

Future Proofing Cities

Creating cities fit for the future

10%

lived in cities in 1900

50%

lived in cities in 2007

75%

will be living in cities in 2050

Who we are

Atkins is one of the world's leading engineering and design consultancies. We have the depth and breadth of expertise to respond to the most technically challenging and time-critical urban infrastructure challenges in the context of complex environmental change.

From low carbon urban planning in India, the creation of a vibrant new business district in the heart of Zhuhai China, to our work on the London 2012 Games, our technical specialists work together across disciplines to help cities develop solutions to complex environmental change.

This document provides an introduction to our current thinking, and our work which supports cities to respond to future challenges.

Plan From integrated city strategies to sustainable transport planning, we help those who work and live in cities to plan for the future.

Design Atkins designs physical structures from buildings to energy, water, and waste systems.

Enable Atkins enables the delivery of urban infrastructure with our clients trusting us with the management of projects, people, and issues – ensuring that deadlines are met, costs are controlled, and success is delivered.

We use the experience that we have gained working on projects worldwide to develop solutions to manage the risks to cities associated with complex environmental change.

We have the necessary breadth of technical skills from economists through to geologists and climate change scientists across the world that we can utilise to ensure the solutions developed are appropriate to their specific location and the challenges faced.

We are at the forefront of carbon critical design that helps our clients to reduce and manage their carbon footprints and prepare for a changing climate.

Our clients include most of the international donor agencies, as well as numerous public sector organisations and private sector companies.

Our thoughts on Future Proofing Cities

Cities face a wide range of environmental risks that have significant potential to impact their economic and social futures. These include climate hazards such as flooding and cyclones, rising energy and carbon footprints, and risks to water security and natural habitats.

A new flagship report led by Atkins in a unique partnership with the UK Department for International Development (DFID) and University College London (UCL) shows that cities can future proof themselves through policies in the physical and built environment.

The report outlines over 100 policy options for future proofing from integrated urban planning to diversifying the urban economy away from climate sensitive sectors, sustainable transport, management of water and waste, alternative energy, and new building design.

The 129 cities covering 350 million people across 20 countries assessed as part of the Future Proofing Cities report together:

Have
2/3
of their collective built-up urban area at significant risk of flooding

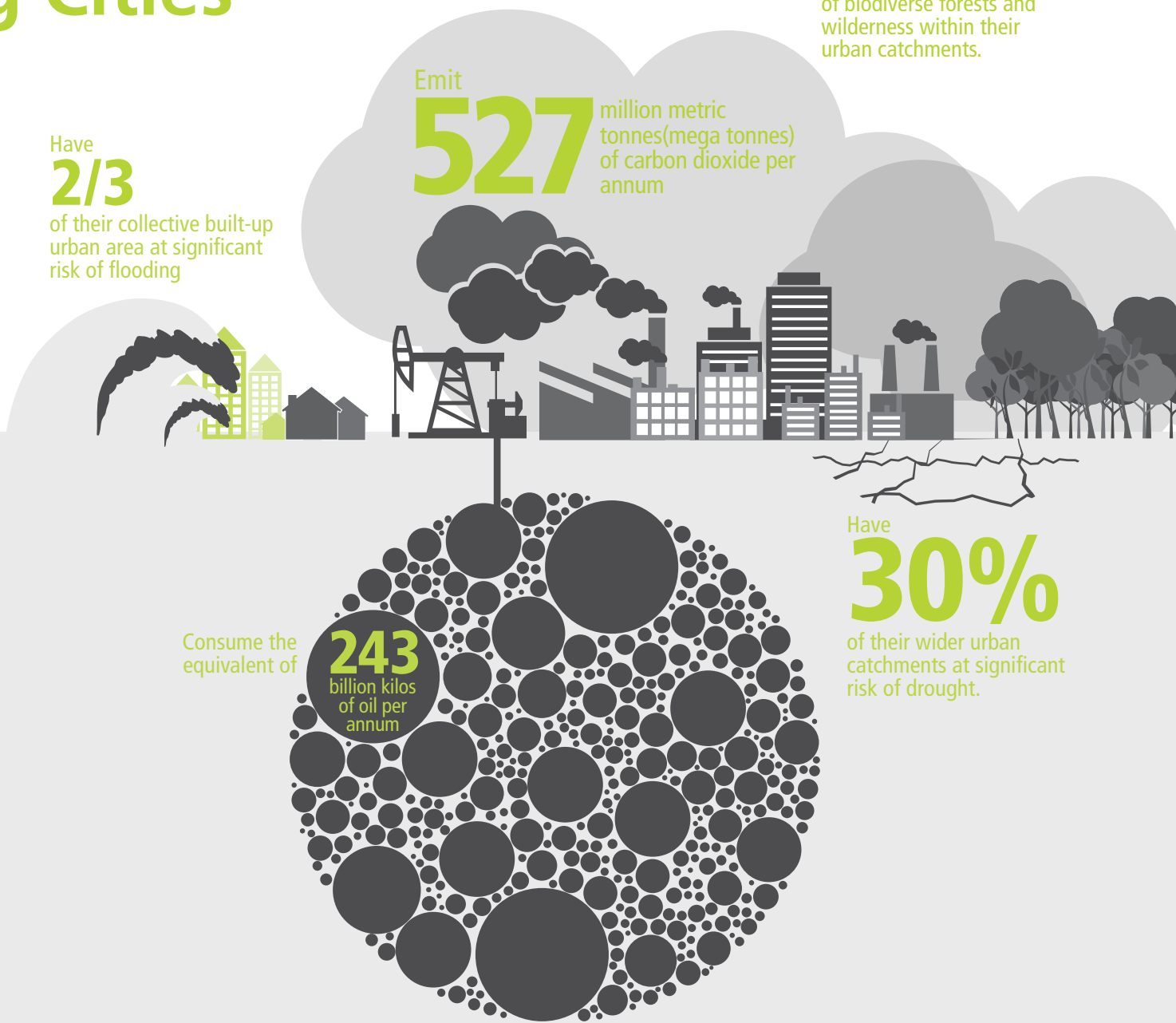
Emit
527 million metric tonnes (mega tonnes) of carbon dioxide per annum

Have over
100,000 sq.km
of biodiverse forests and wilderness within their urban catchments.

Consume the equivalent of

243
billion kilos of oil per annum

Have
30%
of their wider urban catchments at significant risk of drought.



With three quarters of the world's population expected to live in cities by 2050, it is cities that will be at the forefront of managing the challenges of climate change, resource scarcities, and damage to vital ecosystems.

Whilst cities can be natural units for driving innovation and higher standards of living, cities increasingly face a range of risks which are likely to threaten their long term prosperity if not managed in the right way.

Cities face climate hazards such as flooding and cyclones, are highly vulnerable to fluctuations in the price and availability of critical natural resources (such as energy and water), and urban expansion can often damage vital ecosystems such as bio-diverse forests on urban fringes. Cities occupy only two percent of the earth's land, yet account for 75% of global carbon emissions and between 60-80% of energy use.

In short, cities need to take steps to future proof their urban development. Future proofing is about supporting cities to respond to the risks to their social and economic prosperity associated with complex environmental change.

The earlier cities take steps to future proof themselves, the better. With so much of our urban infrastructure yet to be built, this provides an important opportunity for cities to grow in a way which avoids locking in unsuitable and unsustainable infrastructure which is ill equipped for future challenges.

Responding to this challenge will require changing the way cities are planned, designed, and built.

The good news is that cities can act. Our own report shows that cities can future proof themselves and this can generate environmental, social, and economic benefits.

Visit FutureProofingCities.com for further information.

Components required to implement future proofing at city level



How we can help

At Atkins we are expert in balancing social and economic demand for development with the whole range of other issues that need to be tackled to ensure cities become successful, vibrant and positive forces:

- An integrated 'future proofing' approach to strategic city planning to ensure growth balances environment, social, and economic objectives
- Providing adequate urban infrastructure to prepare cities for the future – from energy to water and sanitation, and sustainable public transport
- Planning for climate change and resource depletion, water shortages and flooding
- Supporting the preservation and enhancement of our natural environment and heritage assets
- Dealing with environmental pollution such as waste and contaminated land
- Integrated urban diagnostics to assess the risks, vulnerabilities, and capacities of cities
- Deploying a wide range of carbon tools to support cities to pursue low emission pathways.

We can harness the deep skills from right across the group to provide leading-edge technical expertise to understand the challenges that climate change, resource scarcity and carbon reduction present to the long-term resilience of urban infrastructure.

Since 1938 Atkins has developed urban infrastructure in the UK and overseas and has first-hand experience of the importance of planning and designing urban development schemes to ensure that they will last.

Supported by engineers, scientists and economists from across Atkins covering sectors as diverse as transport, energy, water, and ecosystems, our team of climate change and resource experts assist all sectors and can help our clients answer questions such as:

- Which areas of my city are at significant risks from flooding?
- Does my city have significant risks to its future water and food security?
- What does the future carbon emissions and energy trajectory of my city look like?
- Who is most vulnerable to complex environmental risks?
- What policy options can my city implement which can respond to risks facing us while generating social and economic benefits?
- How can my city attract finance into new sectors which can drive inclusive green growth?
- How can we plan for and manage the uncertainties associated with climate change?



Our people

We are a true people business. The collective expertise of our rich mix of talented people is our real asset.

Jon Swan – Director

An engineer with a background in waste PFI, Jon is looking at the best means to value waste as a resource to meet future energy challenges.

Tony Chan – Associate Director

Based in China, Tony has over fifteen years' experience in R&D and execution of feasibility studies and engineering design for a range flood management schemes and water resources projects worldwide.

Neil Thomas - Managing Director

Neil is the Managing Director for the UK Water and Environment business and leads our Technical Network across Atkins.

Roger Savage – Associate Director

Roger has a background in urban planning in the UK and internationally, with experience embracing all aspects of the development and management of cities. He is currently helping to lead Atkins's work on Liveable Cities, including managing a number of projects on low carbon cities in India and internationally.

Jitesh Brahmshatriya – Principal Masterplanner

Jitesh has extensive experience of working on large scale city planning projects in many countries. He is associated with a number of award winning commissions in India and UK. In his current role Jitesh heads the Masterplanning Team for India. Sustainable Urban Transport and Liveable Cities are at the core of his area of expertise.



Elsbeth Finch – Director

Elsbeth leads the Futures team, analysing the long term environmental and social changes and their likely impact on infrastructure. This is to develop new skills and services to support the resilience of business to withstand complex change. Elsbeth founded specialist consultancy Intelligent Space Partnership in 2000 aged 24, which she sold to Atkins in 2007.

Mike Woolgar – Director

MD of the Environmental & Water Management team in Water and Environment. We work in a wide variety of technical fields all related to development in, on or near water.

Martin Tedder – Principal Planner

Martin is a principal planner with considerable experience of urban development schemes internationally. He is leading the planning element of major mixed-use schemes and is supporting Atkins low carbon masterplanning work in India.

Paul Fraser – Principal Landscape Architect

Paul's expertise stretches across the masterplanning and landscape design disciplines and has been involved in schemes ranging from central London public realm design to major Middle Eastern metropolitan masterplanning.

Gable Bennett – Associate Director (Faithful & Gould)

Gable has been responsible for a wide variety of strategic sustainability commissions in the built environment across the UK, Middle East/North Africa and Australia including some of the world's largest LEED certified projects.

Dr Margaretta Ayong – Principal Hydrologist

Margaretta is a principal hydrologist with over 14 years experience on a wide range of international projects related to cities. She specialises in flood risk assessment, hydrological modelling, integrated modelling, reservoir flood risk modelling, and 3D flood risk visualisation.

Dr. John Box – Associate

John leads in the provision of ecological services to a wide range of partners, specialising in urban ecology, protected species, habitat creation, habitat restoration and habitat translocation, and ecosystem services.

Nikki Van Dijk – Associate

Nikki's background is in climate change adaptation and the use of climate and socio-economic scenarios in vulnerability assessment. She is currently using scenario planning to develop robust strategies for the water sector and has experience across a range of sectors including flood risk management, spatial planning and the natural environment.

Richard Alvey – Director

Richard is responsible for driving our global agenda on Cities, drawing on masterplanning, infrastructure and embedding sustainability and carbon critical design. He is delivering cities and masterplans across the Middle East, China, India and across Europe.

