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MOTT  
MACDONALD

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# Empowering change

Creating transformational  
outcomes for people, place  
and planet in the Midlands



# Why we're here

Our purpose is to improve society by considering social outcomes in all we do, relentlessly focusing on excellence and digital innovation, transforming our clients' businesses, our communities and employee opportunities.

We're a global engineering, management and development consultancy. Everywhere around the world, people's needs and aspirations are changing, fast. That brings increasing challenges for our clients, as you seek to satisfy your stakeholders, tackle societal issues and deliver your business strategy.

Our network of experts look at problems from fresh angles and find opportunities in complexity. They bring together diverse skills, experience and insight, to turn obstacles into sustainable solutions. Our aim: to add value at every stage, for you and the lives you touch every day.

## 1.

### Delivering on our purpose

We're aware of the lasting and far-reaching impacts of the work we do. So we set out to highlight and address ripple effects, eliminating negative ones and pursuing the positive.

## 2.

### Climate change

As one of humanity's most urgent challenges, climate change poses immense risks – but also enormous opportunities to create a better world.

## 3.

### Social outcomes

Accessibility, inclusion, empowerment, resilience and wellbeing – these are at the heart of our purpose. It's not just words; it's a commitment to improving lives.

## 4.

### Digital innovation

Connecting innovation to outcomes, we're solving today's problems with today's technology. Our digital experts are helping deliver enhanced value in infrastructure – globally.

## 5.

### Excellence

We have a relentless focus on being the best that we can be – for ourselves, our customers and their end users – and on delivering right first time, every time.

## 6.

### Our people

We're a global family of innovators, problem solvers, doers and thinkers. Together we're generous with knowledge and take pride in each other's success as much as our own.

## 7.

### Our values

Our PRIDE values underpin every aspect of how we work and what we stand for.

## 8.

### Our position on world issues

As a business we are committed to responding to the world's big issues alongside our clients' needs, in ways that safeguard public welfare and support long term resilience.

## 9.

### This is the future

With our clients and partners, we are committed to making a positive difference. How big a difference is up to all of us. That is why we want to talk about the future we can create, together.

## 10.

### Sustainability

Our planet is under pressure from many directions. Running a business responsibly is key to long term sustainability: all decisions we make have consequences for the world.

## 11.

### Our publications

Read our core publications and papers related to social outcomes, cities, digital, energy, environment, resilience, transport, water and more.

## 12.

### Our governance

As an employee owned organisation, we make decisions and run our business based on fairness, openness and honesty, which lie at the heart of our values.



Click subheadings to learn more



# Creating transformational outcomes for people, place and planet in the Midlands

The Midlands is one of the most diverse regions in Europe, and we have been successfully delivering expertise and knowledge here for over 100 years.

Our 860 local staff are able to connect with and focus on your needs because our people live, work and directly experience life here. We know what is great about the Midlands, and we are full of ideas on how to make it even better.

Our local team delivers advisory services and solutions across four sectors (built environment, energy, transport, and water and wastewater), and that's before we add in the knowledge and experience of 18,000 staff, in 50 countries, with an annual revenue in excess of £2bn.

In the Midlands we generate over 80% of our turnover in repeat business. We like being close to our clients and giving value through the reach of our whole business.

Commitment, knowledge and experience are at the heart of what we do. We have built a stable and loyal staff, and we are immensely proud that we have people working for us in their 50s who joined as apprentices at just 16 years old. Clients who come back after 10 years may easily find they are working with the same people.

We can do this because we are employee owned and this means we can measure success through the professionalism, dedication, enthusiasm and ingenuity of our engineers, environmentalists, planners, economists, cost consultants, project managers, safety experts, management consultants and many more. It also means a share of our profit always comes back to this region.

We are proud of what we do here: our local projects, their impacts and outcomes.

