



Above: sunset over London's docklands

FUTURE CITIES FORUM REPORT

Climate change, energy, and
sustainability 2022

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Introduction

Ahead of COP27, Future Cities Forum is releasing its 'Climate, energy and sustainability 2022' report. COP27 will take place in Egypt this year with focus given to innovation, clean technologies as well as the centrality of waste and agriculture.

Prime Minister Rishi Sunak has reversed his decision not to attend COP27 which had drawn criticism from opposition parties and environmental groups. The government had defended the decision insisting that protecting the planet is a priority for it, but Labour Leader Sir Keir Starmer had stated that it was not an event to 'shun'.

Energy supplier Octopus Energy is to buy its smaller competitor Bulb, after the UK government approved a deal, according to the BBC. Bulb collapsed last year after rising gas and electricity prices, it says, and has since been run by the government. In this report, the University of Birmingham talks to Future Cities Forum about the energy innovations that could lead to lower prices and environmental gains.

Some local authorities have shown concerns over being encouraged to put forward expressions of interest for Investment Zones – which could lead to damage to the environment and affect net zero targets - while others have welcomed the initiative, which was announced under the short-lived Liz Truss' leadership of the UK government. The current government is reviewing the plans for Investment Zones.

The Minister for Levelling Up, Michael Gove said on Sky's 'Sunday with Sophy Ridge' (30th October 2022) when questioned: 'Under no circumstances will we weaken environmental protection.'

So how can good planning and design ensure net zero ambitions around transport infrastructure and house building? What measures can be put in place to encourage biodiversity and sensitive landscaping around nuclear infrastructure?

Please read our report, which seeks to find the answers to these questions and highlights some of the latest thinking around infrastructure projects and climate change concerns in the UK - with interview contributions from the University of Birmingham, leading house builder and developer Hill Group, and architectural and engineering practice BDP.



Above: Sizewell C nuclear plant on the coast of Suffolk, aerial view (from LDA Design)

Energy and innovation

The UK government released its new energy strategy in April this year, setting out its vision for onshore wind, nuclear, solar, and fossil fuels. The war in Ukraine has furthered a desire to become independent from foreign sources and to tackle the issue of security. With a target of 50GW of wind energy by 2030, there is a pressing need for this to come in part from turbines on floating structures, placed out at sea. However, this will need an overhaul of planning rules. Eight new nuclear reactors are also included in its vision, to be delivered by 2030 and could produce 25% of the UK's energy demand. Careful management of landscape around these nuclear sites is an important issue.

Sizewell C, the third generation of nuclear power station on the Suffolk Coast, has been granted development consent by the Planning Inspectorate. LDA Design has supported EDF for more than a decade on this energy-security project. Sizewell C will generate enough low-carbon electricity to supply six million homes and by replacing fossil fuel power will avoid around nine million tonnes of carbon being emitted every year. At the local scale, it will create thousands of jobs and contribute around £4 billion to the regional economy.

LDA Design has advised on landscape matters on all aspects for the main power station site, at all project stages, with planning and design that will establish an enhanced landscape setting for the new and existing power stations, and curate the estate-wide operational masterplan. The practice

has contributed to the design of the turbine halls and ancillary structures, as well as essential infrastructure and new coastal defences.

The power station is located in the Suffolk Coast and Heaths Area of Outstanding Natural Beauty and Suffolk Heritage Coast. Its location demands a sensitive response, and careful mitigation of its potential adverse landscape and visual effects through close collaboration with the wider project team and local stakeholders.

Hydrogen and solar are two other areas where the UK could invest to help solve the energy and climate crisis. So where are UK universities developing their research on clean technologies?



Above: Birmingham Energy Innovation Centre (Glancy Nicholls Architects)

The University of Birmingham's Professor Martin Freer has been talking to Future Cities Forum about its research work in the fields of energy:

'Energy storage is going to be an essential component of the future energy system required in the management of intermittent energy generation of solar and wind and optimisation of the performance of the energy system. We have a national project to split/crack ammonia into nitrogen and hydrogen and the hydrogen can be used in applications from transport to heating and decarbonisation of industry.

'The success of net zero technologies is intimately linked to the circular economy. Recycling of batteries from electric vehicles and magnets from everything from electric vehicle motors to the generators in wind turbines.

'These projects are helping to support the development of next generation energy systems and transport systems. However, one of the distinctive applications of energy storage is a project to support businesses in the Black Country. Many of the businesses in this area of the Midlands are heavy manufacturing with high energy costs and challenges to reach net zero. We are working with

one company which has a manufacturing process which is associated with casting. We have developed an energy storage system which allows them to capture waste heat and then recycle that heat at a later stage by storing it in what are called phase change materials.

'We are also working with Birmingham City Council to develop a plan for a clean energy system for the Tyseley Environmental Enterprise District. This area of Birmingham has a lot of electricity production from the Tyseley Energy from Waste plant which incinerates 350,000 tonnes of municipal waste per year. At present this plant produces waste heat which is not used. We are working to develop an energy system across the local area which would exploit the locally generated electricity and heat, together with the hydrogen produced at the Tyseley Energy Park. These energy vectors would be integrated with energy storage to create a next generation local energy system providing clean energy to 250 businesses and 8,000 residents.

