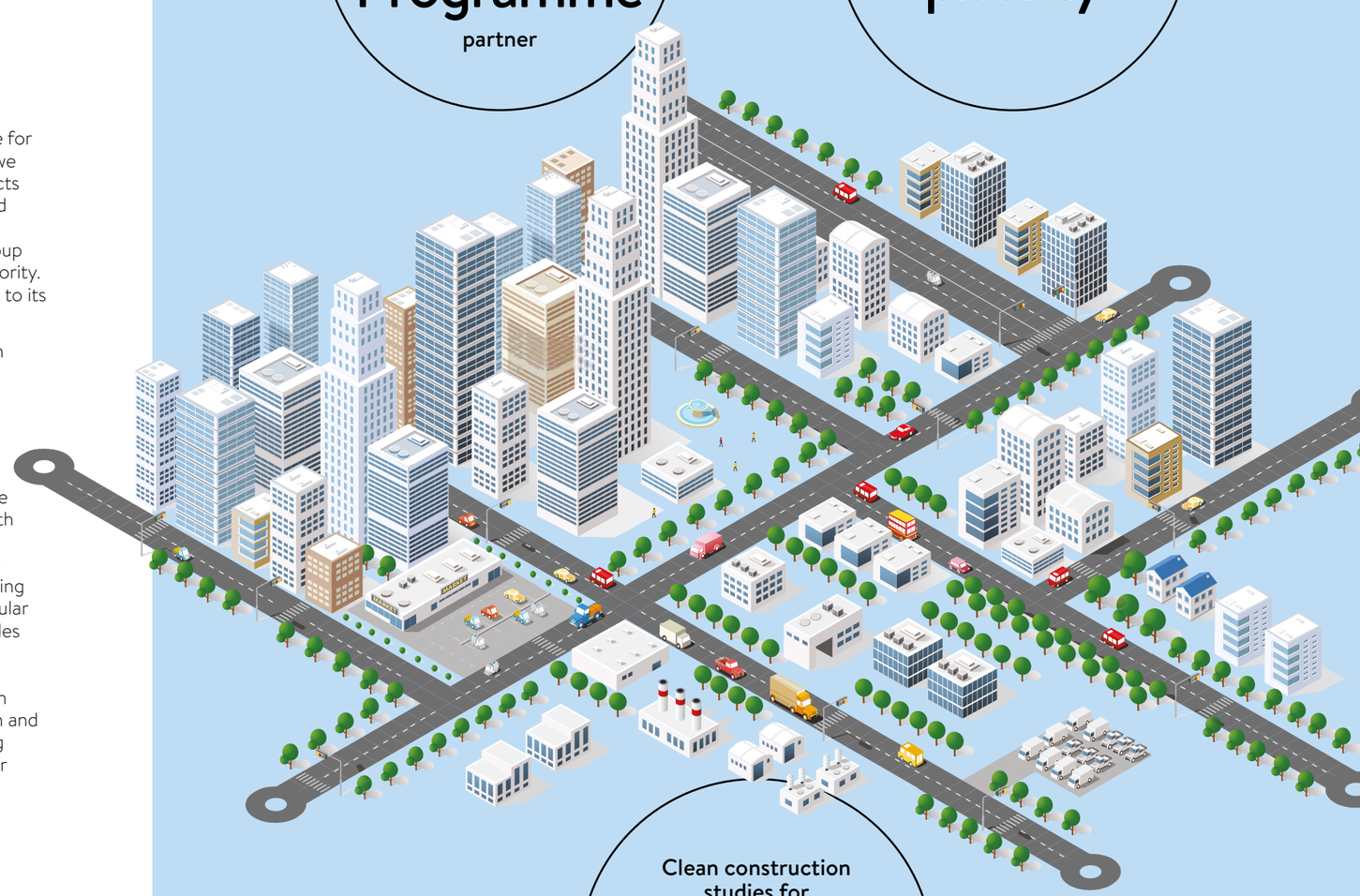
- Clear definition for adoption on a project
- Consistent value framing
- Metrics for accountability and measuring success

These findings further reinforce the importance of our work with the UKGBC and C40 Cities, complemented by our ongoing internal investment in normalising and innovating around the circular economy principles. This includes our **Re:boot** campaign to help reimagine stranded assets and a **C:Lab** project exploring urban mining, both of which underpin and strengthen the case for making circular economy central to our design work.

1. Fixing the economy to fix climate change (ellenmacarthurfoundation.org)
2. Biodiversity – overview (ellenmacarthurfoundation.org)
3. 2020 Buildings GSR_FULL REPORT.pdf (globalabc.org)
4. 1845 (aldersgategroup.org.uk)

UKGBC
Circular Economy Programme
partner

A current or emerging
business priority



Clean construction studies for
6 global cities

Image: Getty Images / alexangel21

6. Aviva Investors

Embedding ESG goals into Real Assets business

Buro Happold has been appointed by the Real Assets business at Aviva Investors to embed sustainability standards throughout its development portfolio and help the organisation achieve its own ambition of becoming carbon net zero by 2040.

Aviva Investors (AI) is the investment arm of Aviva plc, a large financial services company that provides a range of insurance and investments. AI's Real Assets business offers finance in the form of loans against a range of assets, including more than 400 buildings in which they hold equity and actively own.

At the beginning of 2021, Buro Happold was commissioned to support and advise the organisation on transitioning to a low carbon economy and Buro Happold Associate Director for Sustainability, Trevor Keeling, was seconded to the organisation. By embedding directly into our client's business, we were able to fully understand its internal processes and how it operates.

Our experts have produced a set of Sustainable Design Standards, benchmarked against industry performance. We have now begun the process of embedding these standards throughout the organisation's processes; acquisition, property development, investment reviews and tenant leasing. Buro Happold has also acted client-side to ensure that developments (new build, refurbishment and key capex projects) are fully aligned with the Sustainable Design Standards.

IMAGE: Baona / Getty Images

Transformational outcomes

The brief also ensures all new acquisitions and developments meet BREEAM Excellent standards and can show a route towards reaching Outstanding. The standards include operational energy targets, including in-use energy of 100kWh/m^2, are fossil fuel free and meet EPC A standards. There has also been a drive from the organisation to ensure it fully understands the embodied carbon within its portfolio – with standards determining that the group should work towards achieving embodied carbon of less than 600kgCO_2/m^2.

In terms of wellbeing and social standards, the portfolio also now needs to report against Aviva social value metrics and reference the WELL Standard.

"We are changing the way an institutional investor operates. This is literally changing the system from the inside," said Trevor Keeling. "We do this in a pragmatic way informed by deep technical expertise and a compassion and understanding of our client's goals and ways of operating. By doing this we help to create a future where our pensions and investments are resilient to the stresses and strains of climate change. The next 10-20 years are going to be crucial. But then Aviva can trace its history back 325 years. I suspect they'd like to reach 1,000."

"In the short term, Buro Happold's work is helping them transition their portfolio of buildings. This helps them attract investments from investors interested in climate change. It also helps them increase resilience to the expected impact of climate change over the next 30 years."

Expert guidance

Being seconded to the organisation means Keeling is on hand at any time to feed into every stage of the organisation's transformation. The client has also benefitted from having access to Buro Happold's broad range of expertise through its multidisciplinary teams across different specialisms.

"We're already seeing examples of the organisation making different decisions on its portfolio, and also examples of where the Sustainability Design Standards are driving real changes," Keeling says.

"For example, industrial units have gone from using gas boilers to heat the attached office spaces, to be replaced by more environmentally sustainable heat pump systems. There have also already been examples of developers changing their sustainability standards because they want to work with the portfolio. So, there is a clear knock-on effect to big organisations like Aviva Investors driving positive change in this way."

> **"We're already seeing examples of the organisation making different decisions on its portfolio, and also examples of where the Sustainability Design Standards are driving real changes."**
>
> **Trevor Keeling**
> **Associate Director for Sustainability**

7. Battery Park City Sustainability Plan

Driving action at neighbourhood level

IMAGE: Aerometrex / Adobe Stock

Battery Park City is a unique district of New York. The 92-acre planned community is located on the west side of the southern tip of Manhattan — close to the site of the 17th century artillery battery that once defended the approach to the Hudson River.

Born of a mid-1960s regeneration project in the former downtown port area, Battery Park City has a long history of environmental leadership, building its status as a model for sustainable, mixed-use urban development.

Managed by the Battery Park City Authority (BPCA), the neighbourhood, with its expansive waterfront parks, has always placed a strong emphasis on recreational space and the provision of opportunities for residents to engage with nature, despite living at the heart of the best-known urban landscape in the world.

In 2019, the BPCA Board of Directors passed a resolution to develop a 10-year sustainability plan that would build momentum and put Battery Park City on a path towards carbon neutrality by 2050. In addition to internal goals, New York City's Local Law 97 stated that buildings in the city must reduce their operational carbon emissions by 2030. These twin challenges created an opportunity for BPCA to pool resources and develop a clear, actionable plan for the next few decades of climate action.

Buro Happold was selected to lead a team of specialist consultants to work with BPCA to provide a route map for that journey. This would be done through three documents: the Sustainability Plan, the Green Guidelines, and the Sustainability Implementation Plan. The Sustainability Plan set the vision for a 10-year plan for sustainability. The Green Guidelines outline best practice on sustainability interventions, and the Sustainability Implementation Plan details specific steps to achieve sustainability milestones and targets.

Driving collaboration

To complete the suite of sustainability documents, Buro Happold assembled a multidisciplinary team of experts. The team thoroughly assessed BPCA's assets and identified opportunities for optimising resource use and environmental benefits.

At the heart of the Sustainability Plan is a vision for Battery Park City that illustrates the authority's ambitions for the future as well as inspiring the community to join in sustainability efforts. Driven by this vision, the team conducted a series of public roundtables, pop-ups, and an online survey to collect input from a broad range of local stakeholders. A detailed assessment of the existing urban landscape and infrastructure also occurred.

The final Sustainability Plan identifies strategies, targets, milestones and actions across Energy, Water, Site, Materials and Waste, with the goals of achieving Resource Management and Reduction, Innovation and Inspiration, and Education and Collaboration.

The resulting suite of sustainability documents provide a holistic framework to encourage collaboration between BPCA, building owners and managers, local businesses, the community, and implementation partners.

One vision

Mike Stopka, North America Sustainability Principal at Buro Happold, says the close, multistakeholder collaboration empowered by the plan will allow Battery Park City to push ahead towards its sustainable future and provide a replicable model for others to follow.

Moving on from the production of the three key sustainability documents, our team is now working with the Battery Park City community to continue to identify and execute crucial projects to ensure the vision is achieved.