## Local knowledge

Understanding people and policies

## Community engagement

Identifying resilient strategies

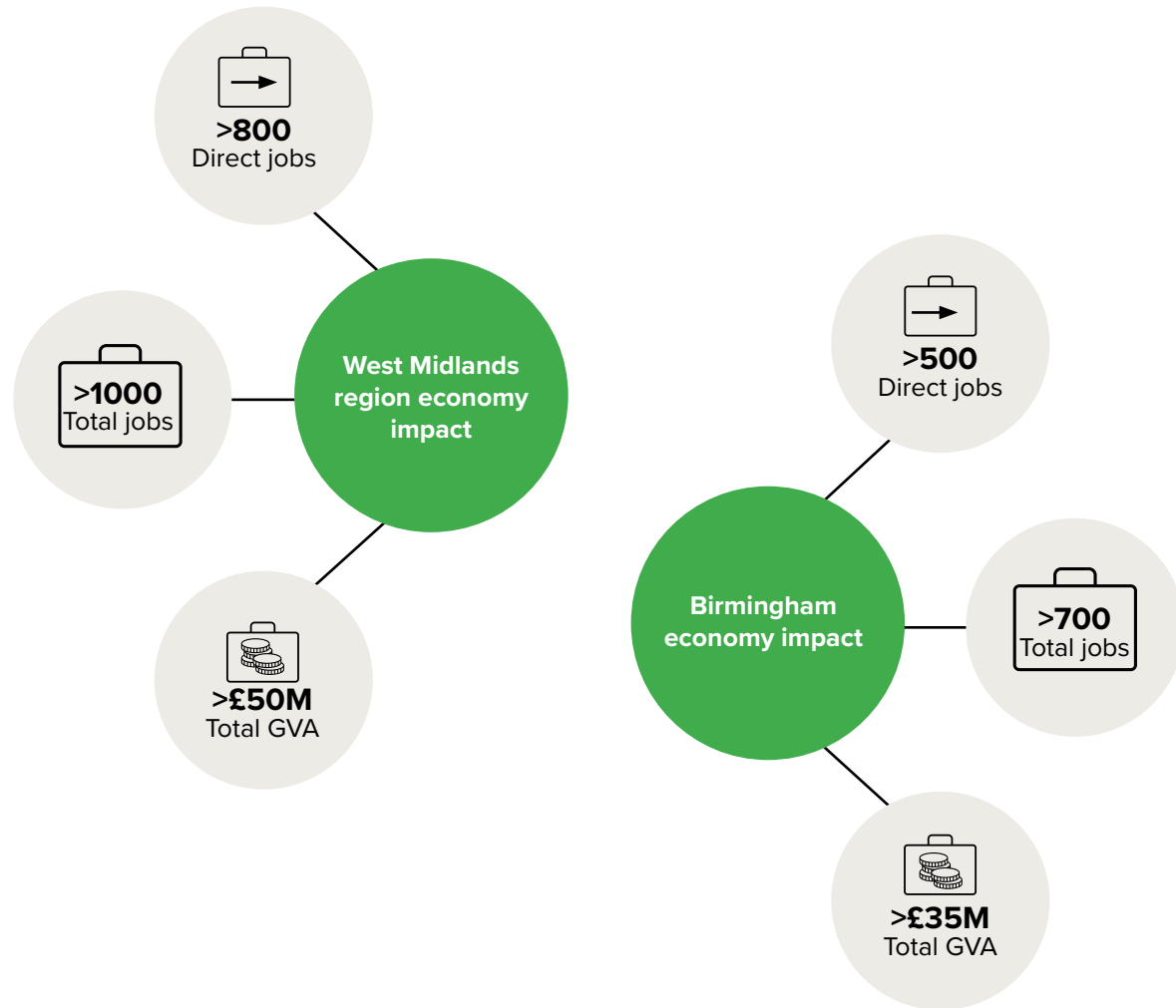
## Global best practice

Experts available on your doorstep





# Our impact in the Midlands



# Midlands key expertise

Our network of experts have deep domain knowledge across a vast range of subjects. Here is a sample of the types of expertise we can draw on, helping you solve your complex challenges and deliver sustainable, socially focused outcomes.

## Advisory

- Asset management
- Carbon management
- Climate change mitigation
- Digital
- Due diligence
- Economics
- Education advisory
- Expert witness
- Health and safety
- Healthcare advisory
- Healthcare planning
- Investment and transactions
- Land
- Management consultancy
- Market research
- Social outcomes
- Sports and events
- Sustainability

## Transport

- Civil engineering including rail, rapid transit, active travel, highways, bridges, tunnels, civil structures
- Transport planning
- Transport modelling
- Transport technology
- Travel demand management

## Built environment

- Architecture
- Building physics
- Civil engineering
- Facilities management
- Landscape design
- Master planning
- MEP
- Structural
- Urban design