'Tyseley Energy Park has the UK's leading production of green hydrogen. A 3.5 MW electrolyser operated by Motive can produce up to 1 tonne of hydrogen per day. At present that hydrogen is being used to fuel 20 National Express hydrogen double decker buses which operate on Birmingham routes. Transport for West Midlands are presently working to procure a further 124 hydrogen buses, which would be the largest hydrogen bus fleet in the Western world. There are opportunities beyond hydrogen buses, including hydrogen refuse collection vehicles, hydrogen trucks and hydrogen trains. At present a Midlands consortium is bidding to host a national hydrogen truck demonstration programme which would see 75 hydrogen trucks running on routes between Birmingham and the port at Teesside in the North East.



Above: From December 2021, Birmingham City Council's 20 zero-emission double deckers started to roll out in service on route 51 to Walsall via Perry Barr. Outside London, these are the only hydrogen buses operating in England (from National Express)

'The energy storage programme that has been developed in China (and which the Energy Innovation Centre has collaborated with) demonstrates the way that thermal energy storage can be used in future energy systems. The project captures excess wind generation in a part of China in which the grid is unable to transmit the generation. When there is too much wind generation, that excess is curtailed. This process generates heat, and the innovation has been to capture that heat in big thermal energy batteries. These batteries can then be used to transport the heat to a district heating system. To date, 1.5 GWh (a lot) of thermal storage has been installed, demonstrating it is a solution that can operate at grid scale. At present this technology solution is being brought into the UK market.

The UK government has set out an ambition for 24 GW of nuclear generation. To set a scale for this the nuclear power station at Sizewell is 1.2 GW and the new power plant being built at Hinkley Point is 3.2 GW. Hence there is very significant ambition to scale up nuclear energy generation. This will be by bringing in more big plants such as that being developed at Hinkley Point (an EPR reactor) at other sites, for example at Sizewell, and the development of other types of nuclear power plant. One of the innovations being driven by Rolls-Royce is a small modular nuclear reactor - SMR. These smaller plants will be more flexible and in principle can be deployed at a greater variety of sites, for instance within an industrial cluster. The UK has also committed to developing a fusion power plant, though it is unlikely this will see commercial operation this side of 2050. The government has announced that the first UK fusion power plant which will attempt to provide electricity into the grid will be constructed in the Midlands at the West Burton site in Nottinghamshire. This is the site of a coal power station and hence the slogan "Fossil to Fusion".'

Professor Martin Freer is a nuclear physicist, and Director of the [Birmingham Energy Institute \(BEI\)](#) at the University of Birmingham. He is also Director of the [Energy Research Accelerator \(ERA\)](#), which comprises eight internationally renowned Midlands universities which are part of the Midlands Innovation partnership, together with the British Geological Survey.

Martin is former Director of the Birmingham Centre for Nuclear Education and Research, which he established in 2010. He has overseen the development of the BEI, helped establish Energy Capital and has co-led the establishment of the joint University of Birmingham–Fraunhofer Germany research platform. He led the development of the Birmingham Energy Innovation Hub and the co-development of Tyseley Energy Park in Birmingham.

In 2015 he co-led the BEI Commission "Doing Cold Smarter" chaired by Lord Teverson, and in 2012 he led the Policy Commission "Future of Nuclear Energy in the UK" chaired by Lord Hunt, he co-led the Policy Commission with Sir David King which saw the creation of Energy Innovation Zone in the West Midlands and in 2020 published a report on The Road to Low-Carbon Heat with the CBI chaired by Lord Billimoria. Most recently, he led the policy commission "Pathways for Local Heat delivery" chaired by Sir John Armit. He has championed the establishment of a National Centre for the Decarbonisation of Heat. His main research area is the study of the structure of light nuclei, using nuclear reactions. He received the Friedrich Wilhelm Bessel Prize, Humboldt Foundation, in 2004 and the Rutherford Medal in 2010. His main research area is the study of the structure of light nuclei, using nuclear reactions. This research is performed at international facilities worldwide. In addition, he is actively engaged in promoting research and educational programmes to support the UK's investment in nuclear power generation. He received the Friedrich Wilhelm Bessel Prize, Humboldt Foundation, Germany in 2004 and the Rutherford Medal (IoP) in 2010.



Above: Radcliffe Square, Oxford looking - towards Broad Street. Oxfordshire County Council, head-quartered in the city, has said that it will not apply for 'Investment Zone' status.

Investment Zones

With news that Prime Minister, Rishi Sunak will not be attending COP 27, there are concerns that climate change may not be a priority for the UK government.

Another feature of Liz Truss' administration was the request for interest from local authorities in moving forward with Investment Zones, which has caused concern among some over biodiversity issues. The Hon. Michael Gove, MP, Minister for Levelling Up, has said that the government is reviewing these proposals.

Oxfordshire County Council has written to government ministers to explain why it has decided the county should not bid to be involved in Whitehall's investment zones initiative, which involves creating targeted areas where planning regulations would be relaxed to drive growth.

Councillor Liz Leffman, Leader of Oxfordshire County Council, has written a formal letter to Simon Clarke, Secretary of State for Levelling Up, to explain why it was thought this was not the right move for Oxfordshire.