"We need to do a building-by-building assessment of every property in Battery Park City," Stopka explains. "We'll be asking what systems they have, how efficient the buildings are, and where the opportunities lie for energy, water and waste savings.

We're also producing a Climate Action Plan – taking the goals set out in the Sustainability Plan and extracting it into a detailed year-by-year timeframe to 2050. This allows us to pinpoint the critical levers to ensure they achieve their goals by that time, such as exploring retrofits and the implementation of new technologies."

Sustainability vision and implementation plan for the next **10 years**

IMAGES: BPCA

8. Deutzer Hafen

Putting sustainability at the heart of placemaking

Deutzer Hafen will be a new city district in a former industrial harbour area, built around a vision for sustainable and resilient 21st century city living.

A short distance across the River Rhine from the main historic centre of Cologne, the ambitious regeneration scheme will transform the former docklands landscape into a vibrant place to live and work.

Soil remediation work following the Second World War bombing of diesel storage facilities on the site, together with concerns around the potential for flooding of the riverside location, left the district undeveloped for generations.

The area is filled with redundant industrial material and low-value brownfield uses such as scrapyards.

But now, the city has an ambition to develop the 240,000m^2 plot into a vibrant mixed-use area, providing new homes for 5,000 people and workplaces for another 4,500. Deutzer Hafen will be the City of Cologne's flagship project, paving the way towards a climate neutral and post-oil city.

IMAGE: moderne stadt Köln, Design COBE, Rendering Beauty & the Bit

“Cologne’s flagship project is paving the way towards a climate neutral and post-oil city.”

Winner
DGNB Platinum
for sustainability excellence

IMAGE: moderne stadt Köln, Design COBE, Rendering Beauty & the Bit

Working with architects Cobe, moderne stadt – the public sector development wing of the City of Cologne – has developed a masterplan which will transform the district over the next 25 years, along similar lines to the Hafencity in Hamburg. Buro Happold has been engaged as lead consultant, advising on sustainability, process integration and district certification.

Deutzer Hafen’s regeneration is designed around a series of public spaces with historical traces to create a vibrant sense of place, including an infinity harbour swimming pool, heated using waste heat from the neighbourhood.

Mitigating the flood risk

Our experts produced a Sustainability Handbook to communicate the sustainability ambitions of the scheme to all stakeholders. The handbook outlines a sustainability strategy built around five guiding principles – climate change, living quality, mobility change, energy transition and resource efficiency.

The development will be shaped by the 15 United Nations’ Sustainability Development Goals (SDGs) that impact urban development.

Flood risk may have been one of the initial concerns, given the riverside location. But our team has carefully analysed the data, and even taking global warming into account, has been able to demonstrate that significant flooding at the Deutzer Hafen site would be a once in a 100-year event. Nevertheless, flood resilience has been carefully factored into the design scheme for the project, with areas most at risk being given over to bicycle storage and parkland.

Streetscapes will be shaped to mitigate and contain the flow of water. A wetland park will also be incorporated to act as a natural rainwater filter. These public areas will act to absorb excess rainwater and to provide diverse and green spaces for the public.

After the rainwater is filtered, it will end up in the new harbour pool. The rainwater will then run from the pool into the harbour, creating a waterfall that will itself become a visual focus for the development.

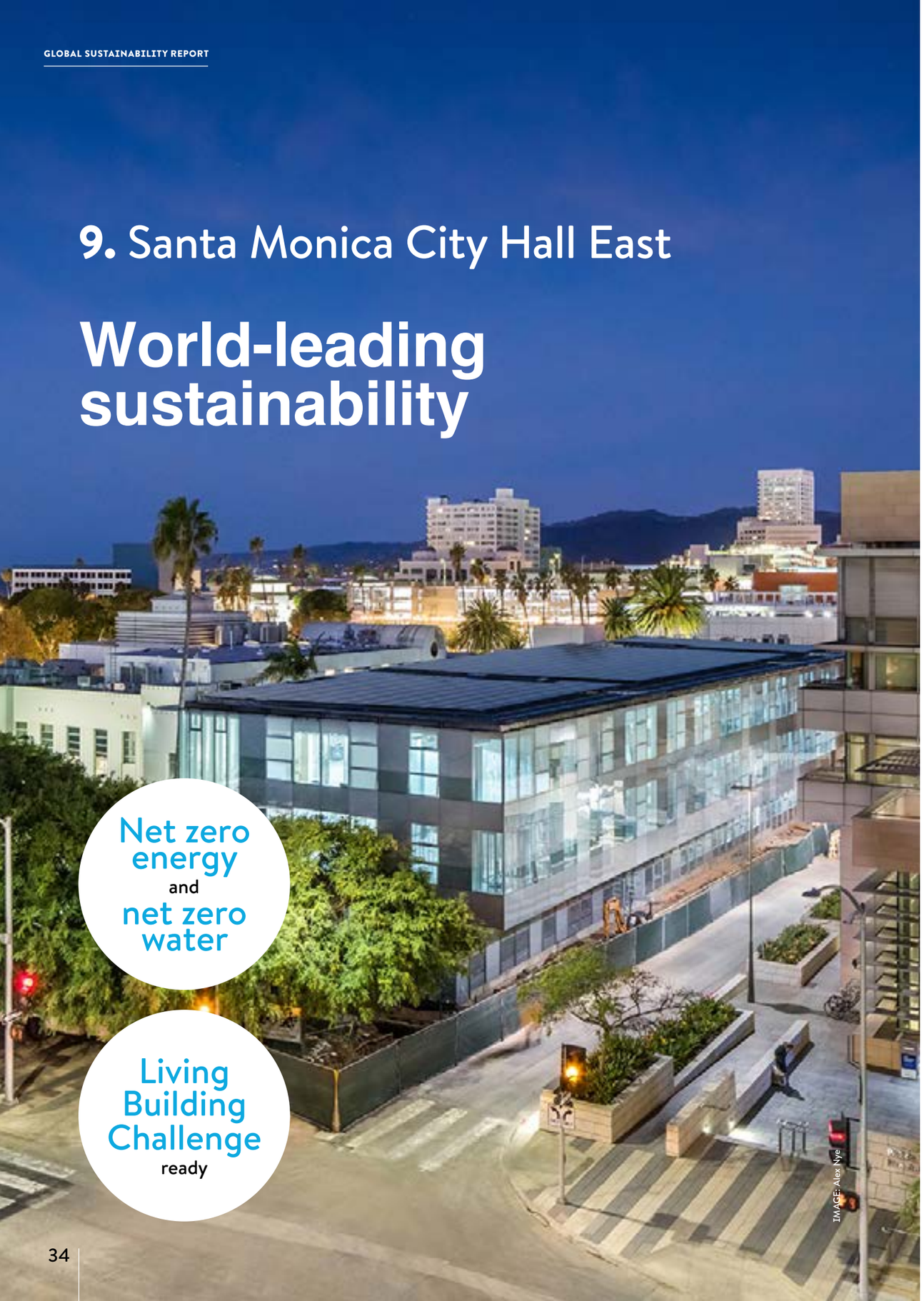
Award-winning design

The project will see the sustainable development of the 60-hectare site over the next 25 years. But, even in its planning phase, it is already winning awards – including a platinum pre-certificate from DGNB, the German Sustainable Building Council.

Thomas Kraubitz, Cities Director and Head of Sustainability for Europe at Buro Happold, says the team aimed to build on an excellent masterplan developed by Cobe, “We said, let’s make sure this lives on, so that in 25 years when the district is complete, we do have something that is different in a positive way. We are also looking at what climate change is bringing — we need to plan for that, including incorporating flood risk mitigation, as well as focusing on everything from the microclimate, to species biodiversity, sustainable transport and carbon-free energy.”

9. Santa Monica City Hall East

World-leading sustainability



The all-electric, net zero energy and net zero water Santa Monica City Hall East building meets the world's most rigorous criteria for sustainability, resiliency and long-term cost-effectiveness.

Buro Happold provided integrated engineering and consulting services to ensure the new office building, which opened in 2020, is ready to meet Living Building Challenge criteria – the world's most stringent green building rating system. Conferred through the International Living Future Institute (ILFI), this certification aligns directly with long-range sustainability commitments made by the Santa Monica City Council to achieve water self-sufficiency by 2023, zero waste by 2030, and community-wide carbon neutrality by 2050 or sooner. The project is intended to pave the way for ongoing environmental transition across the city.

To meet Living Building Challenge criteria, the building must be self-sufficient and remain within the resource limits of its site – producing more energy than it uses, collecting and treating water on the site, and ultimately creating a positive impact on the human and natural systems that interact with them.

The standard ensures that the 50,200ft^2 building will make positive contributions to its environment as opposed to merely lessening its negative impact, demonstrating itself to be carbon positive by at least 105%.

Positive impact

The Buro Happold team used passive design techniques to maximise daylight, views and natural ventilation to ensure occupant comfort while minimising energy use. Our experts devised strategies to ensure daylight and natural ventilation enhanced heating and cooling performance as well as reducing operating and maintenance costs, while also providing health and wellness benefits.

A range of innovative technologies also helped the project to achieve its vision of being a landmark of sustainability. Radiant tubing embedded throughout the open plan-offices and meeting rooms efficiently heat and cool the space and optimise comfort. Phase-change material adds further effective thermal mass in lightweight partitions, absorbing heat by day and releasing it at night, significantly reducing the need for cooling and heating. Building electricity is supplied by rooftop photovoltaic arrays and solar shade structure photovoltaic arrays, which were extended out over the car parking area to maximise the space for solar generation.

Three separate water strategies collectively allow all the building's needs to be met by water harvested on site. The projected water and sewer demand for the structure was cut by half with the introduction of an innovative foam-based composting system for all the toilets.

For potable water uses, rainwater from the roof is captured in a 40,000-gallon cistern located beneath the building. In drought conditions, the rainwater system is supplemented by groundwater pumped from a well that was drilled on site. All rainwater and groundwater is treated with a combination of cartridge filters and granulated active carbon filters on site. This is the first project in California to convert rainwater to potable water in this way for an office building.

For non-potable water uses, a system captures greywater and condensate from the cooling system's air-handling units. This is treated via a moving bed-membrane bioreactor and used for onsite irrigation.

Transition landmark

The new structure will be one of the greenest buildings in the world, exceeding Santa Monica's sustainability standards and reinforcing its commitment to high-performance design. The architecture, engineering and construction practices behind the building consider not only the environment and the challenge of climate change, but also the human health aspect of workers in the buildings. Red list chemicals in manufacturing have also been avoided.

Julian Parsley, Principal at Buro Happold, says the City of Santa Monica has always been at the forefront of sustainability.