Steven Fraser – Business Manager

Steven is at the forefront of policy development and scheme appraisal relating to transport and climate change. He has successfully led a number of high profile climate change studies for clients across Europe and the Middle East.

Nick Godfrey – Principal Economist

Nick has a background in economic development, climate change, and resource scarcities in emerging and developing economies. He is the lead author of a new flagship report, 'Future Proofing Cities', looking at the risks and opportunities for cities to respond to climate change and resource scarcities.

Janardhan Sundaram – Associate Director

Janardhan is a Chartered Civil Engineer whose expertise lies in design and delivery of large scale sustainable transport projects including light rail and metro. Janardhan has worked on several projects around the world, including the Dubai Metro and metro projects in Delhi and other cities in India.

Emma Harvey – Sustainability Specialist

Emma specialises in large scale planning and urban design projects across China integrating low carbon and sustainable development elements into urban strategies. Emma is currently working with the Urban Planning and Consultancy Department in Shanghai as a sustainability specialist.

Dr. Geoff Darch – Principal

Geoff has a background in climate change impact assessment and the development of adaptation strategies. Current work includes advice on global water resources, assessment of impacts on urban transport infrastructure in the Balkans, and the development of monitoring programmes in the UK.

Our experience

Atkins has extensive experience spanning a number of sectors. Here we have showcased selected project examples under the following sector headings:



- City and regional development strategies
- Sustainable Transport
- Buildings
- Renewable Energy
- Managing water and waste
- Flood and storm surge defences and disaster preparedness
- Protecting natural habitats and fragile ecosystems

City and Regional Development Strategies

Carbon Critical Masterplanning Tool

In support of our pan-Atkins 'Carbon Critical' initiative we have developed a range of bespoke tools including a Masterplanning Tool.

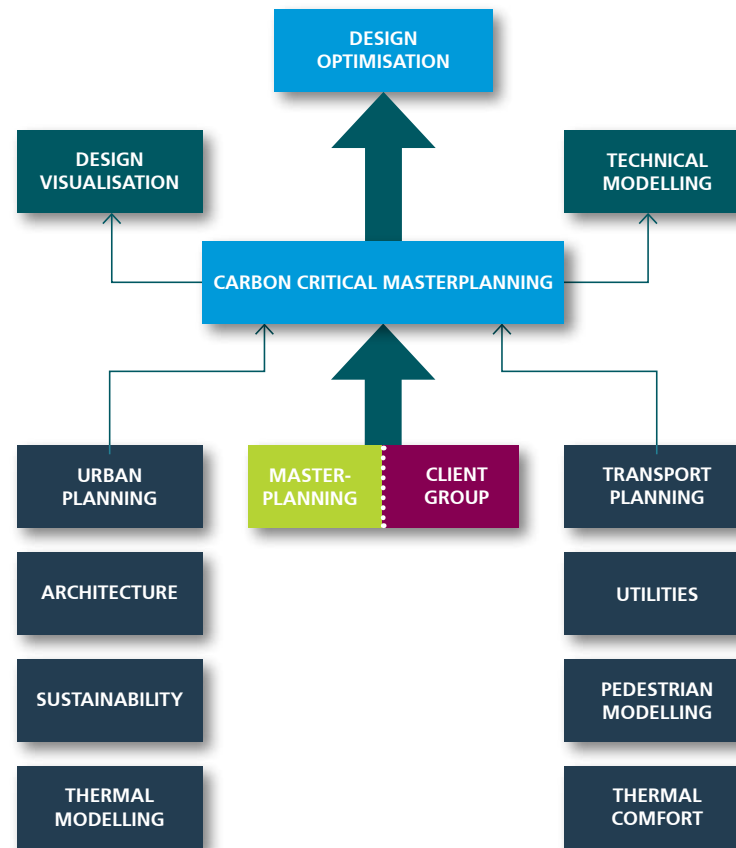
The tool has been developed to respond to all of the core challenges of designing sustainable communities, rapidly testing options at both the macro and micro scales in a dynamically changing database. This database is linked to a 3D model, providing a visual representation of the proposals.

The parametric capabilities of the Carbon Critical Masterplanning Tool allow us to navigate complex interrelationships between city metrics in real time. This is the power of the system - all of these questions could have been answered before, but through separate workstreams with time delays while information was processed by different teams.

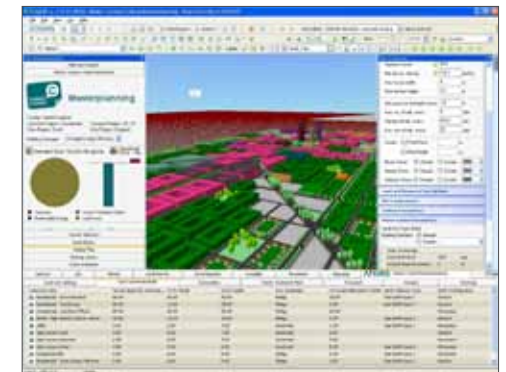
Now we can take a fully integrated approach to assess options for the placement of development, the physical form, density and structure of new developments, and the full range of quantitative data associated with the process of planning new urban areas. We believe we offer a truly innovative process underpinned by this technique. In pursuit of more sustainable solutions.

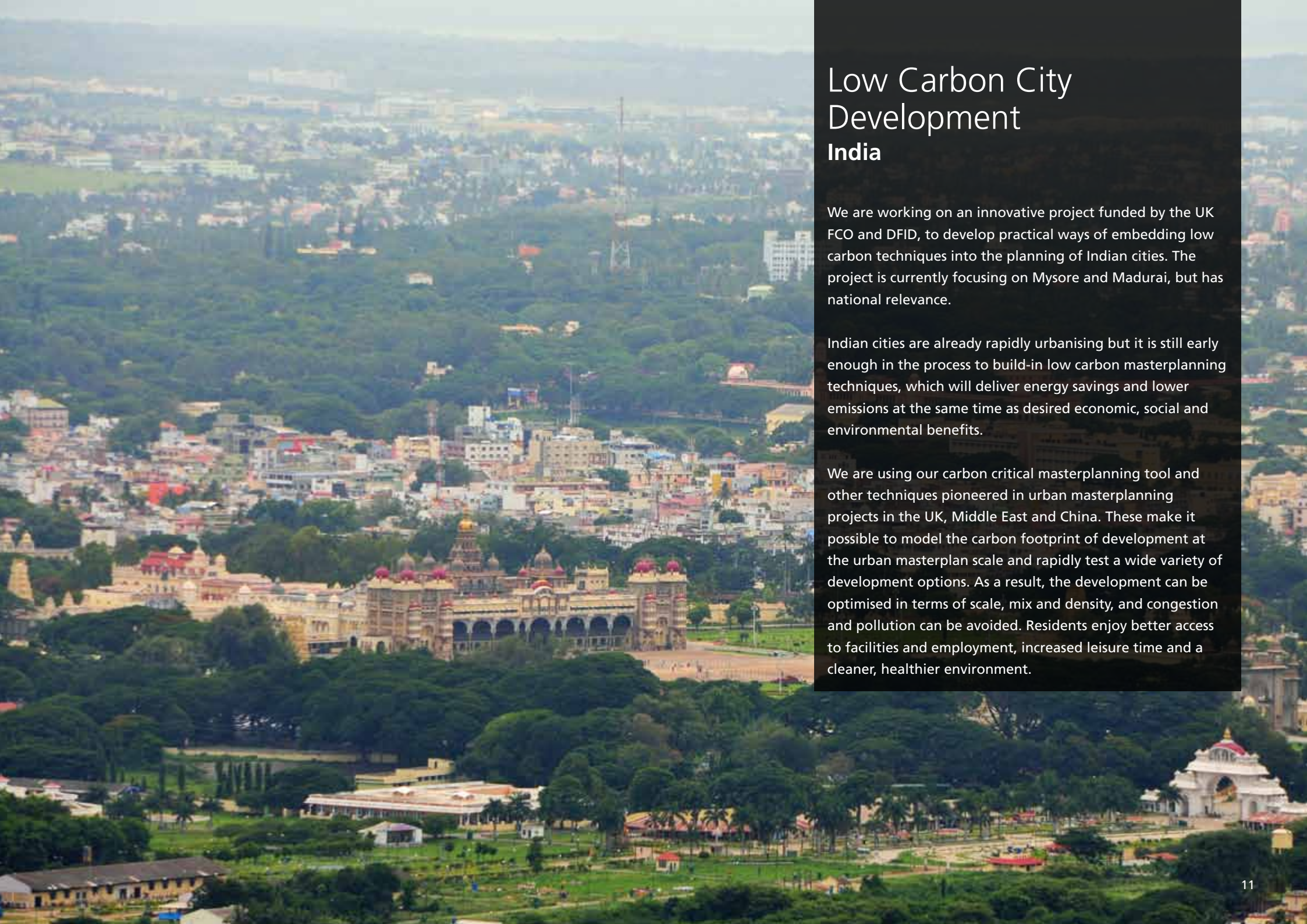
Typical client scenarios might include:

- Enhanced building standards are all very well, but will my **financial model** still stack up?
- How can I optimise the phasing and **distribution of floorspace** against the capacity of the **local property market**? And what will that mean in terms of new **infrastructure delivery**?



- What **social infrastructure** will I need to provide for the new population, and when will it need to be built?
- How can we optimise the energy use of the development to minimise the load on the local **utilities networks**?
- What will the **population** of this new place be? And how many **jobs** will it create?
- How much **waste** will the development produce? What happens to the energy demands if we handle some of it on site?
- What will happen to the number of **trips by car** if we change the location of the school?





Low Carbon City Development India

We are working on an innovative project funded by the UK FCO and DFID, to develop practical ways of embedding low carbon techniques into the planning of Indian cities. The project is currently focusing on Mysore and Madurai, but has national relevance.

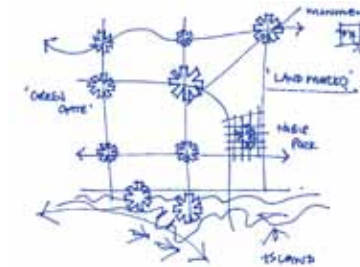
Indian cities are already rapidly urbanising but it is still early enough in the process to build-in low carbon masterplanning techniques, which will deliver energy savings and lower emissions at the same time as desired economic, social and environmental benefits.

We are using our carbon critical masterplanning tool and other techniques pioneered in urban masterplanning projects in the UK, Middle East and China. These make it possible to model the carbon footprint of development at the urban masterplan scale and rapidly test a wide variety of development options. As a result, the development can be optimised in terms of scale, mix and density, and congestion and pollution can be avoided. Residents enjoy better access to facilities and employment, increased leisure time and a cleaner, healthier environment.

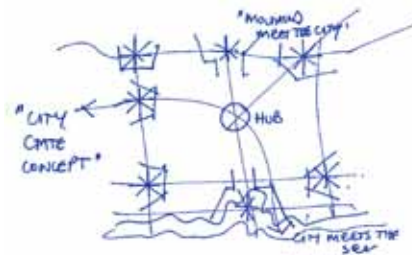




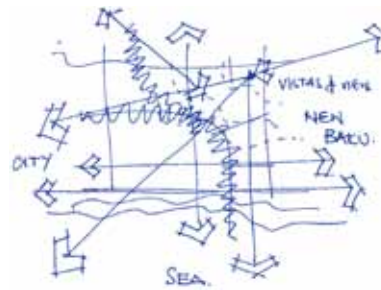
Communities



Landmarks



Gateways



Views and Vistas

Mixed Use Urban Development Baku, Azerbaijan

The White City development project is being undertaken by the Azerbaijan Development Company and is the largest urban development opportunity in Baku.

Atkins international multi-discipline team, involving a wide range of specialists from planners and urban and landscape designers, through environmental scientists of all kinds to utilities and geotechnical engineers and architects developed the overall strategic masterplan for the 220 hectare site. We are now working on the detailed design phase of the project.

A new community for 50,000 people, the masterplan will see the area transformed into a brand new environment, made up of ten distinct mixed-use urban districts. These are woven together in a hierarchy of tree-lined boulevards, public squares and landscaped parks and gardens which have been planned to make the most of the dramatic site topography.