She said: "We have thanked the government for inviting Oxfordshire to bid for investment zone status. We have decided not to progress this opportunity. Oxfordshire continues to support many very exciting business developments, particularly in the areas of science and technology, so in

writing a letter to government I wanted to explain the logic behind why we feel that applying for an investment zone does not fit with our ambitions.

“We consider that the de-regulation of planning controls and reductions in environmental protection, which appear to be a condition of any investment zone, are incompatible with our net zero carbon aspirations and our commitment to protect and enhance biodiversity and environmental quality, as stated in our vision.

“Oxfordshire already has a successful and growing local economy built on the strengths of its world leading universities, science and technology base and locational advantages. We continue to support the creation of a high skill, high wage economy, which contributes significantly to the competitiveness of the UK, and we are proud that many of the UK’s leading research and innovation institutions are located here. We do not believe that an investment zone is needed to enhance this.

“Investment zones are better suited to large urban areas with substantial brown-field sites or former industrial areas, which are seeking much needed investment. We are very supportive of the intention to distribute economic advantage across the country, and we will be happy to play whatever part we can in advancing this.

“In our letter to the secretary of state, we reiterate our call on government to provide support for infrastructure to support housebuilding. We remain committed to enabling the high levels of housebuilding that have been committed to within existing local plans, and as part of the government’s growth deal, to support our high performing economy. To do this, we need to focus on infrastructure, particularly promoting active travel and public transport and high environmental standards, which will contribute to the nation’s net zero carbon targets and protect the environment that we all rely on to survive.

“Any support government is able to provide to help us achieve balanced communities, with good infrastructure and decent environmental standards, would be welcome.”



Above: Chamberlain Square in Birmingham in July 2022, part of the Paradise development by MEPC

However, the West Midlands Combined Authority would like to move forward with the scheme.

The West Midlands has recently announced its formal submission to Government for a package of Investment Zones capable of accelerating economic growth and delivering tens of thousands of new homes and jobs.

If accepted by Government, the zones have the potential to boost the regional economy by more than £4.7 billion a year, creating 65,128 new jobs, 18,616 new homes and 3.1m sqm of commercial space.

In a comprehensive case, the region's political and business leaders said their Investment Zone proposals would help regenerate and lift up some of the more deprived areas of the West Midlands.

The bid emphasises how the zones offer an opportunity to unlock new public and private investment to help rebalance the economy and tackle long-standing issues around deprivation, fuel poverty, jobs, skills and health – goals that are central to the region's on-going devolution discussions with Government.

The zones would offer tax breaks and other incentives to make it easier, quicker and cheaper for the private sector to do business, helping to attract significant inward investment.

But the submission has stressed that the economic growth offered by the zones should not be at the expense of the region's overarching mission to build a fairer, greener and better connected West Midlands or its [#WM2041](#) ambition to reach net zero within the next two decades.

The region's case to Government, which is expected to decide on the proposals in the weeks ahead, has been jointly developed by the WMCA, local councils and business leaders. It concentrates Investment Zone sites in key locations and along major economic corridors.

These include:

- West Midlands Gigafactory Investment Zone: Large sites at Coventry Airport and in its surroundings in Warwick District, with the primary objective of securing major inward investment in a battery gigafactory, and the associated battery and automotive supply chain, focused entirely on employment land
- East Birmingham North Solihull Investment Zone: Large strategic sites at Arden Cross in Solihull (around the HS2 Interchange station), sites in East Birmingham, and smaller sites in Solihull Town Centre, all focused on attracting private investment to deliver new jobs, alongside housing and town centre regeneration
- Dudley Investment Zone: A transformative package of brownfield sites around the route of the Metro extension from Wednesbury to Brierley Hill (many within a 15 mins walk from the Metro Extension), including schemes in Dudley town centre and at Brierley Hill and Lye, creating both new housing and employment sites
- Sandwell Investment Zone: A compelling collection of brownfield sites around the route of the Wednesbury to Brierley Hill Metro extension (many within 15 mins walk from the extension), including schemes at Wednesbury and Tipton, creating new housing and industrial space, and regenerating existing industrial premises
- Walsall Investment Zone: An ambitious brownfield site programme including large employment sites near the M6, and smaller sites in the town centre and across the wider

borough, focused on land assembly, viability, and remediation to bring forward sites, with a mixture of commercial, residential, and mixed-use development

- Wolverhampton Investment Zone: A dynamic proposal featuring the high-growth high-skilled Green Innovation Corridor to the north of the city, and a number of housing and employment sites in the city centre, focused on reinforcing Wolverhampton’s world-class green manufacturing and sustainable construction sectors

A critical element of the region’s bid is to make sure the unlocking of public sector investment attracts and accelerates substantial new private sector investment, bringing wider benefits for local communities.