"From a policy-level, across the city they've always been very ambitious on reducing energy use, trying to become water independent, and looking at waste," he says. "They have always been very aggressive with their policy and they wanted their new building to reflect those goals that they have at the city level on sustainability."

Collective climate ACTION

> **“As designers of the built environment, we have significant potential to impact climate change, and it is our responsibility to fully utilise that potential.”**
>
> Smith
> Director of Sustainability and Physics

IMAGE: Soon Zhi Kvok / Unsplash

10. Progress on targets

10.1 Climate change targets 2019

To demonstrate leadership in acting on the science and reducing our own footprint.

Progress: *Our organisational scope 1, 2 and 3 greenhouse gas (GHG) absolute emissions targets have been validated by the **Science Based Targets Initiative** (SBTi), and in April 2021 we achieved our goal to be net zero carbon in 2019/20 through offsetting residual emissions. The GHG targets are consistent with reductions required to keep warming to 1.5°C and form part of our support for the **Race to Zero** campaign through the **Business Ambition for 1.5°C**.*

Improving our project impacts while encouraging clients to seek to mitigate climate impact and build resilient solutions.

Progress: *Our in-house Building Performance Dashboard has been created to report on modelled and measured energy consumption, embodied carbon, net zero status and sustainability credentials for all projects. The platform has undergone the final stages of testing and will be rolled out by end of 2021.*

Collaboration to ensure we all have the knowledge, skills and competencies to effect change, and that we are empowered to do so effectively.

Progress: *We have contributed to many industry leadership groups including **UK Green Building Council** task groups on renewables and offsets, and **Net Zero Carbon verification**. We have committed internal funding and initiated a practice-wide Climate Knowledge Network. We are Business Champions' for **CO_2nstructZero**, working alongside the Construction Leadership Council (CLC). We are also part of the UK Government's **Construction Innovation Hub** to champion low carbon Design for Manufacturing and Assembly.*

Working together to identify areas of opportunity and need, both current and future, without delay. Building new services based on new skills and wider briefs that we develop with our clients.

Progress: *We have established a climate leadership group to embed our Climate Emergency Action Plan across each part of our business with SMART objectives, carbon budgets and review of progress at CEO/CFO and regional MD levels. Ahead of the **COP26 UN Climate Change Conference** we have launched our **Collective Climate Action** campaign, featuring 2 minute videos from our colleagues around the world.*

Ensuring we play our full role in influencing the market, professions, regulations and policies that will support our goals and ensure that everyone is able to participate in this journey.

Progress: *Through our active involvement in **Aldersgate Group**, Green Building Councils including **UKGBC Net Zero Whole Life Carbon Roadmap**, **UKGBC Social Value and Circular Economy task groups**, RIBA climate action work, COP26 Built Environment Summit, **Built Environment Declares**, **LETI**, **C40 Cities** and others, we are both shaping future policy and enabling our clients to achieve best practice.*

To embed the commitments we have made as a fundamental part of our vision and strategy — measuring performance against goals and holding ourselves accountable for delivering them.

Progress: *Our global climate leadership group has convened virtually throughout the year to embed our Climate Emergency Action Plan across each part of our business with SMART objectives, carbon budgets and review of progress at CEO/CFO and regional MD levels. Working groups have been established for governance, investment, people and skills, policy and market influence, practice footprint and project footprint.*

Additional targets 2020

We will target a reduction in the embodied emissions of our projects of at least 50% for all new buildings, major retrofits and infrastructure projects by 2030 (from 2020 benchmarks).

Progress: *Our Building Performance Dashboard provides a common platform to report on the embodied carbon across all our projects. We have embedded flexibility to disclose cradle to practical completion (LCA modules A1-A5) and cradle to cradle (modules A-C and module D). We aim to report formally on this target from next financial year.*

To provide a low embodied carbon design workshop for every project.

Progress: *Our Project Environmental Checklist has been updated this financial year. It includes a requirement for all project directors to report on the broad spectrum of sustainability and climate change, including initiatives undertaken to reduce embodied carbon.*

To measure the embodied carbon associated with our scope within all our building and infrastructure projects (with a fee value of over £50k).

Progress: *Our Building Performance Dashboard has the flexibility to capture multiple records for embodied carbon on the same project. This enables individual disciplines to report their carbon impact if our scope on the project is limited (e.g. to structural, facade or building services engineering only).*

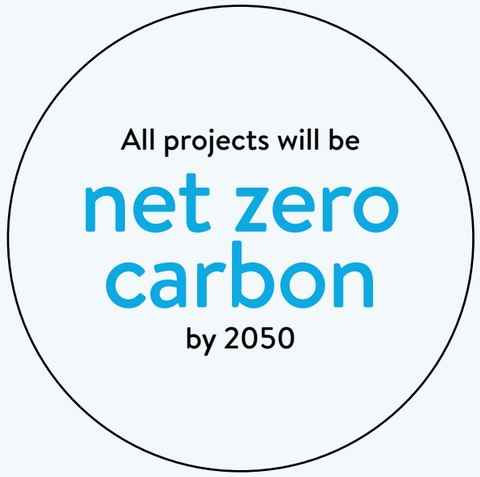
10.2 Energy and carbon targets 2019

Net zero carbon for our own business operations by the end of financial year 2020/21.

Progress: *In April 2021, we procured 100% of our UK electricity from high quality REGOs with a renewable energy guarantee. All remaining consumption (such as heat and global consumption) has been offset through the Verified Carbon Standard.*

All new build projects will be net zero carbon by 2050.

Progress: *Our Project Environmental Checklist has been updated to include mandatory disclosure of progress against our net zero carbon declarations. Our in-house Building Performance Dashboard has been created to report on modelled and measured energy consumption, operational carbon and embodied carbon for all projects. The dashboard has undergone the final stages of testing and will be rolled out by end of 2021.*



Energy and carbon

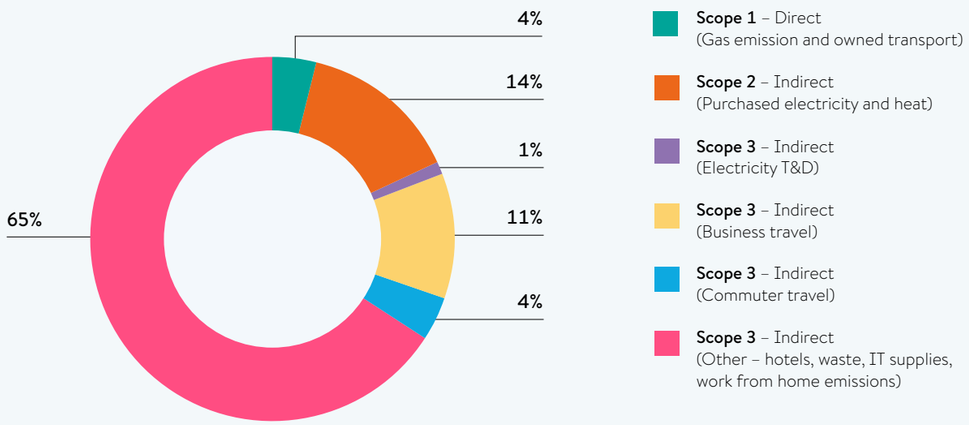
Our verified⁺ global carbon footprint from May 2020 to April 2021 is:

Type of emission	Tonnes of CO_2e/person	Absolute tonnes of CO_2e	% difference compared to 2019/20
Scope 1 – Direct (Gas emission and owned transport)	0.039	75	-42%
Scope 2 – Indirect (Purchased electricity and heat)	0.144	274	-61%
Scope 3 – Indirect (Electricity T&D)	0.014	27	N/A
Scope 3 – Indirect (Business travel)	0.110	209	-93%
Scope 3 – Indirect (Commuter travel)	0.043	81	-90%
Scope 3 – Indirect (Other - hotels, waste, IT supplies, work from home emissions)	0.661	1257	-18%*
TOTAL (with renewable energy)	**1.011**	**1924**	**-68%***

⁺ The Buro Happold global carbon footprint has been verified by Carbon Footprint Ltd in accordance with ISO 14064 Part 3 (2019) and provides a limited level of assurance with respect to the GHG statements made.

* Scope 3 now includes working from home emissions, embodied carbon from purchased IT equipment and an estimated 10% addition of other unmeasured Scope 3 emissions.

Buro Happold global emissions 2020-21
Tonnes of CO_2e



We did it

OUR NET ZERO ACHIEVEMENTS

- Set science based targets.
- Switched to high quality green tariff (UK).
- Offset emissions.
- Joined Race to Zero – Business Ambition for 1.5°C.

Establishing a robust baseline including gathering reliable energy consumption data for all our offices.

Progress: *We have now gathered reliable energy consumption data from all our key offices and this baseline has been verified by the Science Based Targets initiative (SBTi).*

Identifying opportunities for energy savings and reduced travel impacts.

Progress: *GHG emissions associated with global business travel and commuter travel have reduced significantly this financial year due to the global pandemic.*

Producing office-specific plans with short-, medium- and longer-term objectives to reduce emissions.

Progress: *We developed decarbonisation roadmaps for each of our UK offices and have undertaken initial decarbonisation audits of our global offices.*

Purchasing clean renewable energy supplies to our operations with recognised certification/verification, such as REGO certified electricity.

Progress: *We have high quality REGOs with a renewable energy guarantee from Good Energy covering all our UK office electrical consumption and we have also switched to renewable electricity in Germany. We are continuing to investigate this in other offices. Buro Happold also commits to increase annual sourcing of renewable electricity from 40% in FY2020 to 100% by FY2025.*

Offsetting residual emissions through recognised high-quality mechanisms.

Progress: *We have offset residual emissions from our FY2019-20 (6002 tCO2e) through the **Verified Carbon Standard Portel Para REDD+** project in the Amazon, and planted 6002 trees in the Great Rift Valley, Kenya. This approach aligns with emerging industry best practice to prioritise GHG removal using internationally recognised schemes while delivering further outcomes in line with the UN Sustainable Development Goals.*

Disclosing our performance in a recognised way, such as using the *UKGBC Net Zero Carbon Buildings Framework Declaration*.

Progress: *Plans are underway to set energy intensity targets for each of our offices, phasing out gas. We have undergone an independent third-party verification to ISO 14064-3 by **Carbon Footprint Ltd** which is line with our **World GBC Net Zero Carbon Commitment**.*

Integrate embodied carbon assessments into the standard design and decision-making process.