Masdar Abu Dhabi

Abu Dhabi wants to become a world leader in renewable energy knowledge, development and implementation. Masdar City aims to research, fund and test new approaches to sustainable development and renewable energy generation.

Masdar City in Abu Dhabi will be the world's first zero-carbon, zero-waste car-free city. Atkins provided site wide infrastructure engineering concept design for the six million sq m sustainable development. This included an initial strategy for the delivery of support services to the Masdar site in a fully sustainable manner, minimising energy usage and waste generation and maximising

recycling and eco-friendly solutions. Atkins were asked to develop the infrastructure concept design for the city including designing a smart energy grid, surface and waste water infrastructure, and waste.

In parallel our cost management consultancy company Faithful+Gould (F+G) on the evaluation of over 50 technologies and option appraisals using cost benefit analysis over a three year period.

We also carried out the preliminary and detailed design plus tender documentation for the infrastructure services for Masdar MIST 1A area (Masdar Institute of Science & Technology) and the Security design for the Education institute.

The Masdar project is ambitious, testing solutions on an unprecedented scale. Atkins infrastructure designs, F&G's evaluation of technologies and our detailed designs for infrastructure and security for particular buildings.

Coed Darcy Sustainable Village

United Kingdom

Atkins is working with St Modwen Developments Ltd to transform a former oil refinery into the first sustainable 'urban village' in South Wales. We are taking the lead in the extensive remediation programme, onsite drainage and infrastructure, off-site link road and necessary improvements to the motorway junction. The team is also providing services in the ecological consideration of the site as it's adjacent to a Site of Special Scientific Interest (SSSI). The overall development is a true example of providing integrated multidisciplinary solutions. By 2027, this redeveloped site will be transformed into a new £1.2 billion urban village, providing homes for around 10,000 people.





Walkable Urban Development Lisbon, Portugal

The Almada Docks in Lisbon is one of the most extensive dockland regeneration projects within Europe, covering a site of 150 hectares.

The masterplan is based on sustainable urban design principles. The regenerated areas are arranged in the new Waterfront district while the former linear docks become a central water park. The mixed-use plan reinvents the Lisbon 'praca' to create streets and public spaces that are lively, intimate and secure with pedestrians accorded priority over the car. Additional housing promotes the critical mass necessary for urban activity and life.

Directly across the Tagus Estuary from Lisbon, it is intended that the Almada Docks will become a new destination and model type of urban community that will pioneer new forms of employment in the information age. The design exemplifies the best of urban living, using buildings to temper the exposed environment and foster an inclusive community.

The project methodology is a model of best practice. The possibilities to deliver zero carbon development are explored through an integrated strategy for energy efficiency, on-site energy production, renewable energy harvesting and carbon sequestration.



Liveable CBD Zhuhai, China

This concept masterplan envisions a 'Zhuhai – Macao' city cluster centred on the Shizhimen Business District. This new cluster is intended to complement 'Guangzhou – Foshan' and 'Hong Kong – Shenzhen' as a third engine for development in the Pearl River Delta.

The design proposes a vibrant, liveable central business district on the waterfront, sensitive to the existing environment providing a robust basis for economic growth. For example, a borderless relationship between Macao and Zhuhai intended to create a comprehensive and sustainable space for conferences, businesses, heritage and tourism within the Shizhimen corridor has been proposed.

The proposed design features green and public open spaces, landmark buildings and public transport systems. All embrace the central principles of Carbon Critical Design.





Abu Dhabi Capital District Masterplan

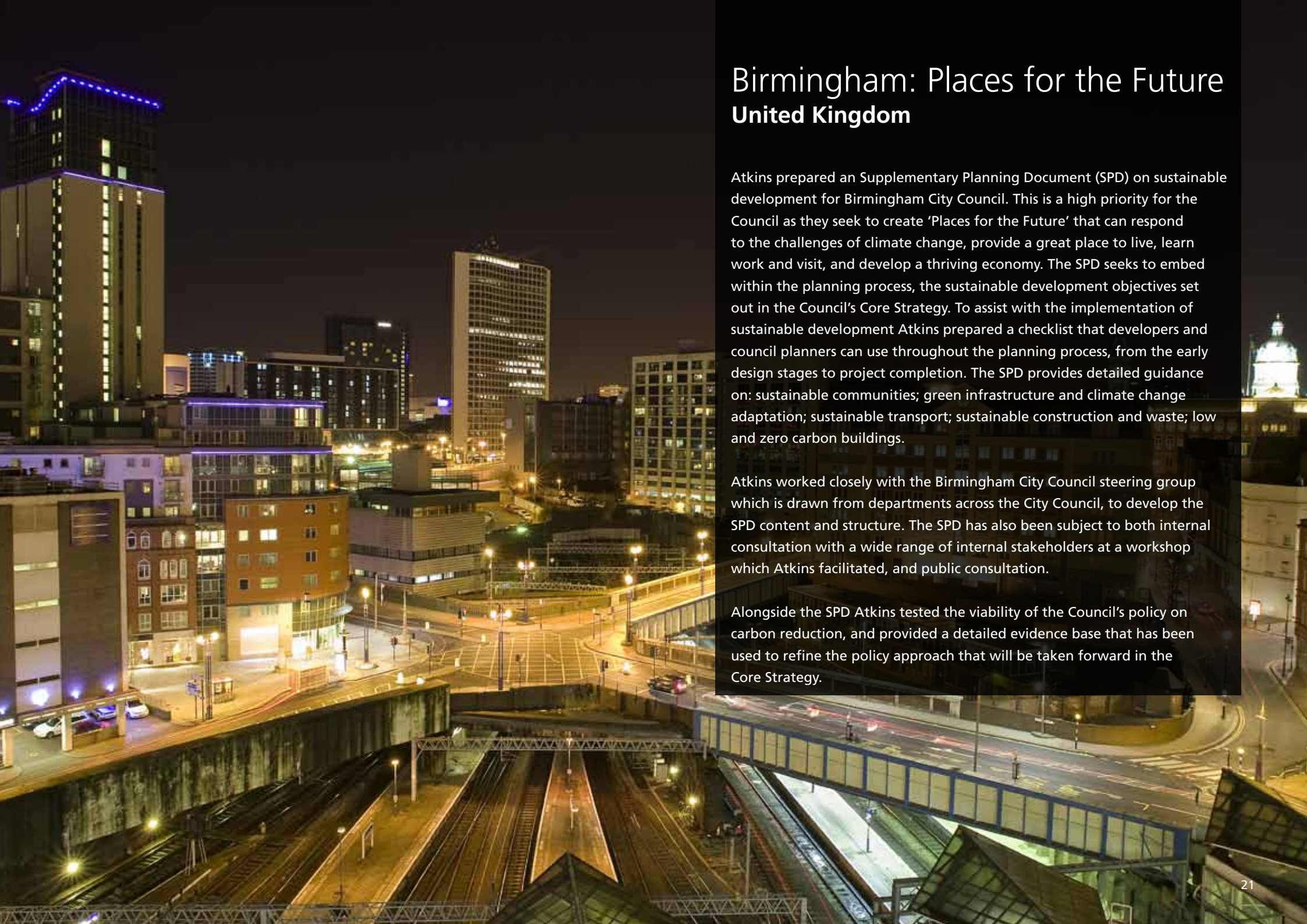
Abu Dhabi, UAE

The proposed Capital District is a strategic initiative to create a new capital city for the UAE and a mainland Central Business District for Abu Dhabi, between Abu Dhabi International Airport and Mohammed bin Zayed City.

We developed and used a Strategic Environmental Assessment method for the systematic evaluation of the Capital District Masterplan's sustainability, in collaboration with UPC and EAD. This was the first SEA carried out in Abu Dhabi according to international United Nations standards.

The Masterplan was assessed against a framework of sustainability objectives. This included strategic land-use, transport, utilities and green infrastructure options, recommendations of preferred options and mitigation and monitoring measures for subsequent design and implementation stages.



A nighttime photograph of a cityscape in Birmingham, UK. The image shows a mix of modern and older buildings, some with blue and white lighting. In the foreground, there are tram tracks and a tram. The background features a large, illuminated building with a grid-like facade. The overall scene is a vibrant urban environment at night.

Birmingham: Places for the Future

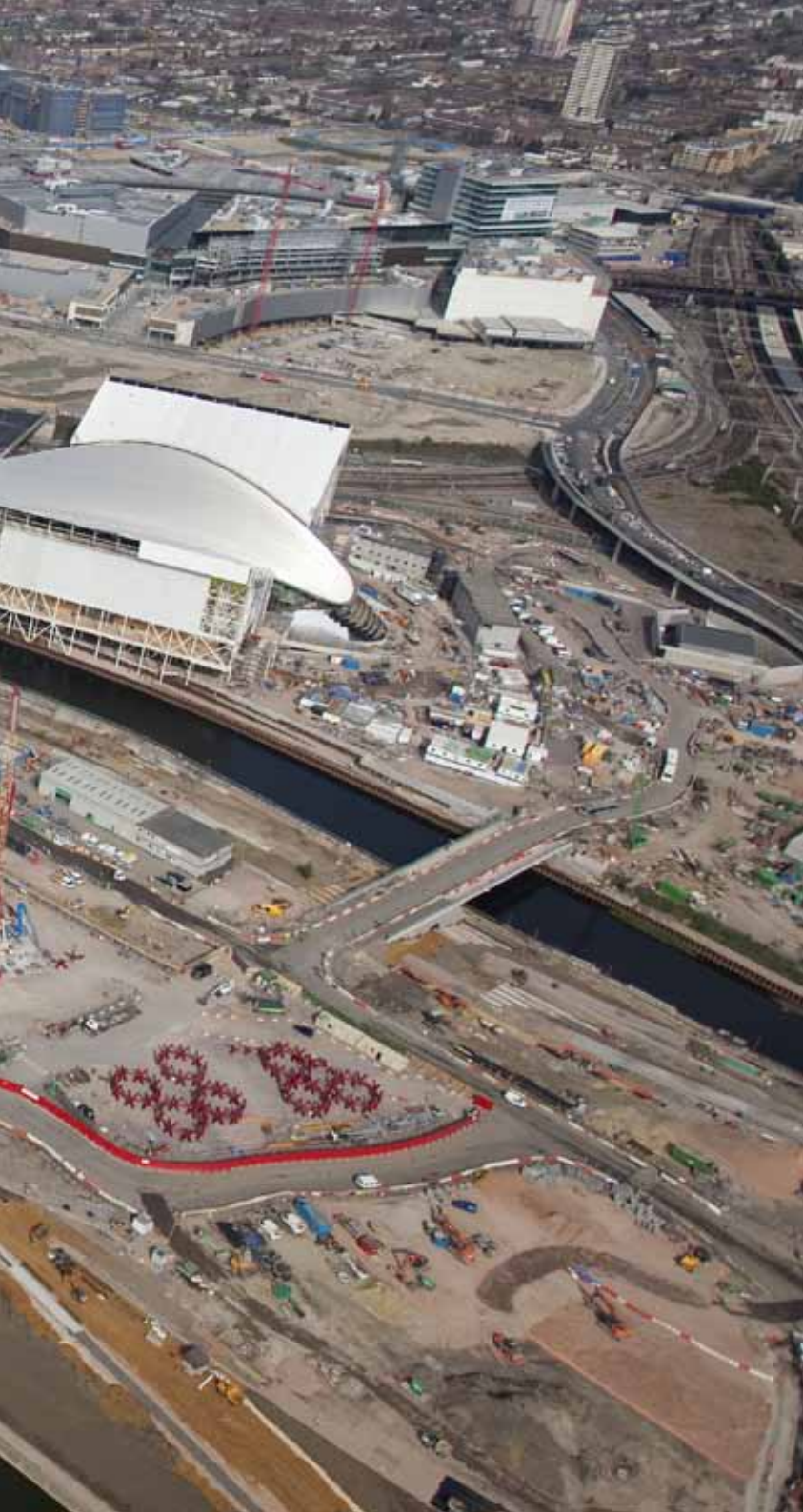
United Kingdom

Atkins prepared an Supplementary Planning Document (SPD) on sustainable development for Birmingham City Council. This is a high priority for the Council as they seek to create 'Places for the Future' that can respond to the challenges of climate change, provide a great place to live, learn work and visit, and develop a thriving economy. The SPD seeks to embed within the planning process, the sustainable development objectives set out in the Council's Core Strategy. To assist with the implementation of sustainable development Atkins prepared a checklist that developers and council planners can use throughout the planning process, from the early design stages to project completion. The SPD provides detailed guidance on: sustainable communities; green infrastructure and climate change adaptation; sustainable transport; sustainable construction and waste; low and zero carbon buildings.