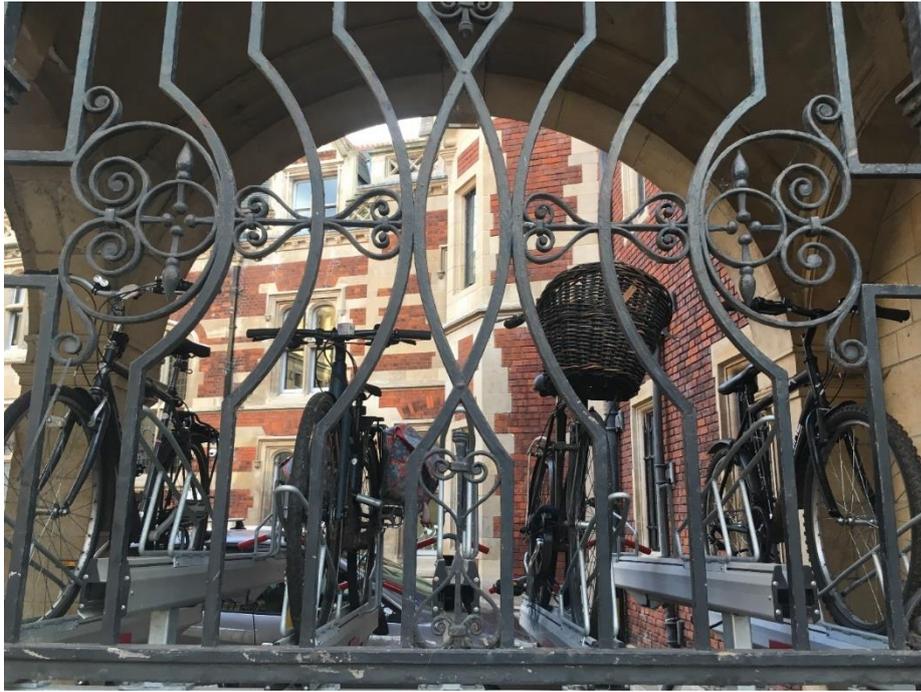
Andy Street, Mayor of the West Midlands and chair of the WMCA, said: “Investment Zones have the potential to supercharge economic growth in our region and so I’m really pleased that, in close collaboration with our local authority partners, we’ve been able to submit such a strong array of options to Government.

“Having been involved in establishing one of the UK’s most successful enterprise zones in and around Centenary Square in Birmingham, I have seen first-hand the power these special economic areas can have with the ability to bring about genuinely transformational change and investment.

“Most importantly we know that Investment Zones can accelerate the delivery of tangible outcomes for residents – including boosting employment prospects - and so I’m looking forward to working with ministers to get our West Midlands zones established ASAP.

Below: Looking towards Centenary Square and Birmingham Library, central Birmingham – July 2022





Above: college cycle storage - Cambridge University

Local authorities, house building and climate change

Ahead of COP 27, the Council has been highlighting its Annual Climate Change Strategy Report to the Environment and Community Scrutiny Committee this month, to recap on the measures it is taking to reduce the city's carbon emissions. The council has worked to increase electric vehicle (EV) charging infrastructure. Eighteen chargers for taxis have been installed with a further three to be completed by the end of the year. The council is working with Connected Kerb to provide a network of approximately 800 charging points in the council's car parks. The first 56 chargers will be installed at Castle Hill, Adam and Eve and Gwydir Street pay and display car parks by the end of October. The council is also working with Cambridgeshire County Council and UK Power Networks to facilitate charging points for residents. 42 charge points are being installed in West Chesterton and Abbey wards as part of a pilot project to make the city more resilient to climate change and increase biodiversity, the council agreed its 2022 – 2030 Biodiversity Strategy and Action Plan in June. During 2021-22 the council planted almost 600 trees in streets and parks, and planted two small, wooded areas at Logan's Meadow and at Five Trees Park, Chesterton.

Energy projects has seen the Council working with partners to reduce energy consumption in council homes as well as private homes across the city. In December 2021 the council was successful in its £6.46m consortium bid with other Cambridgeshire local authorities to the Government's Sustainable

Warmth Scheme. The project aims to support low-income residents in making energy efficiency improvements to their homes across Cambridgeshire from April 2022 to March 2023.

New homes are much needed in this successful but at times over-heating science city. The council is currently building 559 new homes for rent which meet high sustainability standards, using £70m Government funding via the Cambridgeshire and Peterborough Devolution Deal. 183 homes have now been completed. The Council is also building new council homes to Passivhaus standards – a leading energy and performance standard which significantly reduces energy use from building. Construction has started on the councils Passivhaus pilot schemes at Fen Road, Ditton Fields, and Borrowdale. Cambridge Investment Partnership has also received planning approval to build over 80 low carbon affordable homes on three new developments in the city. Aylesborough Close in Arbury ward will see 36 aging homes replaced with 70 low carbon council homes designed to Passivhaus standards, creating highly sustainable homes which will reduce running costs for residents. At Aragon Close and Sackville Close, both in the King’s Hedges ward of the city, each development will provide seven low carbon highly sustainable homes.

Aylesborough Close will see the replacement of a set of existing small flat blocks with three blocks, with homes ranging in size from one bedroom up to three bedrooms. The homes to be replaced no longer meet the requirements of residents, falling significantly short of current space standards and have very low energy efficiency ratings.