Progress: *We have developed tools, for example our open-source **BHoM LifeCycleAssessment_Toolkit**, to assess the embodied carbon of all our key building projects from the outset.*

Additional targets 2020

Reduce GHG Scope 1 and 2 Operational Carbon Emissions by 21% by 2025 based on FY2019-20 emissions.

Progress: *Due to the pandemic, our global GHG emissions (scope 1 and 2) have reduced considerably in FY2020 and FY2021. Reporting on this target will therefore be more representative in our next Global Sustainability Report. To ensure we maintain low levels of emissions we have developed decarbonisation roadmaps for each of our UK offices and have undertaken initial decarbonisation audits of our global offices.*

Reduce GHG Scope 3 Operational Carbon Emissions by 21% by 2025 based on FY2019-20 emissions.

Progress: *Due to the pandemic, our global GHG emissions (scope 3) have also reduced considerably in FY2020 and FY2021. Reporting on this target will therefore be more representative in our next Global Sustainability Report. To ensure we maintain low levels of emissions we have developed an action plan for reducing transport emissions and procurement.*

Our total global carbon footprint (scope 1, 2 and 3) during the pandemic year (FY2020-21) was 32% of base year (FY2019-20) including working from home emissions. The main reduction was in business travel.

Additional targets 2021

Set long-term Science Based Targets to align with emerging SBTi Net-Zero Standard.

Total carbon footprint during pandemic year FY2020-21 was

32%

of base year FY2019-20

10.3 Materials and waste targets 2019

Projects

Integrate embodied carbon assessments into the standard design and decision-making process.

Progress: *We created a LifeCycleAssessment_Toolkit within our open source BHoM software intended to allow designers to quickly conduct an embodied carbon assessment from Revit models.*

Our structural engineering teams have created a simple embodied carbon calculator to make embodied carbon visible and accessible to all engineers during early concept design development. This was complemented by global webinars to increase embodied carbon literacy among all our structural engineers.

A cross-disciplinary embodied carbon group has been set up to create similar early concept design calculators and rules of thumb for our infrastructure, facades and building services teams.

Review and refresh our material specifications to ensure they reflect the latest thinking in reduced embodied impact, responsible sourcing and healthy materials.

Progress: *Following on from the update of our structural concrete specification, similar working groups are looking at structural materials and performance specifications for our other engineering disciplines.*

Deliver circular economy awareness training to all staff to build knowledge capacity and spark debate on embedding the principles into our standard design approach.

Progress: *We conducted a Design for Deconstruction (DfD) research project between our sustainability and structural teams, during which we developed strategies for all aspects of building design to facilitate deconstruction as opposed to demolition. This was presented in an internal training session along with a broader conversation around circular design, where it was discussed that DfD is only appropriate if it is known that the structure will be used for <25 years.*

DfD only touches on one aspect of circular economy at a building scale; we plan to expand our circular economy training into the upcoming year.

We are in the process of setting up a cross-disciplinary circular economy working group to focus best practice from across our global offices for dissemination and discussion.

Develop a company-wide healthy materials vetting plan.

Progress: *Recognising the market is still maturing around this topic, we have focused our efforts on engaging with clients leading on health and wellbeing to collectively test the supply chain for opportunities and barriers. This has included developing a healthy material plans with Argent Related for **Brent Cross Town**, a large masterplan in London, and initiating conversations around eliminating red list materials on projects where we are engaged to oversee the sustainability framework.*

Office operations

Ensure that all Buro Happold offices stop purchasing avoidable single-use plastic consumables.

Progress: *Procurement of consumables in our offices reduced significantly during the Covid pandemic as most offices had no occupants for large periods or had limited numbers of occupants. Health and safety concerns meant that some single-use plastic consumables were purchased but we have now been finding alternative approaches.*

Additional targets 2020

Integrate circular economy appraisals into the standard design and decision-making process for structures, facades and building services.

Progress: *For projects in London, the **London Plan** requirement for a Circular Economy Statement is driving the conversation on circular economy considerations in projects.*

*Outside of London, we have developed and deployed a number of circular economy workshops on projects based on the **Regenerate** tool by the Urban Flows Observatory at the University of Sheffield.*

*Lessons learnt from the above live projects, coupled with our involvement with the **UKGBC Circular Economy** and **C40 Cities Clean Construction** programmes, will inform how we integrate this into our standard decision-making processes.*

Additional targets 2021

Measure our circularity using the *Ellen Macarthur Foundation Circulytics* tool for benchmarking and informing our transition pathway.

Integrate circular economy metrics into our Building Performance Dashboard.

Following on from our innovation investment with Shift Actions, we will consolidate our knowledge on circular economy into a clear service offering for our clients at both the building and regional scale.

10.4 Clean water and sanitation targets 2020

Minimise project water demands.

Progress: *Water demand estimations are completed for all projects where provision of water supply is part of our scope. Targets for potable water consumption are set which are regionally and culturally appropriate.*

Recycling of water and use of treated sewage effluent/renewed water.

Progress: *Collection of wastewater and reuse as TSE for irrigation/district cooling is applied regularly on projects in the Middle East. These technologies are still less common in Europe.*

Provide appropriate resilience of supply.

Progress: *Resilience is provided through appropriate infrastructure design and provision of water storage, depending on the local context and reliability of water supply.*

Identify treatments that provide wider benefits, such as habitat, alternative water source, recreation and education.

Progress: *Many projects are now integrating sustainable urban drainage solutions which manage water while providing habitat and water quality benefits.*

Example projects:

AlUla
This project is prioritising the sustainable management of groundwater, as well as providing new infrastructure for collection and treatment of wastewater and reuse as TSE.

London Resort
This project has 'self-defined' extremely high sustainability targets and challenges associated with restricted water and sanitation availability due to its location at the edge of the service areas for both Thames and Southern Water. Buro Happold have engaged closely with Thames Water on water demands and infrastructure reinforcement requirements. An on-site WWTP has been proposed to manage wastewater and allow for the on-site reuse of TSE. Extensive reed beds and improvement of the existing marsh system are proposed for management of surface water.

Additional targets 2021

Integrate agreed water consumption metrics into the Building Performance Dashboard and Project Environmental Checklist.

Many projects are now integrating **sustainable** urban drainage solutions

10.5 Travel and transport targets 2020

Aim to carry out our Commuter Travel Survey in 2021 and reduce commuter travel by increasing home base working by at least 40%.

Progress: *We are currently planning to carry out a Commuter Travel Survey in late 2021 when working routines have been established after Covid. However, commuter travel in FY2020-21 was 10% of FY2019-20 (43 kg CO_2e per person per year) and current UK guidance is to work at home for at least 2 days a week, on average.*

Aim to have at least a 21% reduction of business travel carbon emissions by 2025 (based on Science Based Target approach).

Progress: *Our business travel carbon emissions in FY2020-21 were 7% of FY2019-20 (110 kg CO_2e per person per year). We committed to **Science Based Targets** to reduce business travel by 21% by FY2024-25 from FY2019-20. We are currently expecting business travel carbon emissions in FY2021-22 to be 50% of FY2019-20.*

Additional targets 2021

Aim to have 80% of applicable projects with a mobility strategy that minimises the impact of transport on the environment (e.g. car-free and/or EV ready infrastructure) by 2023.

Commuter travel in FY2020-21 was **10%** of FY2019-20

Our business travel carbon emissions in FY2020-21 were **7%** of FY2019-20

10.6 Biodiversity targets 2019

Apply the mitigation hierarchy (to first examine the feasibility of avoiding and minimising impacts before turning to mitigation and offsetting) to all our projects.

Progress: *We continue to successfully apply the mitigation hierarchy to all projects, advising clients on the avoidance and minimisation of impacts to biodiversity features, and proactively seeking design changes to protect areas of intrinsic ecological value.*

Integrate biodiversity net gain (BNG) into all designs by 2020.

Progress: *While not always quantified within a metric, it is considered that the majority of projects seek to integrate biodiversity net gain into design through incorporation of enhanced habitats and features for protected and priority species, which we recommend on all projects.*

Apply the principles of the International Finance Corporation's Performance Standard 6 (IFC PS6), relating to biodiversity, to our international projects (widely considered to be global best practice).

Progress: *We continue to apply the principles of IFC PS6 to our international projects.*

Additional targets 2020

For the projects where Buro Happold is appointed as the ecological consultant, our 2020 targets were:

All UK projects to seek to deliver a biodiversity net gain of 10% by end 2021.

Progress: *We have sought to deliver a biodiversity net gain (BNG) on all UK projects by advising every client that this is best practice and providing a commentary on why it is important in every proposal.*

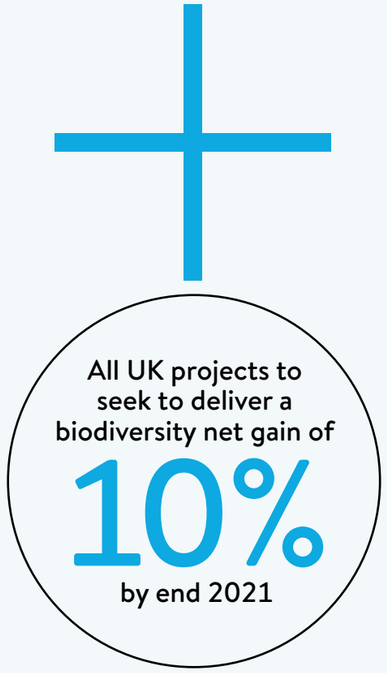
All UK projects to provide a meaningful enhancement for local biodiversity, measured against priorities listed in local Biodiversity Action Plans, local planning policies, or through published guidance such as UK species red lists (mammals and birds).

Progress: *While 50% of our clients have agreed to demonstrate the 10% BNG targets through applying the DEFRA metric, the remaining 50% of projects either pre-date the existence of BNG calculations (and so cannot be quantified) or the client has chosen not to apply the metric. Regardless, we continue to improve the outcomes for biodiversity on all the projects that we work on by building biodiversity into designs and recommending ecological enhancements that contribute to local and national biodiversity plans and priorities. Therefore, all the recommendations we have made on our UK projects make meaningful contributions to biodiversity. This is through enhancements such as buffer planting to retain important ecological corridors, new nesting and roosting opportunities for local BAP species such as black redstart, swifts and bat species, and provision of new nectar-rich planting for invertebrates.*

Through the application of IFC principles to our international projects, we aim to achieve no net loss and/or net gain of biodiversity, whether an IFC-compliant project or not.