Atkins worked closely with the Birmingham City Council steering group which is drawn from departments across the City Council, to develop the SPD content and structure. The SPD has also been subject to both internal consultation with a wide range of internal stakeholders at a workshop which Atkins facilitated, and public consultation.

Alongside the SPD Atkins tested the viability of the Council's policy on carbon reduction, and provided a detailed evidence base that has been used to refine the policy approach that will be taken forward in the Core Strategy.





London 2012 United Kingdom

Atkins has been appointed as part of the team to take forward the design of the Olympic Park infrastructure. The work streams with which we are involved include:

- Landscape and public realm;
- Utilities infrastructure;
- Security;
- Waterways;
- Drainage;
- Roads and bridges.

We are working in consultation with other appointed consultants, statutory authorities, contractors, and ODA delivery partners to ensure that the Olympic Park works are completed to cost and programme.

We are leading the design for the enabling and remedial works, coordinating utility services design for the Olympic Park and completing detail design of services for the north site.

Atkins was commissioned by the Olympic Delivery Authority to coordinate the EIA of the London 2012 Olympic, Paralympic and Legacy facilities located in the Lower Lea Valley. To accompany the planning application an Environmental Statement was prepared. The application represented one of the largest ever planning applications in Europe at over 10,000 pages. The 246ha site had been the focus of heavy industry for over a century, and included waste and recycling

uses, railway lines, waterways, an area of housing and pockets of greenspace and wildlife habitat. Consequently the full range of environmental topics required assessment, including land contamination, aquatic and terrestrial ecology, cultural heritage, flood risk, noise and air quality.



Sustainable Transport and Public Realm





Mass Transit Planning United Arab Emirates

Transport is fundamental in the economic development of UAE and is seen as critical for the future prosperity of the Emirates. Atkins has been commissioned by the National Transport Authority (NTA) to conduct a strategic review of current transport plans and policies. The study will result in a White Paper setting out transportation and infrastructure plans for the UAE up to 2030, and will be presented to the Federal Government for its endorsement.

A multidisciplinary team of experts throughout Atkins will provide input into the review, including specialists in transport planning and economics, public transport, rail, freight and mass transit, institutional reform, transport governance, ports, airports and roads.

We will focus on several strategic areas including, improving safety, reducing congestion, protecting the environment, ensuring excellent connectivity and having a transportation network and infrastructure that will improve economic productivity and growth. Atkins also aims to introduce policies and plans that facilitate the use of sustainable transport which will provide economic, environmental, social and health benefits to the entire United Arab Emirates.

The key challenges we face include producing and implementing a plan that meets the country's future needs and aspirations whilst developing strategies that provide equitable benefits for the current population.



Dubai Metro Dubai

Dubai Metro is the flagship transportation project in Dubai. Apart from being an architectural and engineering showpiece, it offers an efficient, environmentally friendly and convenient form of transport.

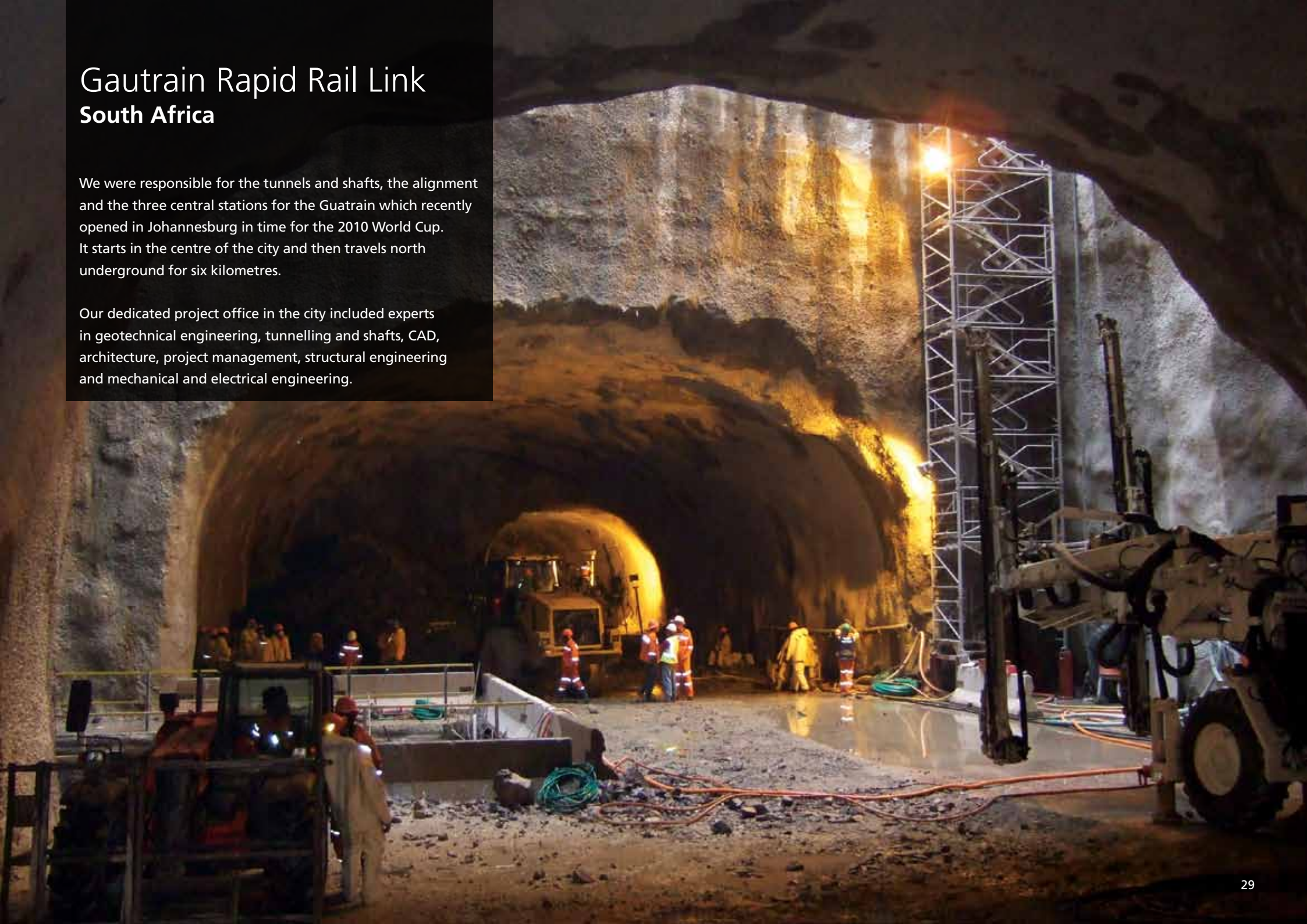
We are lead designer responsible for all civil works associated with the Red and Green Lines, including geotechnical and site investigations, tunnels, environmental impact, noise and vibration reduction and landscaping.

Gautrain Rapid Rail Link

South Africa

We were responsible for the tunnels and shafts, the alignment and the three central stations for the Gautrain which recently opened in Johannesburg in time for the 2010 World Cup. It starts in the centre of the city and then travels north underground for six kilometres.

Our dedicated project office in the city included experts in geotechnical engineering, tunnelling and shafts, CAD, architecture, project management, structural engineering and mechanical and electrical engineering.



Guangzhou Underground

Guangzhou, China

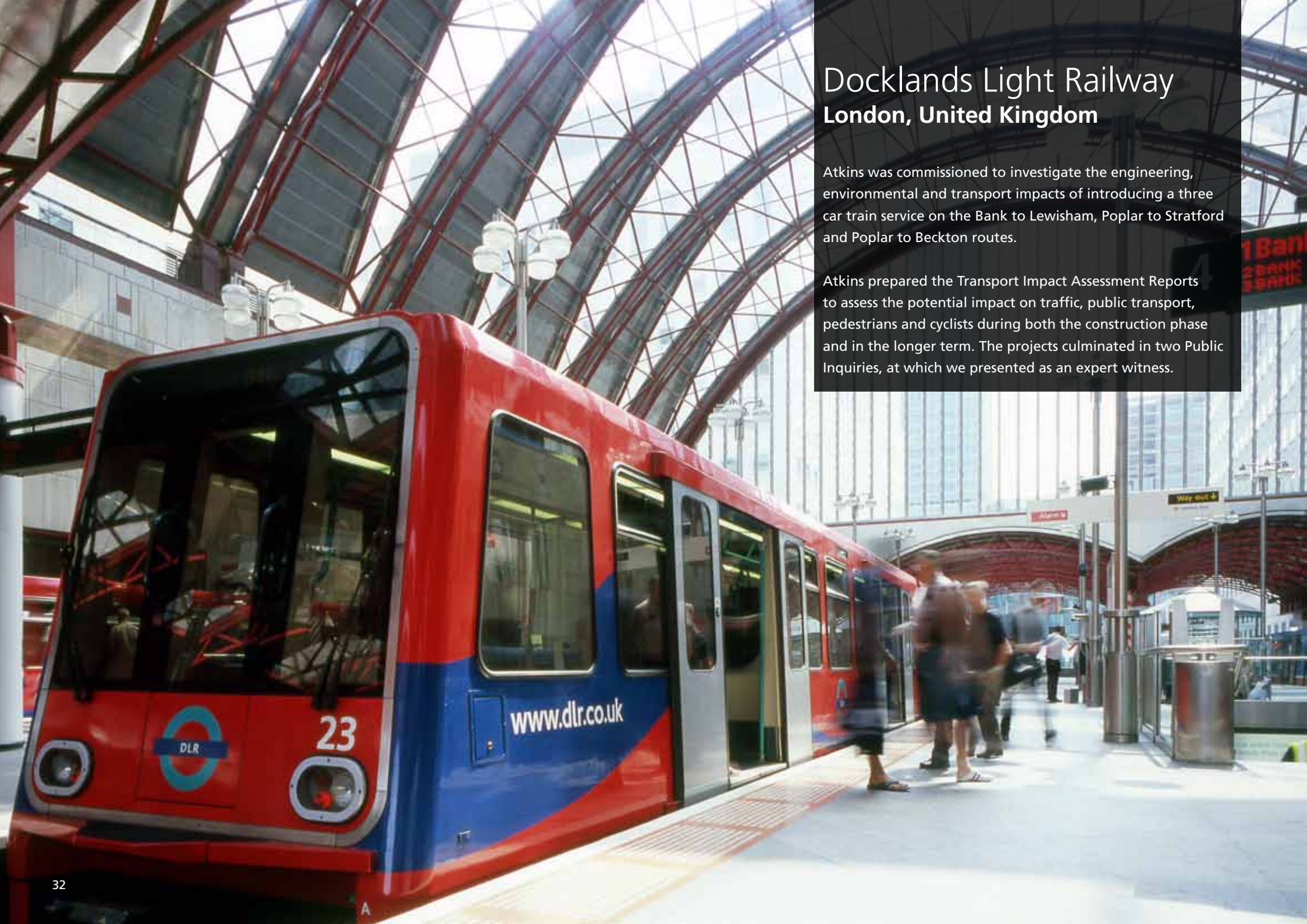
An international design competition for the design of the underground space and central square in the new Zhujiang CBD in the heart of Guangzhou City. The site occupies an area of 140 hectares with a gross floor area of 43 hectares of underground space.

A multi-disciplinary team of designers and engineers provided an integrated solution including 1) the planning of the underground commercial and supporting space and requirements, 2) design of the 5 “exposed” mass transit stations along the continuous underground space, 3) comprehensive underground road and intelligent transport systems design, 4) computer-modeled pedestrian planning for the interchange stations between the internal mass transit and the city-based metro systems, 5) seamless vertical and sub-tropical landscape designed to bring natural lighting and environment into the underground space, 6) construction planning for the complex design, 7) design-driven structural design as well as other engineering feasibility and costing works.