The three blocks will be accessed off Aylesborough Close, Jermyn Close/Fordwich Close and will feature a new green link along the northern boundary of the development. Existing green spaces will also be enhanced along the edges of the site and good quality existing trees will be retained along with new landscaping features and additional trees. A community garden with some play equipment and seating for residents to enjoy is also included.

At Aragon Close and Sackville Close, it will be replacing existing garages and hardstanding at each site with seven new two- bedroom low carbon council homes, designed using Passivhaus principles. The developments will also provide car parking, landscaping, and cycle storage. The homes will have very low energy use and heating costs, with thick highly insulated walls and gas free heating.

[Below: Cambridge Station Square at night – showing improved space for taxis and cycles](#)





Above: new homes by Hill Group at Knights Park, Eddington, Cambridge – designed by Alison Brooks Architects and master-planned jointly with Pollard Thomas Edwards (Image from Hill)

Future Cities Forum talked to Iain Liversage, Technical Manager from Hill, to understand in more detail how homes are being built with climate awareness in mind:

‘We work as a joint venture with the Council and have been removing gas from new developments within our properties in favour of electricity. We also install communal air source heat pumps and are working on a Passivhaus pilot and adopting Passivhaus principles.

‘We have worked with the Council in partnership since 2017 to help it develop its available land bank and income stream. The initial target was set for a net gain of 500 new affordable homes to start on site before March 2022, which we reached a year early and are now working to delivering a minimum of 1,700 new homes, with 1,000 being council homes within 10 years.

‘We made the decision to only develop gas free developments from 2019 and are very concerned about energy performance, so that tenants can keep costs down. This has led to us providing higher levels of air tightness on our recent and upcoming schemes. We are on a journey to NZC and using Passivhaus design processes and standards as a method to reach this. All of it needs to be delivered to budget and there are challenges with certification on larger housing schemes, so we are working to achieve Passivhaus performance without certifying on the two upcoming schemes. We need to constantly look at what is the best outcome for tenants and what meets our budgets.’

Iain was also asked about how important it is to provide green corridors for walks and commuting as well as community gardens and play areas for children:

‘Part of our concern is to make sure we also meet open space requirements and do not over develop. Our provisions are generally above minimum standards. Our schemes often benefit from

the 1950's layouts in Cambridge where parks link together. There is always a balance between maximising numbers of homes and providing green space, but we work with the council closely on this and we do have a green ethos beyond just building homes.

'The idea of a green corridor comes out strongly in our thinking and we do provide walking and bike links. We like to create car parking standards and ensure we don't create parking issues within the communities.'

We are future proofing electric charging connections but how much will they be used?

Iain Liversage, Hill Group

'We are providing a car club on some of these developments in line with planning approval. I am concerned with the price of electric cars and whether these are really affordable for our residents. We are future proofing electric charging connections but how much will they be used? There is talk of a congestion charge in Cambridge that may drastically reduce car usage. Cambridge does not have a mass transit transport system, unlike the one I have recently experienced in Manchester for example. We have been through a heavy review of building regulations and the new FLOS regulations are challenging, so we have to find a robust solution to achieving targets. I favour fast charging for cars but how will it be controlled in price terms? Then there is hydrogen. Will it come along to burst the electric bubble? Can the grid cope with electric charging as there are big demands on it.

'On the question of electric bikes, Cambridge is a bike city and through the LPA we consult with Camcycle, a Cambridge based charity focussed on cycling. We provide lockable bike spaces - one bike per bedroom and up to a maximum of three. The fire brigade advice is not to site electric bike charging stations in enclosed bike stores, because fires are hard to put out in those locations. I would favour detachable batteries that can be taken home and then attached again to bikes.

'We have worked with the council very closely on tree planting, following advice on where to plant so as not to ruin pavements, and also when to plant. Community orchards and allotments can be quite effective if you have community involvement and management, so they don't fall into disrepair. We do not go in for pumped water features which require a continual water supply but as with our development at Cromwell Road, there is a massive open space with surface water storage underneath, to meet best practice.'



Above: exterior of Leicester St Margaret's Bus Station (BDP)

Buses and net zero transport infrastructure

Bus connectivity has been at the centre of levelling up discussions with Future Cities Forum, and up against major rail projects, is often overlooked as an essential part of day-to-day infrastructure that connects communities.

Tom Hewitt, Director at architects BDP will be speaking at our infrastructure and energy forum in November at the City of London offices of international law firm, DLA Piper, about Leicester's new multi-million net zero carbon bus station which has just opened and is the first of its kind in the UK.

BDP has been describing the project:

'With the ambition for the building at St Margaret's to become one of the most sustainable transport hubs in the UK, the 1980s structure was stripped back to its partial steelwork frame as major elements of the previous building were retained and repaired to reduce the 'embodied' carbon cost of constructing the new building by an equivalent of more than 575 tonnes.

'The new landmark building creates a striking gateway into the centre of the city. It features a glazed concourse to maximise natural lighting and cut energy consumption and a curved aluminium roof where a solar array of 390 photovoltaic panels will generate more clean, green power than is needed to run the building.

'The building has an Energy Performance Certificate (EPC) with the highest possible rating of A+ and a score of -4. This means that the new bus station building will achieve better than net zero carbon from its operational emissions.