Progress: *We continue to apply the principles of the mitigation hierarchy, which are embedded into IFC Performance Standards, on all the projects that we work on, regardless of whether the project has committed to meeting IFC performance standards or not.*

We do this through proactively engaging with clients at the outset of projects to create environmental zoning plans that actively guide development away from sensitive areas. We then work with masterplanning teams to avoid and minimise impacts through changes to design and follow this process through to considerations on how the masterplan will operate. Where we are engaged to do so, we look for meaningful benefits to biodiversity that are not just tick-boxes to meet a country's legal requirements but aim to truly contribute to biodiversity in that area, and support threatened and declining populations through, for example: recommending set-aside conservation areas, restoration of important habitats and long-term monitoring programmes to ensure that adaptive management can continue to support important ecological features.



Promote nature-based solutions for climate resilience across all our projects.

Progress: *We continue to provide further consideration and commentary on the wider benefits of habitats included within project design for their potential to support climate change resilience and adaptation.*

Additional targets 2021

We will formalise our internal processes and reporting in order to benchmark our biodiversity recommendations against best practice at every stage of the project that we are involved in. This will create an auditable system that provides formal guidance in this area and measures our progress. We envisage the above to be an adaptive and stepwise approach that can be improved and updated to ensure the latest thinking in biodiversity planning and management is applied to our projects at every opportunity.

10.7 Health, wellbeing and equity targets 2019

We have certified two of our offices through WELL Certification. We will aim to achieve third party health and wellness certification for two additional offices by 2021.

Progress: *With the continuing impact of Covid, we have been unable to progress with these certifications but will be aiming to review and move forward with these when our offices return to a stable state.*

We are currently monitoring environmental conditions in two of our offices. We will aim to implement continual environmental monitoring in one quarter of all offices by 2021/22 with one done to RESET standards.

Progress: *In January 2021, we created new guidance for indoor air quality which established targets for all our offices. We have since set up air quality monitors in another 5 offices and are rolling this out across the practice.*

We are pursuing WELL, Living Building Challenge, Fitwel, and Health Impact Assessments on 17 of our current projects. We aim to establish an internal health and wellness checklist for all projects by 2020 and double our WELL, LBC, Fitwel, RESET and Health Impact Assessment projects.

Progress: *We have now included a checklist of questions on health and wellbeing in our Project Environmental Checklist which is required on all projects above a £50,000 fee or equivalent. This will link in with the other recognised standards noted in the target.*

Additional targets 2020

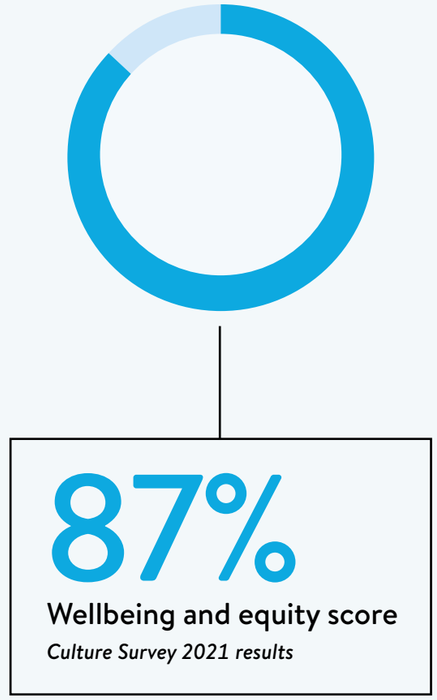
Implement office-wide approaches to enhance the health and wellbeing of our staff.

Progress: *We are setting up a Workplace Wellbeing Steering group in our UK region with senior management representatives to bring regular focus to the well-being of our employees. This will also be considered in other regions. Results from our recent Culture Survey 2021 show a wellbeing and equity score of 87%.*

Additional targets 2021

Embed equity into the approach and team makeup on all project pursuits.

Hold an equity workshop on projects during early design phases.



10.8 Inclusivity, equity and diversity targets 2019

Our 2019 Culture Survey highlighted positive results in our employee experience, with 87% of respondents believing that Buro Happold offers a fair, inclusive and respectful environment. We aim to increase this figure to 90% at the next survey and have introduced measures such as our Fairness and Inclusion awareness sessions and Prevention of Sexual Harassment training to support our goal.

Progress: *We were very pleased to see that 90% of our Culture Survey 2021 participants felt that Buro Happold offered an inclusive environment.*

In addition, 90% also felt that individual differences were respected, irrespective of things such as age, disability, gender identity, race and sexual orientation.

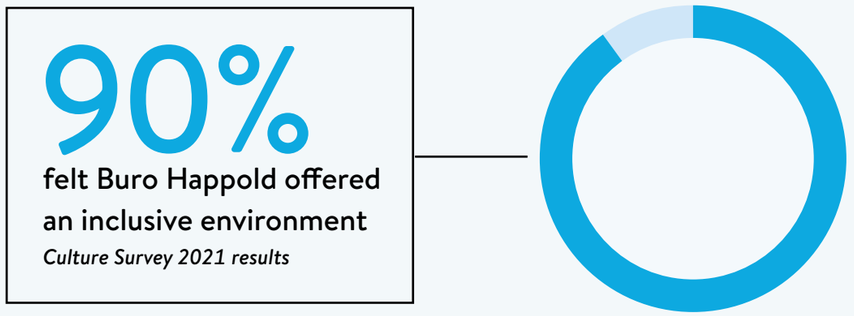
Additional targets 2020

Create Equity Plans for all our global offices. Regionally appropriate action plans with KPIs reflective of the outputs of the external inclusion audit.

Progress: *All of our offices have now created their own Regional Equity Plans with associated targets.*

Create a charter that outlines how our work will promote inclusion within the built environment.

Progress: *The charter is still a work in progress as regions defined their equity plans in the first instance. An Inclusive Recruitment Charter has also been introduced.*



10.9 Community involvement targets 2019

Buro Happold provides up to 200 employee days annually for Share Our Skills projects and will continue to do so.

Progress: *During 2021, Buro Happold has awarded 133 days of time in support of 7 inspirational projects around the world. Examples include the design of a Social Enterprise Campus in Malawi, developing exemplar eco-homes in India, and providing support to NGOs in Syria and Lebanon.*

In addition to this specific target, Buro Happold regularly incorporates a ***Social Value offer*** *in our projects which includes employment and work experience for local people, volunteering and outreach such as STEM in schools, and local charity event participation in all our offices. We will aim to align specific targets in future.*

10.10 Training and education targets 2019

Learning and Development satisfaction score of 85%+ from leadership and management formal and virtual learning offerings.

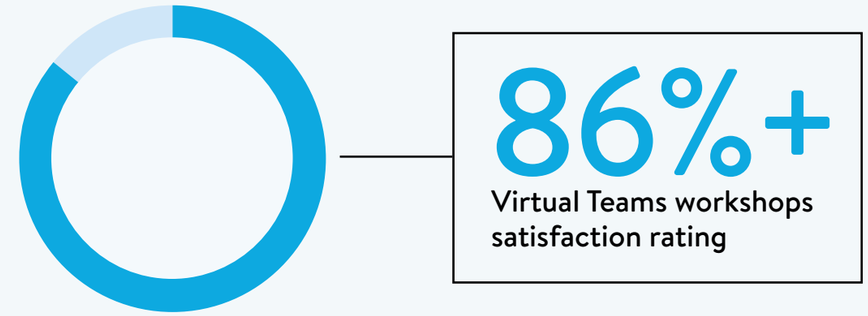
Progress: *High-performing Teams virtual workshops satisfaction rating of 86% and above.*

Make learning scalable and accessible to all employees through virtually led workshops on key business skills. Supporting our climate change ambitions by reducing travel while offering quality development globally.

Progress: *All classroom learning has been moved into a virtual space and will continue in a mostly virtual environment going forward. L&D continues to provide on-demand digital resources accessible at the point of need through an easy-to-use internal site. Transitioning to a Learning Experience Platform (LXP) by November 2021.*

Following our 2019 Culture Survey results we will focus development of our managers on regular feedback to support the empowerment of all employees in their continuous development. We will provide all managers with virtual-led training in coaching and mentoring by Q1 2020.

Progress: *All global line managers have been offered the opportunity to participate in targeted management and leadership learning, focusing on coaching conversations, creating empowerment, giving feedback, managing virtual and hybrid teams, and psychological safety.*



10.11 Fair practice and procurement targets 2019

Develop our procurement processes to ensure compliance with all our fair practice policies as detailed in our Code of Conduct.

Progress: *We are introducing a new global supplier onboarding process. This will include a supplier questionnaire that contains questions regarding their sustainability credentials. This will be in place by the end of 2021.*

Maintain a global days payable outstanding (DPO) time of 45 days.

Progress: *Our DPO is in line with targets.*

Additional targets 2020

Develop our procurement processes to align with ISO 20400 Sustainable Procurement guidance wherever applicable.

Progress: *We are aiming to ensure that our new proposed procurement system, which is due to be rolled out in 2022, aligns with ISO 20400 principles.*

IMAGE: Phil Handforth

11. Economic performance

Details of Buro Happold's economic performance are published in the ***Happold LLP Members' report and consolidated financial statements for the year ending 30 April 2021.***

The company financial year runs from 1 May to 30 April.

In the year 2020/2021, the key figures for the whole group were:

Turnover (£'000)

£188,203

Operating profit (£'000)

£22,071

Operating profit margin

12%

Museum of the Future

Dubai, UAE

Occupying a prime urban location adjacent to the Emirates Towers, Museum of the Future is conceived not as a repository for ancient artefacts but as an incubator for new ideas, a catalyst for innovation, and a global destination for inventors and entrepreneurs.

Working in a BIM environment proved invaluable in achieving the LEED Platinum accreditation stipulated by our client. We created a 3D energy model in which all 12 disciplines could interact in real time, agreeing more than 50 sustainable design decisions that resulted in a range of benefits, including a 45% reduction in water use and total energy savings of 25%.

12. Buro Happold by region

Asia

Jason Tse
Associate, Sustainability

China is aiming to reach peak carbon dioxide emissions by 2030 and carbon neutrality by the year 2060, according to a speech made by President Xi Jinping during the United Nations General Assembly in September 2020. Hong Kong has also set its target to achieve carbon neutrality by 2050, as stated in the 2020 Chief Executive Policy Address.

The government will use various means to achieve these goals, including the use of new environmentally-friendly technologies, enhancing the energy efficiency of buildings, promoting zero-carbon vehicles and building large-scale waste-to-energy facilities.

In the past year, Buro Happold's Hong Kong team earned more sustainability qualifications, notably Jason Yick – BEAM Plus (NB), Ivan Chan – BEAM Plus (NB), and Tak Chan – LEED AP (BD+C).

Our office has also undertaken a variety of sustainability actions. In travel, we are encouraging our staff to use mass transport instead of single-occupant vehicles, especially the MTR and tram, as they have the lowest CO_2 emissions. Virtual meetings are held whenever possible to minimize travelling, and we encourage the use of digital brochures and documents, as opposed to printed ones.