This project was jointly managed by and involved staff from various teams and offices in mainland China and Hong Kong.



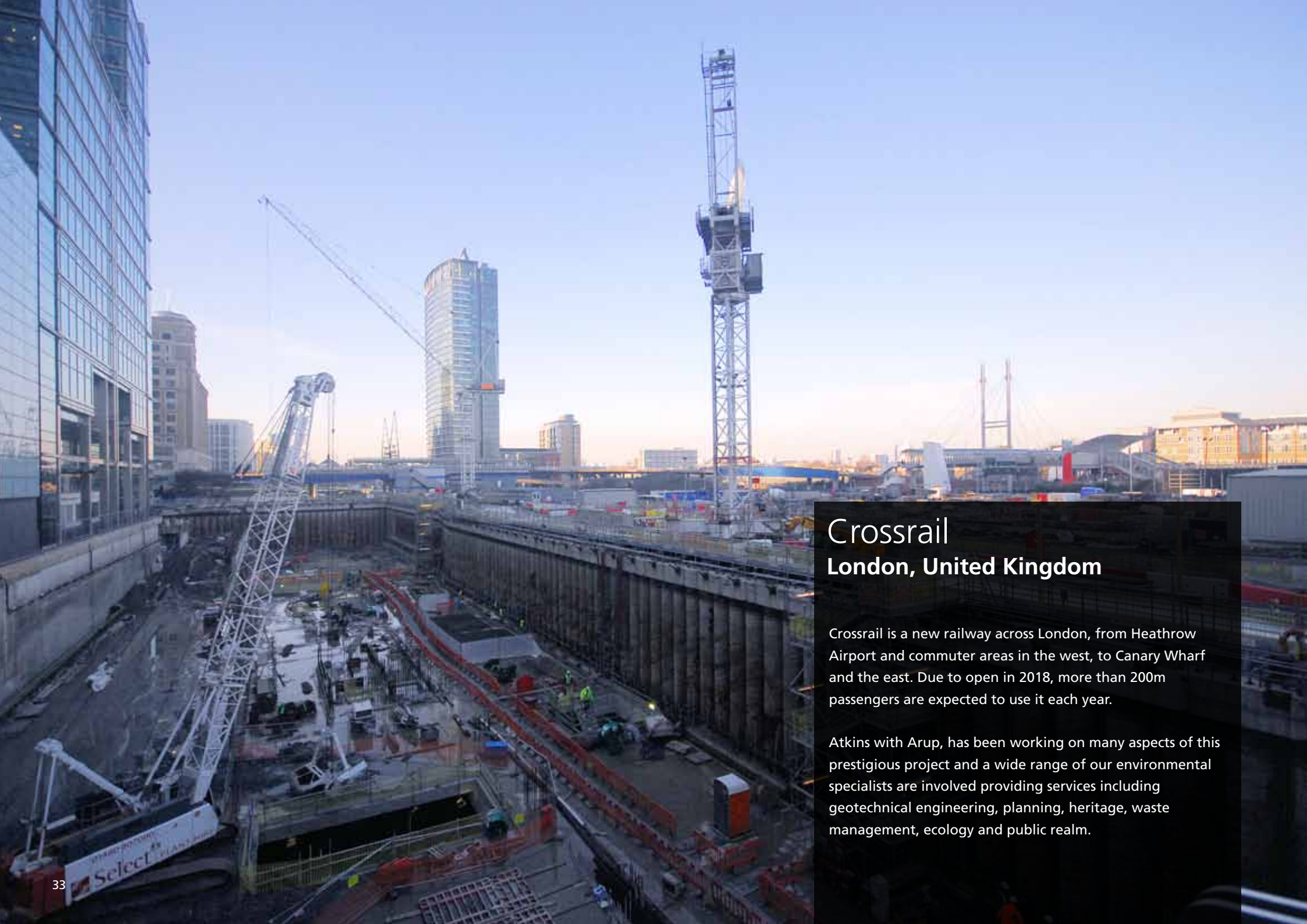




Docklands Light Railway London, United Kingdom

Atkins was commissioned to investigate the engineering, environmental and transport impacts of introducing a three car train service on the Bank to Lewisham, Poplar to Stratford and Poplar to Beckton routes.

Atkins prepared the Transport Impact Assessment Reports to assess the potential impact on traffic, public transport, pedestrians and cyclists during both the construction phase and in the longer term. The projects culminated in two Public Inquiries, at which we presented as an expert witness.



Crossrail London, United Kingdom

Crossrail is a new railway across London, from Heathrow Airport and commuter areas in the west, to Canary Wharf and the east. Due to open in 2018, more than 200m passengers are expected to use it each year.

Atkins with Arup, has been working on many aspects of this prestigious project and a wide range of our environmental specialists are involved providing services including geotechnical engineering, planning, heritage, waste management, ecology and public realm.



Cambridge Guided Bus United Kingdom

Atkins work for Cambridgeshire County Council (CCC) on Cambridgeshire Guided Busway (CGB) commenced with initial feasibility studies for the busway. Following the acceptance of the Cambridge to Huntingdon Multi-Modal Study (CHUMMS) Atkins developed the scheme assessment incorporating the following elements:

- Environmental impact assessment;
- Transport impacts, accessibility and decongestion benefits;
- Economic and financial appraisals;
- Engineering feasibility assessment; and
- Capital costing.

On the basis of the above assessment, an 'Annex E' Major Scheme Appraisal submission for project funding was prepared and was successfully submitted to Department for Transport. Atkins continued to provide advice to CCC in its role as lead consultant and project manager for the scheme and supported the negotiation and discussion with DfT for funding for the scheme. Funding was obtained in summer 2006 for £90M of the £116M scheme cost. Atkins managed the scheme through the procurement phase, managing other consultants through the pre-contract and tender stages.

East-West Corridor BRT Delhi, India

The Government of National Capital Territory of Delhi (GNCTD) planned to construct an East West Corridor for East Delhi to New Delhi Railway Station. UMTC were commissioned to develop alternatives for a mass transit system that would address the issue of traffic congestion at intersections as well as wider connectivity. The project team undertook a full review of BRT options which culminated in a preferred alignment to encompass all users such as traffic, pedestrian, cyclist and BRT user.



Regional Rapid Transit System National Capital Region, India

NCR Planning Board as per the “The Regional Plan – 2021” has conducted a study on ‘Integrated Transportation Plan for NCR’ for the Transportation Plan for NCR for the perspective year 2032 and has decided to implement a Regional Rapid Transit System (RRTS) for NCR. The decision has been taken to take action on the preparation of Feasibility Study and detailed project report for three corridors, namely Delhi-Ghaziabad-Meerut, Delhi-Gurgaon-Rewari-Alwar and Delhi-Sonepat-Panipat. UMTC were appointed for the preparation of the Delhi-Gurgaon-Rewari-Alwar corridor of 158km, undertaking all elements of a detailed project report from primary data collection through to alignment and facility plan.



Walking & Cycling Masterplan Abu Dhabi, UAE

Atkins was commissioned by the Development of Transport (DoT) to develop a walking and cycling master plan for the Emirate of Abu Dhabi – to provide a platform for both existing and future developments and to assist in the design of street layouts. The master plan addresses all issues (legislation, street network and design guidance) currently restricting walking and cycling.

Working collaboratively with the DoT and a Technical Advisory Group, the project team facilitated a series of workshops around Abu Dhabi – enabling key stakeholders (including local municipalities, UPC, other DoT departments, the police and local community groups) to input into the masterplan process.



Pedestrian Wayfinding System

United Kingdom

Atkins refined and implemented a pioneering pedestrian wayfinding system across the central London areas of South Bank and Bankside.

Legible London aims to deliver a consistent approach to walking wayfinding information throughout London.

The system was originally piloted in and around Bond Street and was then refined and extended to the popular tourist areas of South Bank and Bankside, specifically chosen as they offer complex wayfinding challenges, as well as being home to the UK's busiest transport interchange in Waterloo Station.



Oxford Circus

London, United Kingdom

Oxford Circus is one of the busiest spaces in central London with over 40,000 pedestrians an hour crossing the Circus at the junction of London's two main shopping streets – Oxford Street and Regent Street. Atkins was appointed by the Crown Estate to improve pedestrian movement and the quality of the public realm. This involved the introduction of the UK's first large scale, diagonal crossing and a radical increase in the amount of footway space, by clearing clutter and narrowing the carriageway.

To test such an innovative approach Atkins' transport planning team and our Intelligent Space pedestrian modellers initially developed computer models including 2D real time simulations for vehicles (VISSIM) and pedestrians (LEGION). The urban design team combined this data and prepared a 3D animated, photo-realistic environment (3D Studio Max model) with specialist Design Hive, which was used for stakeholder and public consultation.

A seven month programme of site operations had to coordinate with London Underground improvements, maintain safe and convenient retail operations, street clutter clearance and utilities works, as well as implement improvements including granite paving, lighting mounted on buildings and wayfinding.

The completed project had drawn significant public and professional support and Oxford Circus is again a place to visit for its change in character both by day and by night.

The movement of traffic appears to work as predicted with a dramatic reduction in pedestrian congestion.





Reducing carbon emissions in European cities

Ticket to Kyoto

Atkins, in partnership with Frontier Economics and Edinburgh Napier University, provided support to help five European city transport authorities to reduce CO₂ emissions in urban public transport (bus, tram, metro) through more environmentally friendly behaviour and changes in infrastructure (moBiel in Bielefeld, Germany; RATP in Paris, France; RET in Rotterdam, Netherlands; STIB in Brussels, Belgium; and Transport for Greater Manchester in Manchester, UK). This led to a number of options being identified and developed with the partners, including stronger requirements on emissions reporting, company reporting and CO₂ information provided to public transport users, improvements to cost benefit analysis processes and guidance to better account for volatility of energy prices, cost of carbon and whole life cost of investment, capacity building and development of tools, investigating financing options including EU funding sources and the use of ESCO (Energy Services Company) or EPC (Energy Performance Contracting) models, using the carbon markets to offer carbon neutral products, including GHG performance as a criterion in procurement processes and contracts with supply chains, and stricter and consistently enforced land use planning and building regulations requiring improvements in energy efficiency and carbon reduction.



An aerial photograph of a city intersection. A river flows from the top left towards the bottom left, crossing a bridge. The intersection is busy with traffic, including cars and buses. There are several buildings, including a large, modern building with a circular roof structure. The image is used as a background for the text on the right.

Green Growth in the Transport Sector Macedonia

Atkins was appointed by the World Bank in April 2012 to provide support to the Macedonian Government with transport sector green growth and climate change analytical work. This commission presented a great opportunity to really make a difference and help towards mitigating transport's impact on climate change and enhancing Macedonia's transport's network resilience to the future impacts of climate change through the effective deployment of affordable mitigation and adaptation measures. The commission identified mitigation and adaptation potential in Macedonia's land transport sector, including the economic costs and benefits associated with these policies and measures; and developed mitigation and adaptation action plans. The mitigation aspect of the work includes the preparation of three emission scenarios: a business as usual scenario and two mitigation scenarios titled "Green" and "Super Green". The scenarios are modelled using the World Bank's EFFECT model (Energy Forecasting Framework and Emissions Consensus Tool). Following on from the modelling work, a transport sector emission mitigation action plan will be developed including information on the economic costs and wider benefits of the proposed mitigation measures as well as Marginal Abatement Cost Curves (MACCs) for the Macedonian transport sector. The adaptation aspect involves the development of an adaptation action plan on the basis of research on local conditions and potential climatic risks and the most appropriate approaches for responding to them. As with the mitigation plan, the wider impacts of the suggested measures will be included in the plan and the research process includes a workshop with key stakeholders.