## Water

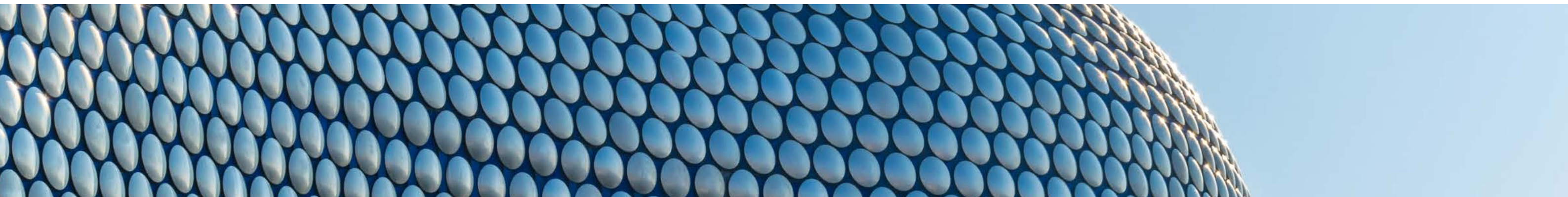
- Dams and reservoirs
- Drainage
- Flood defences
- River engineering
- Wastewater and clean networks
- Wastewater treatment
- Water resource management

## Energy

- Energy storage
- Energy systems
- Hydrogen
- Local area energy planning
- Micro-generation
- Renewable energy
- Smart networks
- Transmission and distribution
- Thermal generation

## Cross cutting

- Air quality
- Archaeology and heritage
- Biodiversity
- Building information modelling (BIM)
- Business cases
- Contaminated land
- Contract management
- Cost management
- Ecology
- Environmental impact assessment
- Foundation design
- Geographic information systems (GIS)
- Geotechnical engineering
- Nature based solutions
- Noise, vibration and acoustics
- Project management
- Procurement
- Public consultation
- Quantity surveying
- Risk management
- Social impact analysis
- Stakeholder engagement
- Sustainability certification
- Town planning
- Utilities
- Visualisation
- Waste
- Whole life costing





# Sustainability is at our core

Our approach to managing carbon is informed by PAS 2080, the international standard for managing infrastructure carbon – which we co-authored – and ISO 16745, the standard for measuring carbon in buildings.

In 2021 we joined the UN's Race To Zero initiative to rally leadership and support from businesses, cities, regions and investors for a healthy, resilient, zero carbon recovery.

We are committed to reaching net-zero greenhouse emissions across our value chain by 2040, from a 2019 base year. We have set interim targets for 2027 and 2030. We will reduce absolute emissions by 90% in 2040 and remove residual emissions. Our targets have been certified by the Science Based Targets initiative.

We are also a founding member of the Net Zero Infrastructure Industry Coalition, a network of public and private businesses and academic institutions committed to mobilising the UK infrastructure

sector to meet the net-zero challenge.  
**UN Sustainable Development Goals (SDGs)**  
 Positive social outcomes are at the heart of our purpose, which aligns directly with sustainability and SDGs, a global framework and a set of aspirations that encompass social, economic and environmental sustainability. We are committed to placing SDGs at the centre of our business by promoting company-wide alignment and fostering external partnerships to drive targeted contributions towards the goals.



“Net-zero is a central focus for the West Midlands region, being considered by companies of all shapes and sizes from all sectors. Working with Mott MacDonald on West Midlands Growth Company’s Cross Sector Initiative allowed us to widen the conversation to companies across the West Midlands who are at the earlier stages of their decarbonisation journey and give them tangible objectives and actions in achieving both organisational and wider regional net-zero targets.”

**Partnership manager**  
 West Midlands Growth Company





# Net-zero consultancy

Leading the transition to a low carbon economy

We've developed ambitious strategies for both public and private sector clients to achieve net-zero aspirations by 2030, 2045 and 2050. Our advice is guided by national expertise but anchored in rich local knowledge of cities, local councils and local infrastructure.

We firmly believe that the most successful net-zero solutions are those that are most rooted in place, because they're the ones that best meet the needs of local people and building users. That means taking time to understand the needs of your colleagues, customers and stakeholders so that the net-zero solutions we deliver are people centred.

Our specialist net-zero advisors work with clients to understand their drivers and so develop practical strategies that achieve their objectives and meet net-zero targets. Our philosophy is to prioritise 'low regrets options' which make immediate improvements while keeping options open to allow adoption of developing technologies.

## Delivering a net-zero operating environment

### Delivering the right thing

Delivering the right assets to transition to net-zero carbon.

Includes maximising opportunities at early stages to unlock whole life emissions reductions.

### Delivering it right

Delivering low carbon assets to minimise the impact of the transition.