In terms of energy use, we encourage staff to turn off their monitors when they leave their desk for longer than 10 minutes, as well as switch off their monitors at the end of each working day to reduce standby electricity consumption. We also advise staff to switch off their phone charger when their battery is full.

We have also asked the Building Management Office to adjust the indoor temperature setpoint during wintertime, in order to save energy, as well as reduced the number of printers from three to two.

Other actions include asking staff to avoid using unnecessary running water, and to minimize their non-recyclable waste, such as single-use plastic cutlery, and also paper towels. Recycling paper, cardboard, plastic and aluminium is a priority, as it the use of recycled paper, and 'double-sided' printing and writing.

Good air quality is important, so we are adding more plants into the office to improve air quality and add to the sense of wellbeing. We also have the office carpet deep-cleaned twice a year to reduce allergen content.

Example projects

- **Chinese International School**
  Chinese International School lies at 7 Eastern Hospital Road in Causeway Bay. Opened in 1983, the school decided to carry out facade renovation and the installation of the BIPV system. Buro Happold has been working on the feasibility study and providing technical supports for the tendering process of BIPV system for the project since December last year. Through the application of a computation simulation, we revealed the possibility of power generation of 342.2MWh/year, which is equivalent to 20% of total annual electricity consumption of the school. The application area of the PV system is about 3,700m^2 on the facade and roof. The installation of the rooftop PV system is underway.

  Our facade team and MEP team are still working on the design of the facade BIPV system.

- **Spring City 66, Kunming**
  Spring City 66 is a mixed hi-end development containing retail, offices, and a hotel with serviced apartments. It is located at the junction of two new subway lines in the heart of Kunming, the capital of Yunnan province. Spring City 66 is our client's first project in the southwest region of mainland China. The project tagline: "Bring the Best to Kunming, Showcase the Best of Kunming to the World', exemplifies our client's aim to build a world-class office, retail and residential development, and create a true landmark for the city.

  While the hotel with serviced apartments is still under construction, Buro Happold has assisted the project team by incorporating sustainability measures into the building design and construction, aiming for a 15% energy saving. Strategies applied included introducing a high efficiency chiller, VFD motor, heat recovery, rainwater/grey water reuse, LED lighting, timer control, infra-red sensors and daylight dimming, free cooling for the AHU-served area, EC (Electronically Commutated) DC (Direct Current) FCUs, high-efficient VRF units, demand control ventilation based on occupancy and water-efficient fitting and fixtures. Buro Happold also obtained a LEED BD+C (Core and Shell) Gold Certificate for the office tower and retail tower in 2020.

CHINESE INTERNATIONAL SCHOOL
Hong Kong

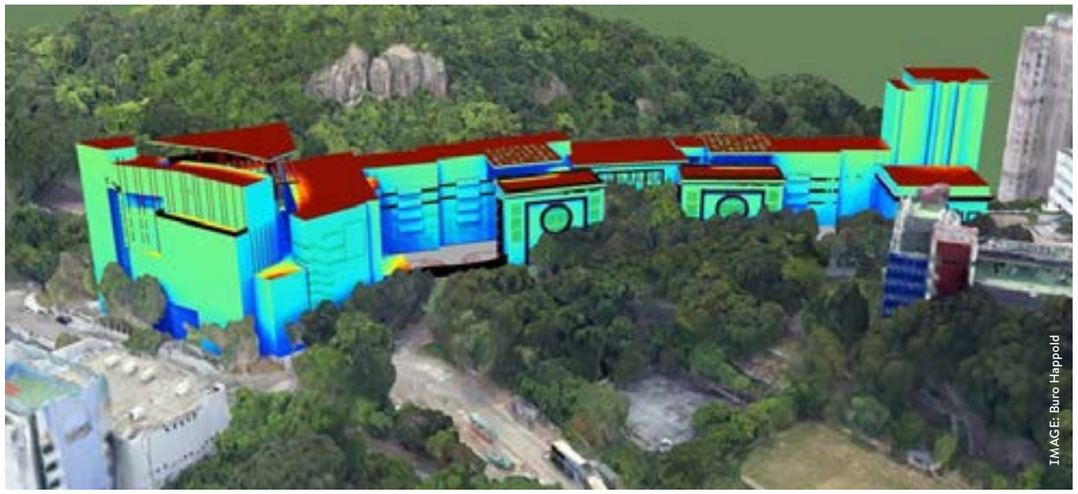


IMAGE: Buro Happold

EDGE SUEDKREUZ
Berlin, Germany

Europe

Thomas Kraubitz
Director and Head of Sustainability Europe

'Health is Wealth' can be described as one of our overarching principles in our activities across Europe. Together with scientists and doctors, we have launched a certification scheme for Allergy-Friendly Buildings and Districts, with The Tacheles in Berlin being the first certified District in Europe (New ECARF quality seal for allergy-friendly buildings - AM TACHELES).

Our teams in Berlin, Munich, Warsaw and Copenhagen advise organisations and businesses how to implement the highest standards of sustainability principles into a wide variety of projects that includes both buildings and urban development. With the EU Taxonomy for environmentally sustainable economic activities in place, we advise clients on climate change adaptation and the transition to a circular economy, often connected to an ESG-Strategy Advisory.

We are involved in stranded assets on a material, building, district, and park scale, making best use of the existing built environment by saving materials, cost and emissions. Examples include the Spreepark, an abandoned amusement park in Berlin and the Expo 2000 Hanover Pavilion that, after 20 years of neglect, will see a new district arising from its ruins.

Within Europe, our enthusiastic group of young consultants are considering ways in which we can continually improve the impact of our own operations on the environment, for instance making lifecycle analysis an embedded tool in our Structures Group. Our specialists provide our clients with a unique skillset including solar and snow predictions as well as naturally integrating lighting to our projects.

Buro Happold GmbH supports the German Sustainable Building Council's Phase Sustainability intiative to transform current planning and building culture to make sustainable building the new normal.

Example projects

- EDGE Suedkreuz, Berlin, Germany
  Situated near the Südkreuz station in Berlin's Schöneberg district, EDGE Technologies is developing a 10,000m^2 property with the intention of creating 39,000m^2 of office space for German energy supplier Vattenfall. EDGE Suedkreuz is one of the largest buildings planned as a modular timber hybrid construction in Germany. It comprises two office buildings, each with six floors and a connecting underground car park, fully equipped with charging stations for electric vehicles.
- Sino-German Urbanisation Programme Keystone Papers
  Buro Happold developed and supported ten keystone papers for GIZ's Sino-German Urbanisation Programme on emerging issues in urbanisation and the green building sector in Germany. In each of the ten papers, policy frameworks have been scrutinised, best practice examples presented, and an outlook on emerging trends in the respective sectors provided in order to inform discussions around these topics between German and Chinese experts.

India

Mansi Parikh
Senior Sustainability Consultant

India's aggregate primary energy demand is predicted to grow 2.3x in the next two decades. On top of that, the cumulative national cooling demand is expected to increase 11x in the building sector alone (ICAP, 2018). Buro Happold has responded by embedding sustainability through every aspect of our design framework, harnessing expertise from both our Hyderabad and Mumbai offices to incorporate water sufficiency, energy efficiency and waste management measures across our current and future projects.

We work closely with clients and architects to demonstrate how parametric and generative design tools can be used to optimise energy efficiency without sacrificing performance. In addition, we undertake energy performance benchmarking for all our projects, with a particular focus on reducing potable water demand, and incorporating rainwater harvesting and wastewater treatment plants.

Reducing embodied carbon is another focal point for our work in the region. To achieve this, our team has developed an India-specific calculator for carbon emissions to guide our clients towards more sustainable material choices. In our current projects, we are encouraging use of 15-30% GGPS/fly ash as a filler material, as well as using up to 30% of excavated material on site.

Our new Mumbai office showcases our commitment to sustainable practices. Designed to achieve IGBC Gold rating for interiors, it is enabled with smart sensors to monitor CO_2, temperature and daylight levels, and display energy use in real time. We have also reduced our carbon footprint by recycling and reusing almost all the furniture and ducts from our old office. In leading by example, we aim to engineer a better future for the next generation.

LIFE HUB+
Kokapet, India

Example projects

- **Life Hub+, Kokapet, India**
  Impressive in scale and ambition, Life Hub+ will deliver 41.2 million ft^2 of Grade A commercial office space across 14 towers. Buro Happold was appointed to provide health, wellbeing and productivity consulting, as well as MEP and site-wide infrastructure engineering services. Among the sustainable initiatives we developed were a district-wide cooling distribution system, 48-hour power backup and indoor air quality monitoring to enhance occupant wellbeing. We also incorporated efficient water features for net zero discharge, including a gravity-fed water supply system and rainwater harvesting. The development has received an ECBC 5 Star precertification rating and is on track to achieve both LEED and WELL certification.
- **67 RCR, Mumbai, India**
  Standing 200m and 300m respectively, the two striking, mixed-use towers of 67 RCR will create 2.7 million ft^2 of Grade A office and retail space. As well as providing the complex structural engineering expertise required to realise the towers, Buro Happold shaped a number of sustainable initiatives across the development. These include energy-efficient HVAC systems, 100% wastewater reuse, rainwater harvesting and solar PV panels for on-site energy generation. When complete, the project is set to deliver significant social value through the creation of new community spaces and gateways, as well as achieving LEED certification.

Middle East

Rayya Jawhar
Sustainability Lead

Nandan Tavkar
Senior Sustainability Consultant

Buro Happold has had a presence in the Middle East since 1976, with offices in Dubai and Abu Dhabi in the UAE, as well as Riyadh in Saudi Arabia. From here, we have undertaken projects across the region, including Kuwait, Qatar and Oman.

Our main activities in Saudi Arabia involve strategic and project management office (PMO) consulting services via our Cities team, as well as MEP consulting. In the UAE, we provide multidisciplinary consulting services across the design, construction and post-occupancy stages of projects. These include structural and MEP engineering, specialist services such as sustainability, fire and planning, as well as construction site supervision.

We are currently working on a number of initiatives across the region with a sustainability focus.

These range from aspirational net zero energy and net zero water projects such as the Expo2020 Sustainability Pavilion in Dubai and Bee'ah Headquarters in Sharjah, to developing the sustainability strategy for an inclusive, design-driven public park in Riyadh. Our commitment further extends across several major masterplanning and cultural projects in Saudi Arabia, where we have been working with clients to bring enhanced sustainability aspirations into the design process.