'Bus passengers benefit from a completely redesigned, improved and more spacious internal layout with better seating, a new café, modern toilets complete with a Changing Places accessible facility, and real-time digital passenger information.

The new building also provides significantly more capacity for national and regional services, with the number of available bays increased by a third from 18 to 24. Electric bus charging points have been installed and the new building offers secure storage for up to 100 bicycles, as well being the latest location for a docking station as part of the city's new e-bike share scheme.

'Improvements to footpaths and roads next to the bus station are also complete. These include new and improved facilities for cyclists and pedestrians, safer crossings, new landscaping, and more tree planting. The work help strengthen and improve links between key development sites and the city centre, including the new Savoy Street which provides a quick, direct pedestrian route link between St Margaret's and Haymarket bus stations.'

'Architects have been championing embodied carbon (assessments) for thirty years now, so it's good to see this approach now being used.' – Tom Hewitt, BDP

Tom Hewitt, Director, BDP explained to Future Cities Forum:

'Our Leicester bus station project is representative of a lot of infrastructure projects in the UK, but on a smaller scale. The story of the bus station really was one of practical limitations of what they (the council) could do. There were big ideas to begin with, but we suggested trying to re-use the existing structure, as we thought other ideas would complicate it. It meant that the local authority could then save money and get it done quicker and while carrying out landscaping around it. The building was so much of its time, it didn't make sense to lose all of it, but you couldn't see into it and it was right to follow an airport lounge logic to it to open it up.

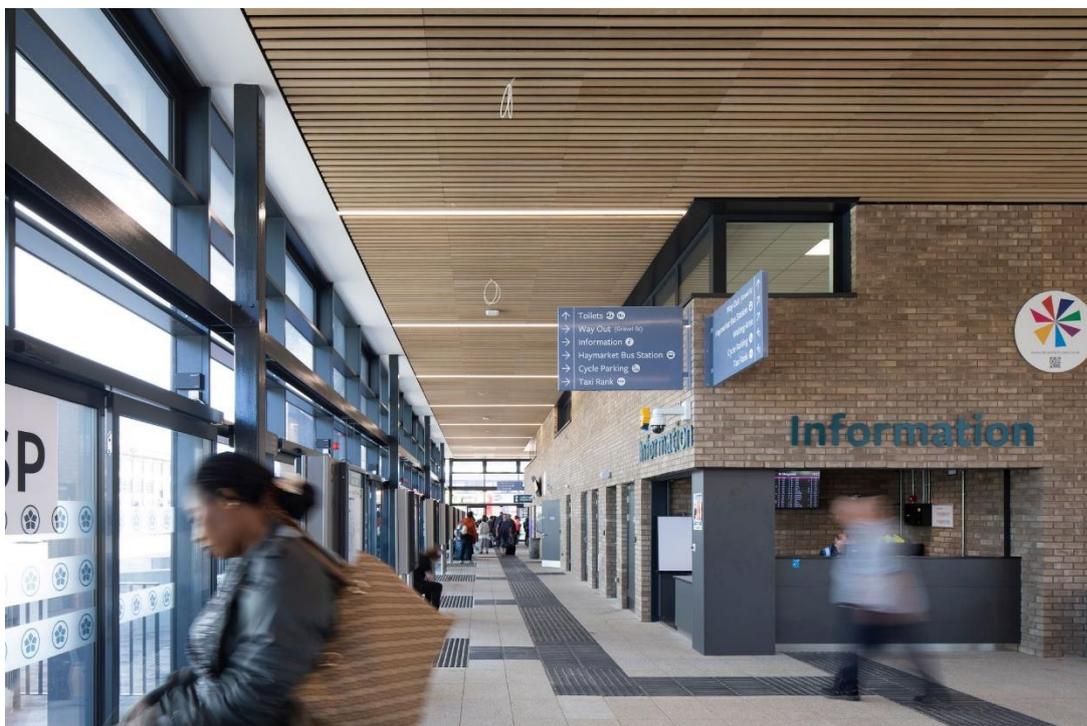
'The idea of embodied carbon was central to this as well. Architects have been championing this for thirty years now, so it's good to see this approach now being used.

'There is now much better natural light and ventilation in the building which means it is using reduced energy and this is something that architects will always apply from a baseline position.

‘The introduction of cycle parks is really giving people the opportunity to get physical. Of course, there will always be someone who doesn’t want to ride a bike, but it is giving them a chance to take up a healthier lifestyle.

‘There has been a good ambition from the local authority to improve the area around it and connect to a further station in Haymarket nearby, where the whole street has been refurbished with quality materials. What these projects do is enhance the entrance to cities and the Leicester bus station development could be a blueprint for other places. As with BDP’s work at Gloucester and Swansea, we are responding to the changing needs of customers and passengers, and these developments can be transformational in creating a sense of arrival.’

Below: interior of re-modelled St Margaret’s Bus Station in Leicester (BDP)





Above: aerial view of the Royal Docks in Newham in east London, with London City Airport, looking east to Barking riverside and across the river to Thamesmead

Master planning for green space in east London

Future Cities Forum wanted to highlight the work of LDA Design in master planning for greener neighbourhoods, where the community is both consulted and involved in creating a sustainable and natural world learning environment.