Buildings

Efficient Building Design

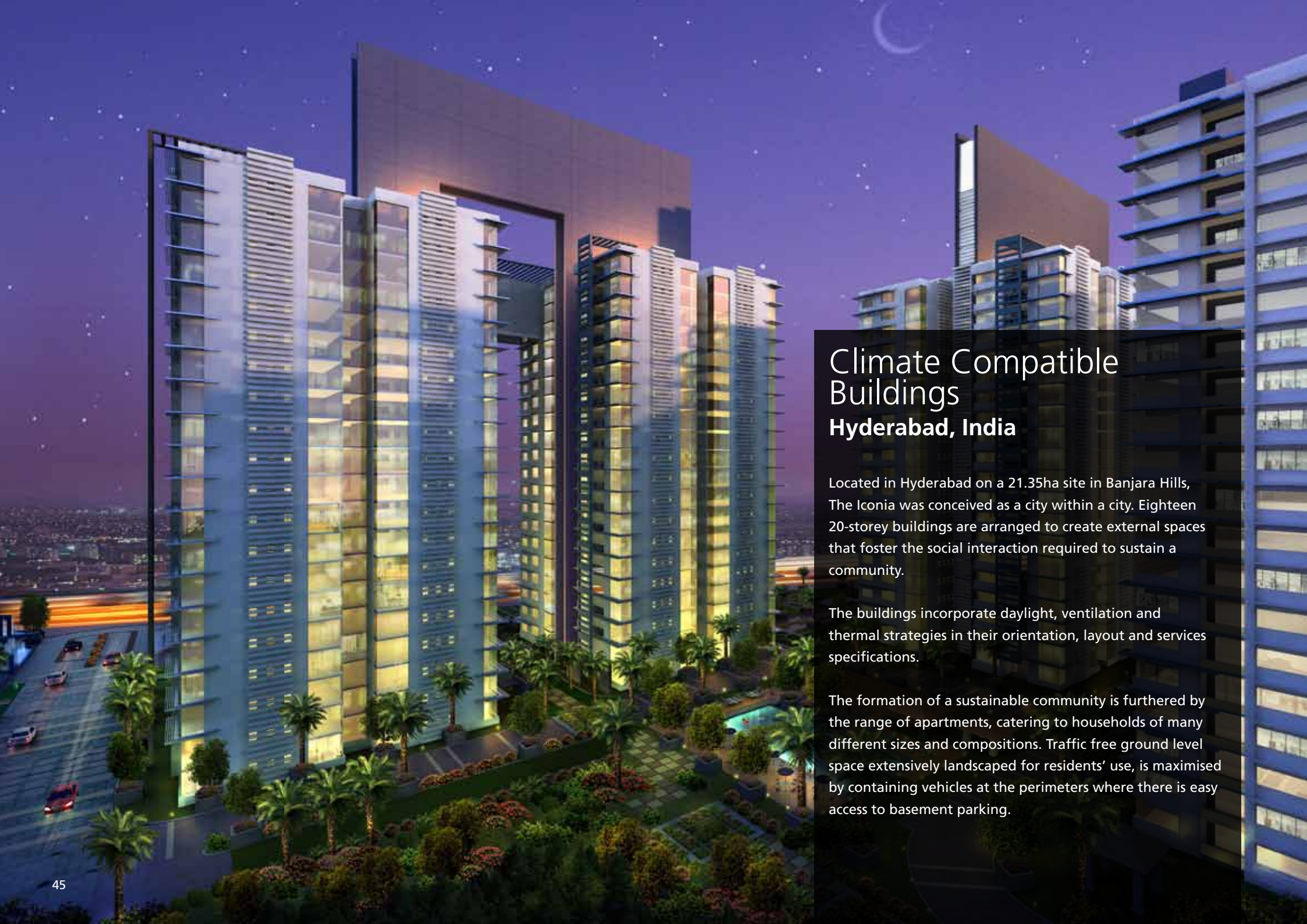
World Trade Centre, Bahrain

The world's first, large scale integration of wind turbines in any building, the Bahrain World Trade Centre is not only a great piece of architecture, it is also a great office building, an exclusive mall, highly commercially viable, and it is becoming Bahrain's national icon, in the same way the Burj Al Arab is Dubai's icon. Both of these icons were designed by Atkins.

Other sustainable design features in the building are:

- Photovoltaics
- High performance thermal glazing
- Shading to A/C areas
- Balconies for fresh air
- Heat recovery wheels
- Low energy lighting
- District cooling system
- Water conservation measures





Climate Compatible Buildings

Hyderabad, India

Located in Hyderabad on a 21.35ha site in Banjara Hills, The Iconia was conceived as a city within a city. Eighteen 20-storey buildings are arranged to create external spaces that foster the social interaction required to sustain a community.

The buildings incorporate daylight, ventilation and thermal strategies in their orientation, layout and services specifications.

The formation of a sustainable community is furthered by the range of apartments, catering to households of many different sizes and compositions. Traffic free ground level space extensively landscaped for residents' use, is maximised by containing vehicles at the perimeters where there is easy access to basement parking.

Climate Compatible Buildings

Bangalore, India

ITC wanted a tower for its new offices, but it was reluctant to lose the advantages of its existing campus-style facility, such as the way the staff taking a quick break in the interposed green spaces had chance meetings that sparked good business ideas.

Our response was to create a vertical campus, by elevating the green spaces into atria and sky gardens. As an additional benefit, these are also essential elements of the advanced sustainability systems developed for the scheme. The central atrium, for example, is both a healthy meeting place for staff and also a stack-effect flue, exhausting stale air and using the draught created to draw cool, fresh air into the office spaces. Similar thinking is applied throughout the tower, for instance in the use of a silvered reflective glazed cladding, coated and layered to minimise heat transfer.



Renewable Energy

Energy New Build

United Kingdom

Atkins provides a wide range of planning and environmental services, including EIA and consents, to a wide range of clients in the UK energy sector including Airtricity, npower, United Utilities, Gaz de France, Powergen, E.ON, EDF and National Grid.

Current and recent new build projects across Scotland, Wales and England range from windfarms to nuclear power stations.





Dorset Green Renewable Energy and Low Carbon Energy Facility

Dorset, United Kingdom

New Earth Energy is proposing to develop a renewable and low carbon energy facility at the Dorset Green Technology Park in Winfrith, Dorset. The facility will provide approximately 20MWth of renewable heat and 10MWe of renewable power through the pyrolysis of residual non-hazardous waste and biomass. The Park occupies part of a former United Kingdom Atomic Energy Authority nuclear research establishment.

Atkins undertook an EIA which established that there would be loss of acid grassland and heathland habitats on the application site, but these losses are offset by improved biodiversity in nearby pine woodland through thinning and replanting with native species. There will be some adverse visual effects, and some benefits through the provision of a renewable, low carbon form of heat and power, as well as the diversion of waste away from landfill.

Hydropower

Republic of Sudan

The Sennar Dam was constructed in the 1920s on the Blue Nile and is a key source of irrigation water to the Gezira irrigation scheme. It is fundamental to the Sudanese economy with around 60% of the country's agricultural production dependent on it.

Atkins carried out a technical review and provided advice on the retrofitting of 50 hydroelectric turbines in existing sluiceways. We undertook a two-year safety study of the dam, which included an update on the magnitude of the design flood, a condition survey of gates and mechanical equipment, seismic review and stability analyses. We have also provided environmental impact assessments for proposed schemes at Shree Maheshwar in India and at Bujagali Falls in Uganda.





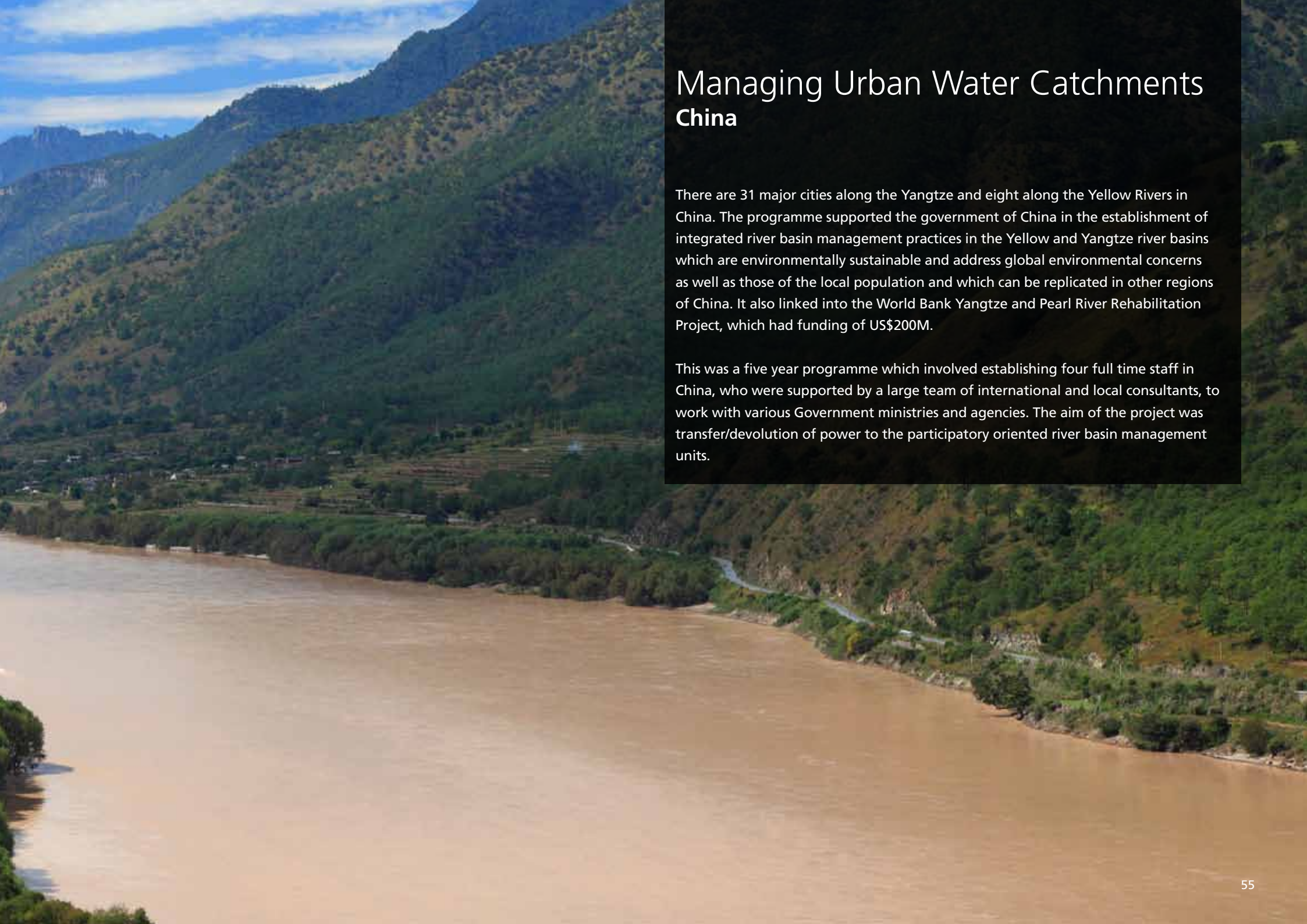
Tidal Energy United Kingdom

Tidal Energy Ltd are developing DeltaStream, a 1.2MW capacity tidal energy generator, distinct from other devices as it does not require fixing to the sea bed, therefore eliminating much of the installation cost. Atkins has been commissioned to generate design parameters for the DeltaStream device. The design parameters include an overview of the operational environment, including predicted tidal current flows and survival design conditions based on the most severe occurrence expected over a 50 year period.

Operational design loads and abnormal loads (including the effects of various failure modes) are being calculated for major components. Finally, construction, transportation, installation and decommissioning loads are being assessed. The document will be updated and maintained as new design data becomes available from CFD simulation or model testing.