Buro Happold has also been active with industry outreach, and is proud sponsor of both the World Green Building Council's Beyond the Business Case and Better Buildings for People taskforces.

Example projects

- **Sustainability Pavilion, Dubai Expo2020, UAE**
  Sustainability stands alongside Opportunity and Mobility to create three thematic pavilions for the Dubai Expo2020. Unique features, such as solar 'energy trees' and use of innovative materials, ensure the pavilion provides visitors with a memorable and immersive educational experience. With LEED Platinum certification, and further targets for net zero energy and net zero water, the Sustainability Pavilion delivers an aspirational message about the natural world, ecology and technology to a global audience.
- **Bee'ah Headquarters, Emirate of Sharjah, UAE**
  The new headquarters of leading environmental management company, Bee'ah, needed to epitomise sustainability through all aspects of its construction and subsequent operation. Buro Happold worked closely with both Bee'ah and Zaha Hadid architects to integrate the aspiration for net zero energy into the unique vision for this building. Key to this came in rethinking the design of the complex facade, for which we replaced concrete shells with structural steelwork to realise its iconic curvature. The result is a landmark headquarters that has achieved LEED Platinum certification.

IMAGE: Zaha Hadid Architects

BEE'AH HEADQUARTERS
Emirate of Sharjah, UAE

Landmark headquarters that achieved LEED Platinum certification

United Kingdom

Duncan Price
Partner, Sustainability and Climate Change

The UK region has invested heavily in developing our sustainability and climate change services though collaboration with clients and industry leaders.

Our membership of Aldersgate Group provides a platform for maintaining our cutting edge to inform and influence government policy to shape the zero-carbon economy. We are active Gold Leaf members of the UK Green Building Council, sit on the Members Advisory Group and are programme partners for Advancing Net Zero, Resilience and Nature Based Solutions, Circular Economy and Social Value.

We use these initiatives to bring interdisciplinary expertise to bear from both our Buildings and Cities business units, drawing on specialist knowledge from a range of groups including Sustainability and Physics, Energy, Environment, Water, Cities Consulting, Asset Management, MEP, and Structural engineering. We now have over 100 people in the UK focused on delivering sustainability and climate consulting services across a range of sectors, active in the UK and globally.

We were delighted to win the prestigious CIBSE Building Performance Consultancy of the Year award for the fourth year running, as well as Champion of the Year for our work leading the climate agenda through initiatives such as Built Environment Declares. We have taken a pioneering approach to implementing Design for Performance and the roll-out of the NABERS UK scheme alongside leading clients.

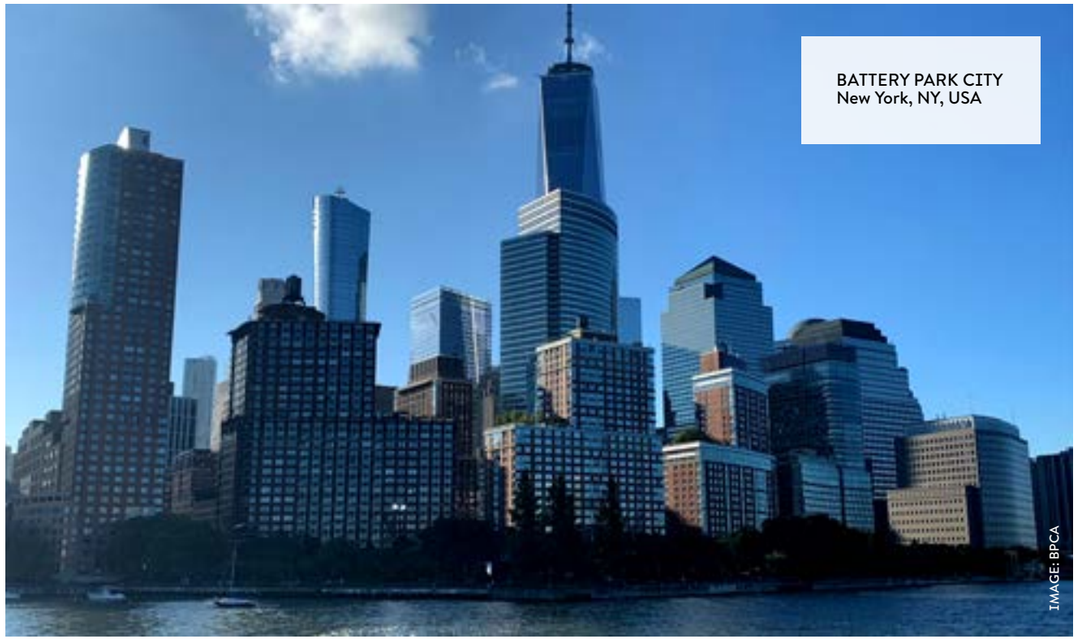
IMAGE: Buro Happold

UAL LONDON COLLEGE OF FASHION
London, UK

New home for London's College of Fashion, achieving a design stage rating of BREEAM Outstanding

Example projects

- **Landsec Net Zero Carbon Strategy**
  Landsec has committed to becoming a net zero carbon business by 2030. To complement its existing net zero carbon strategy for commercial projects, the company commissioned Buro Happold to develop routes to zero carbon for its Urban Regeneration residential mixed-use sites. Our report and accompanying design guides present a framework for Landsec to achieve a cost-effective pathway to net zero carbon on residential focused sites, factoring in embodied and operational carbon. Each site will be expected to meet the targets laid out in the brief and exceed them, where feasible.
- **UAL London College of Fashion**
  Conceived as a 21st century workshop, the new home for London's prestigious College of Fashion combines free spaces for learning, studying and social interaction in a rich, multi-level environment. Environmental considerations played a key role in the design – from planning the layout to maximise the number of naturally lit and ventilated spaces, through to the final specification of materials. The project achieved a design stage rating of BREEAM Outstanding and is listed as a Zero Carbon London case study, with expected total energy use of 230 kWh/m^{2}yr. Embodied carbon of 530 kgCO_2e/m^2 meets and exceeds the UKGBC/ LETI best practice target.



United States

Julian Parsley
Principal

Buro Happold in the United States is involved in some of the most sustainable projects in the country, ranging in scale from single buildings up to entire regions and across both design and consultancy. The key themes are decarbonisation, embodied carbon and responding to the climate crisis.

Our work at building scale has been looking at decarbonisation through the electrification of buildings – we have more than 4,000,000ft² of all electric buildings in design and construction. This includes the recently completed Santa Monica City Hall East project where we provided sustainability and MEP engineering services, and the North Shore Community College Allied Health Building where we worked on net zero energy analysis and energy modelling. We've also been studying the decarbonisation of real asset portfolios with clients such as Harrison Street, a global real estate management and investment firm.

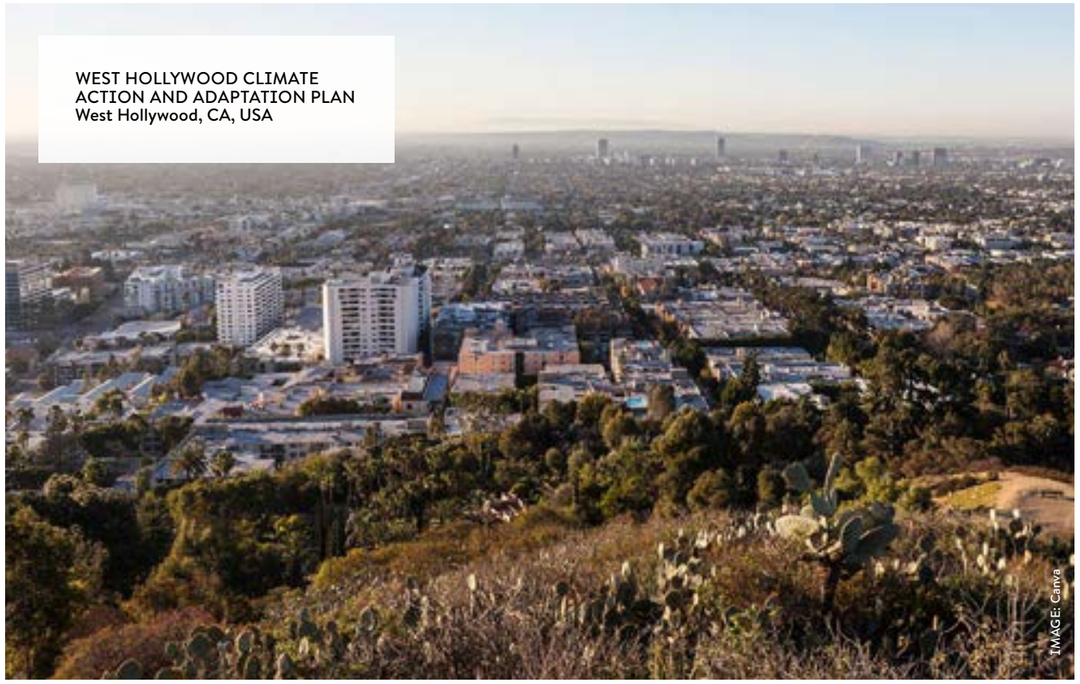
How we minimise embodied carbon

Understanding embodied carbon lies at the heart of our work. The recently released BHoM Life Cycle Assessment Toolkit gives us an easily understandable data-driven framework for measuring embodied carbon within building design. This toolkit won a 2020 AIA Innovation Award and is now accepted by ILFI for calculating embodied carbon on zero carbon projects. Buro Happold projects such as the new LAX MSC South Terminal are quantifying and minimizing embodied carbon emissions through smart material choices and design optimisation. We are funding internal research to take this further as we want to quantify the carbon emissions of MEP systems to understand how system and material choices can impact emissions. This also provides thought leadership relative to material selection and its impact on communities (for example, extraction, production and end of life impacts).

Buro Happold has expanded its climate strategy work to not only focus on mitigation efforts, but also to support climate adaptation and resilience efforts. We are developing climate action and adaptation plans for cities and regions including West Hollywood in California and the Metropolitan Council for the Twin Cities region in Minnesota. Resilience analyses and strategies continues to be a big part of our work, through the development of the Climate Vulnerability Assessment for the County of Los Angeles, leading the Community Energy Resilience services for Silicon Valley Clean Energy, as well as developing climate-informed guidelines for the California State University system. Our clients prioritise an equity and human-centered approach, which we achieve through stakeholder engagement and data analysis, bringing the equity and public health implications of climate change and infrastructure disruptions to the forefront of our work.