Carbon management, supply chain engagement and monitoring in use.

We believe that delivering the right things in the right way leads to the best outcomes. That means honing solutions that are directly aligned to net-zero goals, while using tools and approaches to deliver assets with low or no capital nor operational emissions.

Click to learn more about our four-step approach



### Setting a net-zero carbon route map in four steps

We develop route maps to help clients on their carbon reduction journeys. Our four-step approach is underpinned by PAS 2060, the international standard for carbon neutrality, and PAS 2080, the international standard we co-authored for managing infrastructure carbon.



# Regenerative and biophilic design

Using the power of nature to improve buildings

Biophilic design is a transformative way of designing buildings and infrastructure that brings the healing power of nature into our daily lives, creating vibrant, regenerative and inspiring spaces. It goes beyond sustainability. The focus is on renewal, restoration and growth to maximise positive ecological and community outcomes.

However, while the benefits of biophilic design are clear, its adoption in the industry can be challenging. It requires a different mindset, with investors, designers, developers, engineers and contractors collaborating to deliver buildings and infrastructure that create thriving, biodiverse and vital ecosystems.

Effectively calculating and monetising the positive outcomes from regenerative projects – to demonstrate that they deliver value for money – strengthens support from local planning authorities and communities. So too will effective development of biophilic policy and demonstrating its alignment with industry standards and best practices. However, this requires education and awareness raising to help stakeholders understand the benefits of biophilic design.

We work closely with our clients, partners and stakeholders to develop biophilic design solutions that meet their needs while creating positive outcomes for society and the environment. Our tailored biophilic design solutions are developed to suit local contexts and communities and are supported by a wealth of research and technical expertise.

Our advisory services focus on providing guidance and recommendations to clients about how to incorporate biophilic design into their buildings and spaces. This involves conducting assessments of the existing built environment, developing strategies and recommendations for incorporating nature into the design, and providing guidance on the implementation of biophilic design solutions.



Winner of Mott MacDonald regional sustainability and climate change award



## Transforming vast NEC car parks into a sustainable 5000-home community, rooted in nature

### Biophilic design improves wellbeing

A 2018 study published in the International Journal of Environmental Research and Public Health found that people who live in neighbourhoods with more green space report higher levels of mental wellbeing than those living in areas with less green space. Incorporating access to green space into the design of buildings and infrastructure, such as by including rooftop gardens, public parks or green corridors, can be an effective way to create a more biophilic environment that supports users' mental health and wellbeing.

**Project**  
NEC Master Plan

**Location**  
Solihull

**Client**  
NEC Group Limited

**Expertise**  
Multidisciplinary, including sustainability, ecology, transportation, engineering, social and cost estimating

Our vision will transform NEC car parks into an inclusive, diverse and thriving community. The existing habitats and landscapes will provide a springboard to nature focused and active lifestyles for residents, purposefully accounting for the triple bottom line of positive social, economic and environmental outcomes.

Collaborating with Glenn Howells Architects, our proposals follow themes of sustainable mobility, community, biodiversity and placemaking.

The key moves were a mobility hub and embedded connectivity, active community creation, nature led social infrastructure, and the transformation of

Bickenhill Plantation back into a wet woodland to capture carbon, provide connectivity and exercise routes, and create a nature based drainage solution.



# Circular economy

Challenging the 'take, make, dispose' model

The circular economy is about recovering value and resources through systems that are regenerative by design. It's a departure from the linear 'take, make, dispose' business model, with the 'dispose' element being designed out. That means sourcing materials which recover lost value and designing assets to capture value at the end of their life.

This 'cradle-to-cradle' approach is crucial to the net-zero transition. By implementing circular economy principles, we can both identify new value streams and dramatically reduce the carbon embodied in projects.