Plans have been submitted for the redevelopment of Carpenters Estate in Stratford, one of London's largest and most ambitious estate regeneration programmes. The outline planning application is being brought forward by Newham Council's wholly owned housing delivery company, with a multidisciplinary team led by the Tibbalds / Campbell Reith JV and including LDA Design as landscape architects, and Metropolitan Workshop and Proctor & Matthews Architects who are collaborating on the masterplan. First developed between 1968 and 1972, Carpenters Estate covers a 28-acre site surrounded by Stratford High Road, Queen Elizabeth Olympic Park, Westfield Stratford City and Stratford Station in east London.

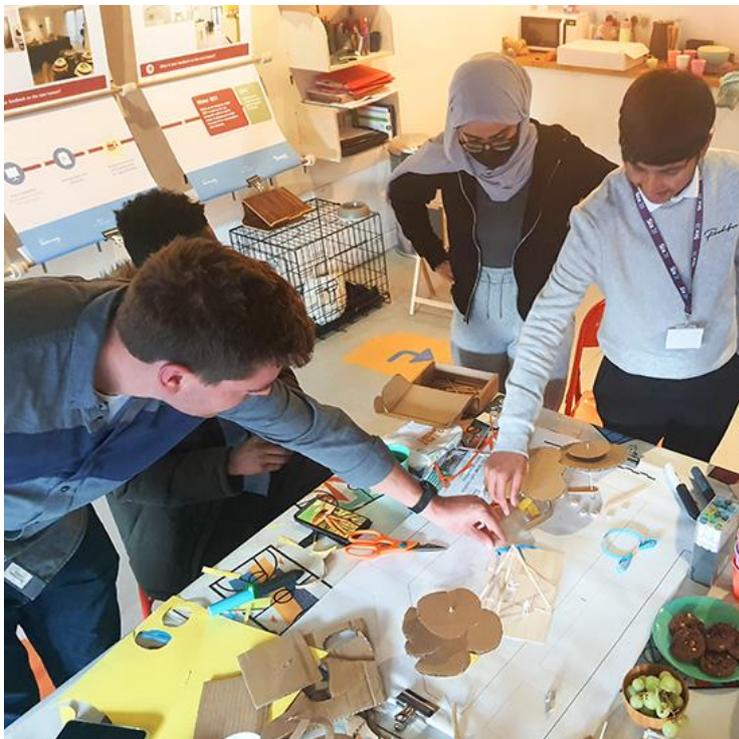
The new masterplan, LDA says, follows extensive consultation and co-design with estate residents and local stakeholders, and will deliver up to 2,022 new, refurbished and replacement homes. It establishes a network of multi-functional open spaces and green

pedestrian routes. This high-quality, finer grained network supports a 15-minute neighbourhood, with everything to live a good quality life within easy reach, with community, education and commercial facilities. It states:

‘Seven key open spaces range from a central neighbourhood green to lively public squares animated by spill-out spaces and distinctive play features. The spaces are designed to complement each other and collectively strengthen community bonds by integrating a variety of social opportunities for residents across the estate, improving access to play for children, encouraging active lifestyles, and supporting urban greening. A large neighbourhood park is surrounded by lower-rise apartment buildings, houses and maisonettes served by intimate mews streets and communal courtyards.’

Ben Walker, a director at LDA Design and London studio lead, said: “The people of Carpenters Estate have a strong community spirit and deserve a great place to live, and this landscape-led masterplan will deliver it.

“We have loved working with residents and found the process hugely rewarding. I think we’ve arrived at a genuinely co-designed masterplan fit for 21st century Londoners, and there’s so much great work to carry forward to other estate regenerations. The nature-rich public realm is designed to be welcoming, inclusive and a learning environment, which encourages ownership of public space.”



LDA Design’s Ben Walker designing with local students



Above: The masterplan will create quality green spaces, designed by LDA Design – visualisations by Proctor and Matthews and Metropolitan Workshop

The proposals include new buildings for the Building Crafts College, and improved access into Stratford Station and Queen Elizabeth Olympic Park. Commercial and employment spaces are focussed along the site’s northern edge, adjacent to the railway line. These will deliver a range of workspace, training and commercial opportunities. In total, over £1 billion will be invested in restoring the estate and creating new homes through phased plans that will be delivered over the next 15-20 years.

Mayor of Newham Rokhsana Fiaz is delighted that progress is being made in the restoration of Carpenters Estate. “After decades of waiting and being left behind, residents can finally take comfort that they have a Council which is forging ahead to deliver on the promises I made to deliver much needed homes they can afford. We are making substantial progress with the Carpenters Estate restoration and regeneration programme and submitting the outline masterplan is a demonstration of our commitment to transforming the estate into a vibrant community and neighbourhood instead of a ghost town languishing because of historical neglect. The plan also better connects the estate to Queen Elizabeth Olympic Park so that residents benefit more from this incredible public asset.”



Above: Dawlish Warren beach, Devon – viewed from the National Nature Reserve

Oceans and climate change

UK university research is at the centre of finding out how our oceans can help the world absorb CO₂. It is a question that will be highlighted at COP27 this November.