Example projects

- **City and State Policies and Codes**
  Our consulting and technical advisory work at the policy scale includes existing building carbon thresholds, like NYC's LL97 and Boston's BERDO 2.0, as well as new construction efforts like Boston's Zero Net Carbon Zoning Initiative and Massachusetts's commercial energy stretch code.
- **MEP 2040 Challenge and Carbon Leadership Forum (CLF)**
  We are on the Steering Committee for MEP 2040, and act as co-chairs, presenters, and active members of CLF Hubs, from Boston to Pittsburgh, Seattle, Los Angeles and New York.
- **One Boston Wharf Road**
  The Boston Seaport L5 Block features a 630,000ft² office that will achieve zero carbon with a high-performance envelope, an all-electric systems solution.
- **Harrison Street**
  Buro Happold was asked to conduct a study of a core global investment fund that includes 350 properties, in order to identify a path to zero carbon by 2025. We also advised on ESG policy. Buro Happold's advisory role with Harrison Street continues to evolve, providing analysis and advice on implementing sustainability changes across the organisation.
- **Silicon Valley Clean Energy (SVCE)**
  A Community Energy Resilience Framework informed by a regional vulnerabilities and energy resilience solutions report. The project supports customer transition to a clean energy future and also helps prepare for increasing disruption from extreme heat and increasing fire risk. Buro Happold partnered with AESC to develop a tool to help member cities identify critical community sites and energy resilience solutions.
- **West Hollywood Climate Action and Adaptation Plan (CAAP)**
  Buro Happold is developing the WeHo CAAP for the City of West Hollywood. The plan sets ambitious targets for community-wide climate neutrality by 2045 and outlines actions to reduce greenhouse gas emissions and to prepare for climate impacts. The CAAP uses an evidence-based planning approach built upon quantitative and qualitative data to catapult West Hollywood's progress towards its climate and sustainability goals.



13. Description and disclosures

Organisational profile

1. Name of organisation

Happold LLP

2. Activities, brands, services and scale

Happold LLP, known as "Buro Happold", is an international, integrated engineering consultancy operating in 28 locations worldwide with approximately 70 partners and over 1,900 employees. For over 40 years, Buro Happold has been building a reputation for delivering creative, value-led building and city solutions for an ever-changing world. The principal activity of the Buro Happold group is that of consulting engineers providing professional, integrated design and advisory services to clients that include the property and construction sectors, city administrations and campus portfolio owners. The principal activity of Happold LLP is providing management services to companies in the Buro Happold group.

3. Location of headquarters

Camden Mill, Lower Bristol Road, Bath, UK, BA2 3DQ.

4. Location of operations

We operate in 28 global locations and internally this is delivered via 6 geographic business units: United Kingdom, Europe, United States, Middle East, India and Asia.
A seventh business unit, Cities, spans multiple locations and consists of 7 specialisms: Bridges, Consulting, Energy Consultancy, Environment, Infrastructure, Transport and Water.

5. Ownership and legal form

Happold LLP is the ultimate parent company of Buro Happold Engineers Ltd (non-trading) and Buro Happold Limited, which is the main UK trading company. In addition to these companies there are a total of 15 corporate trading entities in the various foreign jurisdictions that Buro Happold operate in, all of which are wholly owned subsidiaries of Buro Happold Engineers Limited.

Happold LLP has approximately 70 members and is incorporated in England and Wales and registered at Companies House (LLP Number: OC331879). The LLP is controlled by its members as delegated to the management team, and as such there is no one controlling party. In terms of identifying Persons of Significant Control (PSC), currently none of the members of Happold LLP hold more than 5% of the shares in Happold LLP and therefore no member qualifies as a PSC.

6. Markets served

Our geographic markets generally include countries in the same areas as our operational locations.

Buro Happold has an established multi-sector client portfolio across Culture, Sport, Commercial and Urban Development which has expanded in recent years to include the sectors of Science and Technology, Air and Rail, and Education.

7. Supply chain

Buro Happold's supply chain primarily comprises professional infrastructure consultancy providers, acting as sub-consultants. The types of infrastructure sub-consultants Buro Happold typically engages include architects; surveyors; geotechnical or environmental consultants; IT consultants; economic/financial consultants; acoustic, lighting or security consultants; and BIM suppliers. As a professional service organisation, the risks associated with slavery and human trafficking are objectively low.

Buro Happold also directly engages suppliers of services for our offices, such as facilities management, travel, insurance and office equipment.

8. Precautionary principle of approach

We apply the precautionary principle in our own activities to protect our employees and the environment as part of our Health, Safety and Environmental management system. We also apply the precautionary principle in all our design work by promoting sustainable solutions that address all the key issues raised by climate change.

9. External initiatives

During the year 2020-21, the Buro Happold group contributed £182,000 (2019-20: £249,000) to the Happold Foundation, a UK registered charity. The Happold Foundation, a UK registered charity. The Happold Foundation is a charity registered for the promotion of education, research and training in the fields applicable to the construction industry, engineering, design, technology and architecture.

The Happold Foundation is the primary route for financially supporting CSR projects. Buro Happold also supports other initiatives, such as engineering programmes through visiting lecturers and visiting professors in most of our operational locations, as well as ground-breaking research and sponsoring public lectures. Buro Happold runs a global Share Our Skills programme where we provide free input into good CSR projects.

10. Membership of associations

Buro Happold is a member of many associations, either organisationally or individually. However, some of the main memberships include:

- Association of Consultants and Engineering (ACE)
- UK Green Building Council – Gold Leaf members
- American Institute of Architects (AIA) – 2030 Challenge
- Confederation of British Industry (CBI)
- Aldersgate Group

11. Ethics and integrity

Buro Happold issued a new Code of Conduct in May 2019 setting out the standards of behaviour expected of global employees which they are all required to electronically sign. The purpose of the Code of Conduct is to clarify the standards of individual and collective behaviour that all staff are required to adhere to across our global locations. This is supported by other related standalone policies such as Anti-Bribery, Anti-Fraud, Speak Up (Whistleblowing), Diversity and Equal Opportunities, Health and Safety, Quality, Gifts and Hospitality, and Modern Slavery which considers the ethics that underpin our relationships with suppliers and external organisations.

To comply with Indian law, Buro Happold publishes a Corporate Social Responsibility Statement on its external website.

Buro Happold has an established Speak Up (Whistleblowing) Policy which sets out the internal mechanism for staff to disclose or expose information which relates to suspected wrongdoing or dangers at work. The aim of the Speak Up Policy is to enable the reporting, investigating and remedying of any wrongdoing.

12. Governance structure

Happold LLP is governed by a Board consisting of both partners and non-executive directors. The Board has three committees: the Audit and Risk Committee, the Partnership Committee and the Investment Committee. The Board provides governance and oversight to the Buro Happold group of companies. The Group is then managed by a Global Leadership Team and a series of Regional Boards.

14. Goals and standards alignment

These tables describe how Buro Happold is addressing the named standards in principle in this report although we acknowledge that, in many cases, we are not yet addressing the specific requirements of each standard.

Sustainable development goals

Goals	Buro Happold Global Sustainability Report
SDG1 No Poverty	**Inclusivity, Equality and Diversity**
SDG2 End Hunger	**Community Involvement**
SDG3 Good Health and Wellbeing	**Health and Wellbeing**
SDG4 Quality Education	**Training and Education**
SDG5 Gender Equality	**Inclusivity, Equality and Diversity**
SDG6 Clean Water and Sanitation	**Clean Water and Sanitation**
SDG7 Affordable and Clean Energy	**Energy and Carbon**
SDG8 Decent Work and Economic Growth	**Fair Practice and Procurement**
SDG9 Industry, Innovation and Infrastructure	**Energy and Carbon**
SDG10 Reduced Inequalities	**Inclusivity, Equality and Diversity**
SDG11 Sustainable Cities and Communities	**Health and Wellbeing**
	Community Involvement
	Materials and Waste
	Travel and Transport
SDG12 Responsible Consumption and Production	**Materials and Waste**
SDG13 Climate Action	**Climate Action**
SDG14 Life Below Water	**Biodiversity**
SDG15 Life on Land	**Biodiversity**
SDG16 Peace, Justice and Strong Institutions	**Fair Practice and Procurement**
	Community Involvement
SDG17 Partnerships for the Goals	**Community Involvement**

Global reporting initiative

GRI 100 Universal Standards	Buro Happold Global Sustainability Report
GRI 101 Foundation	**Description and Disclosures**
GRI 102 General Disclosures	**Description and Disclosures**
GRI 103 Management Approach	**Description and Disclosures**
GRI 200 Economic	
GRI 201 Economic Performance	**Economic Performance**
GRI 202 Market Presence	**Description and Disclosures**
	(and Annual Report)
GRI 203 Indirect Economic Impacts	**Community Involvement**
GRI 204 Procurement Practices	**Fair Practice and Procurement**
GRI 205 Anti-corruption	**Fair Practice and Procurement**
GRI 206 Anti-competitive Behaviour	**Fair Practice and Procurement**
GRI 300 Environmental	
GRI 301 Materials	**Materials and Waste**
GRI 302 Energy	**Energy and Carbon**
GRI 303 Water and Effluents	**Clean Water and Sanitation**
GRI 304 Biodiversity	**Biodiversity**
GRI 305 Emissions	**Energy and Carbon**
	Travel and Transport
GRI 306 Effluents and Waste	**Materials and Waste**
GRI 307 Environmental Compliance	**Fair Practice and Procurement**
GRI 308 Supplier Environmental Assessment	**Fair Practice and Procurement**
GRI 400 Social	
GRI 401 Employment	**Fair Practice and Procurement**
GRI 402 Labour Management Relations	**Inclusivity, Equality and Diversity**
GRI 403 Occupational Health and Safety	**Health and Wellbeing**
GRI 404 Training and Education	**Training and Education**
GRI 405 Diversity and Equal Opportunity	**Inclusivity, Equality and Diversity**
GRI 406 Non-discrimination	**Inclusivity, Equality and Diversity**
GRI 407 Freedom of Association and Collective Bargaining	Not addressed – not applicable
GRI 408 Child Labour	**Fair Practice and Procurement**
GRI 409 Forced or Compulsory Labour	**Fair Practice and Procurement**
GRI 410 Security Practices	Not addressed – not applicable
GRI 411 Rights of Indigenous Peoples	**Community Involvement**
GRI 412 Human Rights Assessment	Not addressed – not applicable
GRI 413 Local Communities	**Community Involvement**
GRI 414 Supplier Social Assessment	Not addressed – not applicable
GRI 415 Public Policy	Not addressed – not applicable
GRI 416 Customer Health and Safety	**Health and Wellbeing**
GRI 417 Marketing and Labelling	Not addressed – not applicable
GRI 418 Customer Privacy	Not addressed – not applicable
GRI 419 Socioeconomic Compliance	Not addressed – not applicable

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