Managing Water and Waste

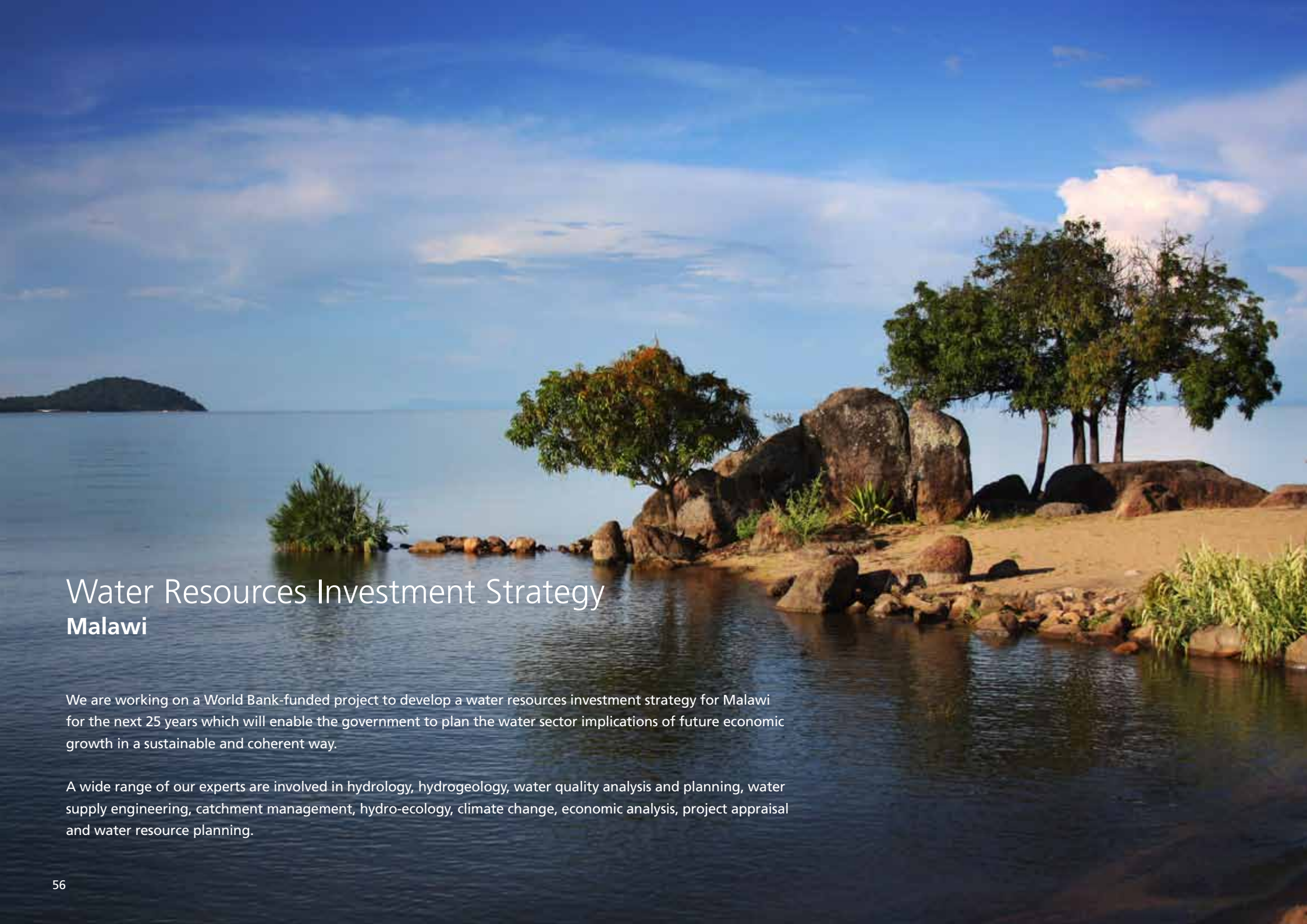




Managing Urban Water Catchments China

There are 31 major cities along the Yangtze and eight along the Yellow Rivers in China. The programme supported the government of China in the establishment of integrated river basin management practices in the Yellow and Yangtze river basins which are environmentally sustainable and address global environmental concerns as well as those of the local population and which can be replicated in other regions of China. It also linked into the World Bank Yangtze and Pearl River Rehabilitation Project, which had funding of US\$200M.

This was a five year programme which involved establishing four full time staff in China, who were supported by a large team of international and local consultants, to work with various Government ministries and agencies. The aim of the project was transfer/devolution of power to the participatory oriented river basin management units.

A scenic photograph of a rocky shoreline. In the foreground, there's a sandy beach with several large, dark rocks. A few trees, including a prominent one with green and yellow leaves, are growing on the shore. The water is calm and reflects the sky. In the distance, a small island is visible on the horizon under a bright blue sky with scattered white clouds.

Water Resources Investment Strategy Malawi

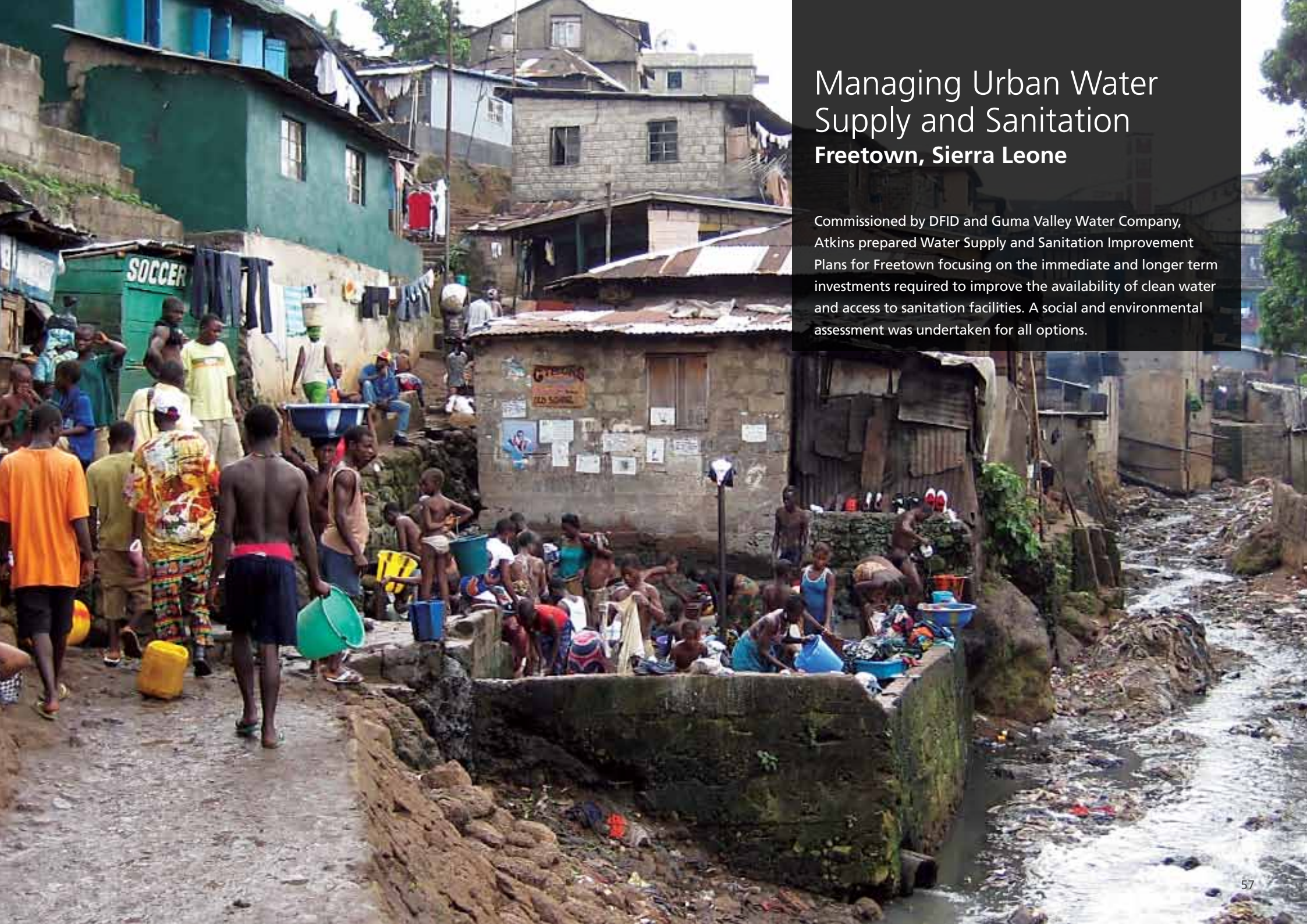
We are working on a World Bank-funded project to develop a water resources investment strategy for Malawi for the next 25 years which will enable the government to plan the water sector implications of future economic growth in a sustainable and coherent way.

A wide range of our experts are involved in hydrology, hydrogeology, water quality analysis and planning, water supply engineering, catchment management, hydro-ecology, climate change, economic analysis, project appraisal and water resource planning.

Managing Urban Water Supply and Sanitation

Freetown, Sierra Leone

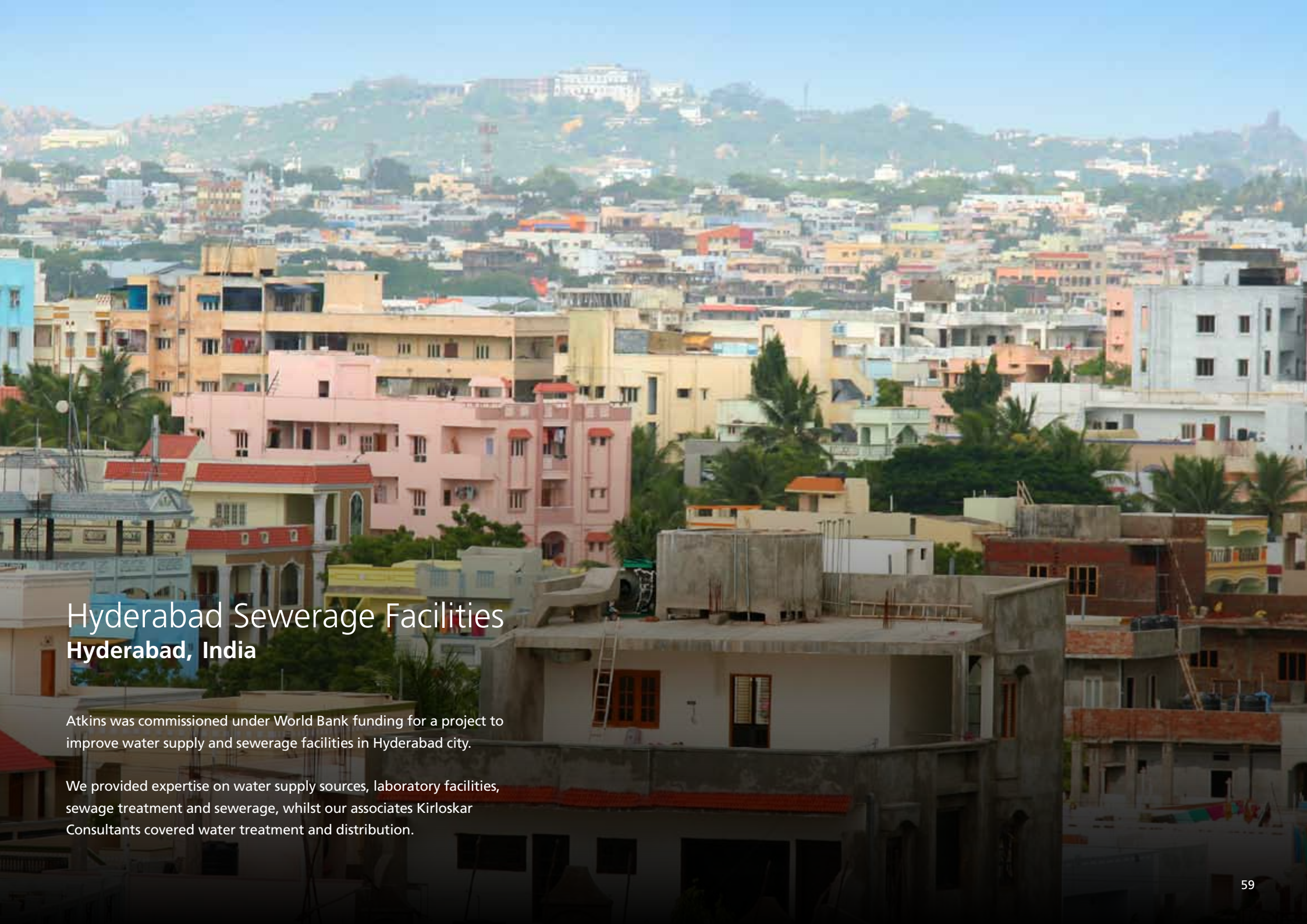
Commissioned by DFID and Guma Valley Water Company, Atkins prepared Water Supply and Sanitation Improvement Plans for Freetown focusing on the immediate and longer term investments required to improve the availability of clean water and access to sanitation facilities. A social and environmental assessment was undertaken for all options.