The International Science Council is asking how scientists can make a difference at COP 27? Martin Visbeck is a Member of the ISC Governing Board (2021-24) and is head of the research unit on physical oceanography at GEOMAR Helmholtz Centre for Ocean Research, Kiel and Professor at Kiel University, Germany, and states:

‘The ocean is part of the solution: it absorbs around 25% of CO₂ emitted. There’s a lot of effort in the global investment community on ocean-based, nature based or technological solutions for removing CO₂ from the atmosphere to the ocean domain. However, there are serious questions about whether these so-called blue carbon drawdown initiatives can be part of the national carbon accounting in the COP framework (NDCs). Emissions from the merchant fleets, plus the dramatic

impact of ocean warming, rising sea level, increasing ocean acidification, ocean deoxygenation, marine heat waves and biodiversity loss, all are arguments why a separate ocean negotiation track at COP would make sense.'

The University of St Andrews is leading on a transformative new programme, endorsed by the United Nations Educational, Scientific and Cultural Organization (UNESCO), to address the effects of climate change on the ocean.

The University's Global Ocean Decade Programme for Blue Carbon (GO-BC) is one of four major programmes unveiled and will focus on the role of blue carbon ecosystems across estuarine, coastal and open ocean environments for better ocean sustainability. It is a partnership with the UK Government's Department for Environment, Food and Rural Affairs (Defra), the Scottish Government, the Blue Carbon Initiative/Conservation International, the International Partnership for Blue Carbon (IPBC), and the Intergovernmental Oceanographic Commission of UNESCO.

Blue carbon refers to the carbon stored in marine habitats, such as saltmarshes. These marine ecosystems are highly effective at capturing CO₂ and storing carbon in organic-rich soils, often over thousands of years. The degradation or damage of these ecosystems may cause carbon to be released from the soil stores back to the atmosphere, at the same time compromising their ability to capture and store carbon in the future.

Professor Willian Austin from the University's Scottish Oceans Institute (SOI) and School of Geography and Sustainable Development said: "The United Nations Decade of Ocean Science for Sustainable Development reflects the global ambition for collective action for the Ocean; GO-BC will build a global partnership to support the ocean science that we need to inform these actions.

"The GO-BC programme aims to identify and provide evidence-based actions for blue carbon as nature-based solutions that go beyond climate mitigation, highlighting benefits for biodiversity and society, as well as climate adaptation and resilience. I am indebted to the many partners who encouraged and supported the development of GO-BC; there is much to be done and I am deeply honoured to be leading this UN programme."

Each of the Decade Programmes will generate new knowledge and solutions to the impacts of climate change and other stressors on the ocean through collaborative approaches, as well as reducing the gaps between science and policy.

A Defra spokesperson said: "We're pleased to announce UK Government support to GO-BC – working closely with our partners at the University of St Andrews, the Blue Carbon Initiative and International Partnership for Blue Carbon. GO-BC will enhance our understanding of the ocean-climate nexus and generate new knowledge and solutions to mitigate the effects of climate change, recognising the multiple roles blue carbon ecosystems play across mitigation, adaptation and resilience."

Conclusions

To help reduce climate change, the UK government is looking to plan for eight new nuclear reactors to be delivered by 2030, potentially producing 25% of the UK's energy needs, but a sensitive response is required around energy infrastructure and place-making, to mitigate adverse effects on the landscape and biodiversity.

Energy storage and the recycling of batteries from electric vehicles are part of the circular economy and the foundation of successful net zero technologies. There are opportunities to be grasped beyond hydrogen buses to hydrogen trucks and trains. Rolls Royce is pushing forward the creation of a small modular nuclear reactor according to the University of Birmingham, which is more flexible and can be deployed in a greater diversity of sites.

Some councils in the UK are rejecting the idea by the Liz Truss administration of Investment Zones because of compatibility with net zero ambitions. However, the West Midlands has announced its formal submission to the government and notes that if accepted this would boost the regional economy by £4.7 billion. It states that it should not be at the expense of a 'fairer, greener and better-connected West Midlands.

Cambridge City Council is working to boost EV charging infrastructure, reduce energy consumption in council homes and build new accommodation to Passivhaus standards. Hill Group which works with the Council is working on a Passivhaus pilot and in building new homes in the city is concerned not to overdevelop – so that it can meet open space requirements. It states that it benefits from Cambridge's 1950's layout of linked parks to create green walking routes, but questions whether there will be the need for large-scale electric charging infrastructure, if hydrogen 'bursts the electric bubble in the future.'

Can the design of the UK's first net zero bus station in Leicester become a blueprint for other cities transport hub infrastructure? Stripping back existing buildings to retain and reduce embodied carbon, while providing more natural light to reduce energy consumption could be the answer.

The master planning of Carpenters Estate in Stratford, east London by LDA Design shows what is possible in developing green pedestrian routes through the 15-minute neighbourhood. Public realm becomes a learning environment and encourages ownership of natural green space, in a vibrant and sociable neighbourhood, that replaces a ghost town.

Can our oceans continue to absorb CO₂, if our marine habitats are constantly degraded? New research between the UK government and St Andrews University in Scotland is taking place to find solutions for resilience. Scientists are attending COP27 this November to make sure these questions are posed, and delegates made aware of the urgency to find answers.

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