Scaling up water supply and sanitation in towns

Lake Victoria, Uganda

This project formulation study for the European Investment Bank will contribute towards the accelerated development of an investment programme in major towns within the vicinity of Lake Victoria. Specifically, the study deals with Kisumu and Mwanza. The programme aims to increase access to clean water - particularly in low income areas - improve sanitation infrastructure including the collection and treatment of wastewater, and reduce the pollution of Lake Victoria resulting from urbanisation.



Hyderabad Sewerage Facilities Hyderabad, India

Atkins was commissioned under World Bank funding for a project to improve water supply and sewerage facilities in Hyderabad city.

We provided expertise on water supply sources, laboratory facilities, sewage treatment and sewerage, whilst our associates Kirloskar Consultants covered water treatment and distribution.



New water sources: Lilongwe and Blantyre **Malawi**

The population of Lilongwe and Blantyre has grown significantly, and continued projected growth is expected to result in further significant growth in water demand. Current demand already exceeds the reliable yield of existing sources, and a moderate drought would result in rationing. The Water Boards are undertaking programmes of non-revenue water reduction but there is nonetheless projected to be a supply-demand shortfall. New water sources are required and the investments required are likely to be very significant. The aim of this study is to identify options of financing schemes that can present a financially viable combination of the various financing sources for the mobilization of the required capital costs for the new water sources for Blantyre and Lilongwe.

Waste Minimisation Strategy

Dubai, UAE

Dubai Municipality has growing concerns over the quantity of waste generated in the Emirate and commissioned us to identify solutions, by identifying the solid waste needs of the Emirate for the next 20 years and then developing environmentally and economically sound waste minimisation strategies, together with an action plan for delivery.

The Waste Minimisation Strategy and Action Plan focuses on a programme for implementing reduction, reuse and recycling initiatives. It also considers ways of improving waste infrastructure, awareness and governance.



A photograph of a construction site. In the foreground, three construction workers wearing white hard hats and high-visibility yellow-green vests are seen from behind, looking towards a building under construction. One worker on the left is pointing upwards with their right hand. In the background, a tall building with a blue glass facade is being constructed. A large green crane is visible on the left, and a yellow crane is on the right. A small object is suspended in the air between the cranes. The sky is blue with some wispy clouds.

Waste & Resources Action Programme, Net Waste Trial

Guiding 5 major construction companies through the process for the first time, Atkins/Faithful+Gould carried out a field trial of the 'Net Waste' method for the Waste & Resources Action Programme (WRAP), a UK Government agency tasked with improving resource efficiency.

The Net Waste method calculation balances the value of materials wasted against the value of materials recycled or reused. If the value of recycled and reused material is greater than the value of materials wasted, there is 'zero net waste'.

The Net Waste Method calculations helped make the true costs of waste clear and helped incentivise the use of materials with a high recycled content.

Protecting Natural Habitats and Fragile Ecosystems

Coastal and Habitat Management

St Lucia

An aerial photograph of St. Lucia, showing a coastal town with colorful buildings nestled at the base of lush, green mountains. A vibrant rainbow arches across the sky above the town, and wispy white clouds drift through the valleys and around the mountain peaks. The foreground shows dense tropical vegetation, including palm trees.

Our team worked across half of St Lucia's coastline to produce a series of coastal habitat maps. As this data hadn't existed, it will prove invaluable to guide future land use and planning decisions to ensure development on this popular tourism island is balanced with habitat conservation. Our work involved capture of remote sensing data, aerial and GIS tools to help interpret and visualise marine habitat data for the first time in St Lucia. A series of national training events were held to educate and inform stakeholders on future coastal habitat mapping techniques and how decision making can be improved on the coast through correct use and interpretation of the habitat maps produced.

Protecting Fauna and Flora Yemen

The Socotra archipelago, famous world-wide for its fauna and flora is one of the least developed parts of the Yemen Republic, yet immensely valuable as a destination for eco-tourism. We recommended a phased eco-tourism development plan based on building eco-lodges and training programmes for local people. We prepared a masterplan for the islands' development over a ten year period, looking at the existing situation in a variety of sectors - environment, population, health, education, fisheries, agriculture, livestock, tourism, economy, infrastructure, utilities, local government administration, water and land use - and devised projects for implementation in each sector, ensuring each element did not threaten the important wildlife.



Nepal Ecotourism

Nepal

This project was designed to address poverty, gender and environmental issues in Nepal within the context of tourism development, by developing a programme of action for different sectors and areas and empowering local governments and communities to implement their own projects.

A number of hill towns and remote areas were identified for tourism development, together with 'sub projects' such as infrastructure improvements community development and tourism training.

Flood and Storm Surge Defences and Disaster Preparedness



Integrated flood mitigation and erosion control Freetown, Sierra Leone

Atkins was commissioned by Freetown City Council and the European Commission, to improve living conditions for the people in Freetown by providing infrastructure advice on flood mitigation, erosion control and facilitating communication. Emphasis was placed on awareness about flood and landslide risks, infrastructure maintenance and solid waste management. We introduced sanitation facilities as part of the health improvement aspect where community programmes were being established to support long-term sustainability. The project recommended the following prioritised actions: 1) flood protection proposal for the Kroo Bay slum; 2) safety proposal and awareness programmes against the landslides induced by heavy rain at Moyiba town; and 3) pedestrian crossing for the safety of people at Tengbeh town.

Disaster Preparedness Bangladesh, India

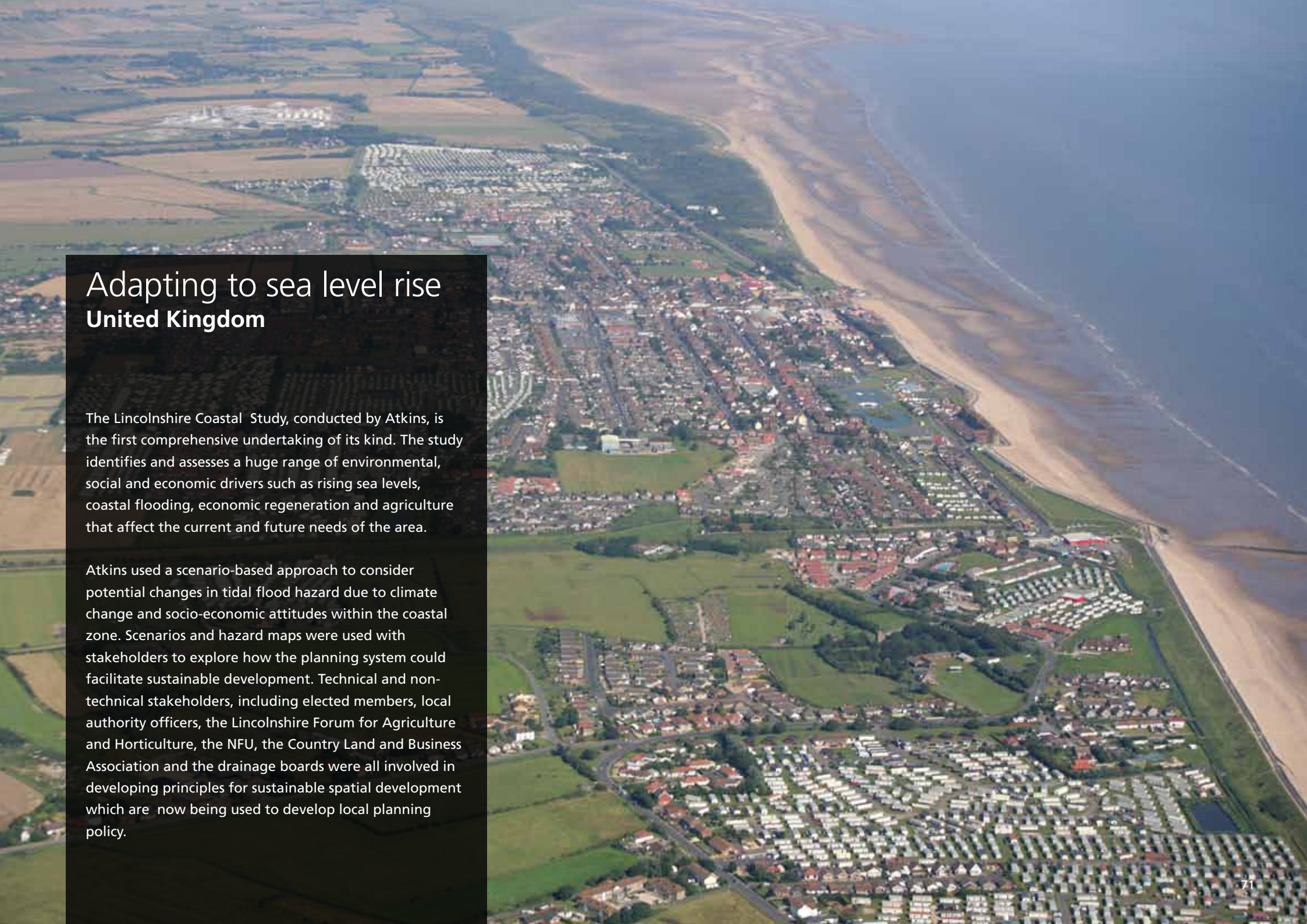
Atkins designed an implementation plan for a Bangladesh Disaster Preparedness Programme (BDPP). Tasks involved widespread consultation with the Ministry of Food and Disaster Management to identify the needs and constraints in implementing the programme and the design of a project proposal for a comprehensive, cost-effective and sustainable intervention in the field of disaster preparedness.



Protecting coasts from hurricanes and tropical storms

Florida, USA

We are working for the State of Florida on a major coastal mapping project designed to best prepare for future hurricanes or tropical storms. Working as Program and Data Solutions (PDS) in joint venture with URS and Dewberry we have completed and updated "Sea, Lake and Overland Surges from Hurricanes" (SLOSH) models for the entire Florida coastline. Federal and Florida state and local emergency managers now have a more complete picture of areas that must be evacuated immediately before a tropical storm.

An aerial photograph of a coastal town, likely in the United Kingdom, showing a dense residential area with red-roofed houses, green fields, and a wide sandy beach meeting the sea. The town is situated along a coastline with a prominent beach and some industrial or commercial areas further inland.

Adapting to sea level rise United Kingdom

The Lincolnshire Coastal Study, conducted by Atkins, is the first comprehensive undertaking of its kind. The study identifies and assesses a huge range of environmental, social and economic drivers such as rising sea levels, coastal flooding, economic regeneration and agriculture that affect the current and future needs of the area.

Atkins used a scenario-based approach to consider potential changes in tidal flood hazard due to climate change and socio-economic attitudes within the coastal zone. Scenarios and hazard maps were used with stakeholders to explore how the planning system could facilitate sustainable development. Technical and non-technical stakeholders, including elected members, local authority officers, the Lincolnshire Forum for Agriculture and Horticulture, the NFU, the Country Land and Business Association and the drainage boards were all involved in developing principles for sustainable spatial development which are now being used to develop local planning policy.



Protecting urban infrastructure from flooding

Khartoum, Republic of Sudan

We advised on flood protection, including a 7km long embankment, for the new Almogran development in Khartoum, Sudan. This prestigious 6.5km² development situated at the confluence of the Blue and White Niles comprises three distinct zones: central business district, golf course and residential area. We prepared an outline flood risk assessment and identified short and long-term remedial options for the existing 1km flood embankment in the central business district. We reviewed the masterplan for the feasibility of the creation of lagoons connecting the White Nile as well as the water management of the lagoons. We also carried out an assessment of water management options for the water supply to the lakes within the residential area and feasibility for maintaining sufficient water quality.

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Nick Godfrey

Principal Economist

Euston Tower, 286 Euston Road,
London NW1 3AT, England

Telephone +44 (0) 20 7121 2837

Mobile +44 (0) 7812 23 6435

Fax +44 (0) 20 7121 2806

Email Nick.Godfrey@atkinsglobal.com

Roger Savage

Associate Director

Euston Tower, 286 Euston Road,
London NW1 3AT, England

Telephone +44 (0) 20 7121 2837

Mobile +44 (0) 7812 23 6435

Fax +44 (0) 20 7121 2806

Email roger.savage@atkinsglobal.com

www.atkinsglobal.com

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