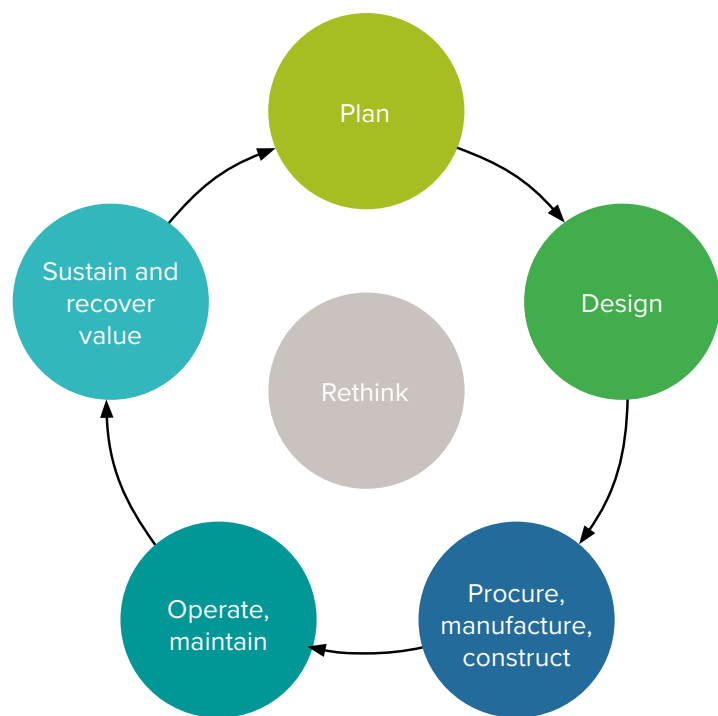
Our circular economy specialists can advise you on holistic cradle-to-cradle approaches to maximise resources and minimise waste while supporting natural systems. We can do that at the design stage, right through to sharing our expertise in waste management to help extend product lifecycles.

We also train our designers and engineers to embed circular economy thinking into project design so that they are optimised for longevity, flexibility, adaptability and deconstruction. One way to embed circular economy principles throughout the lifecycle of a project is to use design for manufacture and assembly (DfMA) techniques, which can be managed with BIM.

**DfMA**  
Compared with traditional construction methods, using prefabricated elements can bring time savings of between 50% and 90%. DfMA uses BIM to bring standardised designs to construction, removing the need to design the same component over and over again.

This results in construction progressing more quickly, with minimal waste and disruption, as well as driving down the carbon footprint of components as less material is used.

We have been using DfMA to design buildings across a range of sectors, from tube stations on London Underground's Northern Line extension, to schools in the UK government's Priority School Building Programme, and a shooting range for the London Olympics.



Our five-point circular economy framework

# Carbon accounting

Calculating a building's whole life carbon footprint

Carbon accounting is an initial step towards building a fully fledged net-zero carbon roadmap. Whole life carbon assessments are part of the carbon management process to measure and compare carbon impacts, as well as to support carbon reduction strategies.

Accounting for whole life carbon (WLC) and emphasising the reuse of building elements and structures can also help to maintain the value of materials, supporting the transition to a circular economy. By considering both embodied and operational carbon emissions, we can develop the best solutions that consider tradeoffs throughout a building's lifecycle.

Working closely with teams at project inception, we'll identify the priorities, opportunities and constraints in minimising WLC emissions. We'll measure and monitor WLC emissions as the project develops, typically from RIBA Stage 2 through to Stages 5-6, to maximise emission reduction opportunities. We'll then develop design outcomes based on our assessment to deliver a project's targets and the client's overarching aspirations or requirements.

**An approach underpinned by BS EN 15978:2011**  
We use the One Click LCA lifecycle assessment software package, which is certified to BS EN 15978:2011, the UK framework for evaluating the environmental impacts of the built environment. Assessments also conform to the Royal Institution of Chartered Surveyors' Professional Statement 'Whole life carbon assessment for the built environment' which sets out specific mandatory calculation and reporting requirements. Doing so results in better direct comparisons between projects and more robust peer review, which together help to simplify future analysis.

To adapt to the latest best practice in this rapidly evolving field, we also consider other guidance and technical toolkits developed by the UK Green Building Council, the Royal Institute of British Architects, the Chartered Institution of Building Services Engineers, the Greater London Authority and others.

**Whole life carbon emissions**  
Carbon emissions result from the energy used throughout a building's lifecycle, from construction and operation through to demolition. A whole life carbon (WLC) assessment calculates embodied carbon emissions (associated with materials and products) and operational carbon emissions (associated with energy and water usage). The sum of these parts is referred to as the building's WLC footprint.



# Helping to deliver better outcomes for communities

We want to improve society by considering social outcomes in everything we do, relentlessly focusing on excellence and digital innovation, transforming our clients' businesses, our communities and employee opportunities.

Accessibility	Inclusion	Empowerment	Resilience	Wellbeing
 <p>Access to good quality housing</p>	 <p>Low levels of poverty, with no one left behind</p>	 <p>Inclusive and regenerative growth</p>	 <p>Inclusive public realm and high quality natural environment</p>	 <p>Good mental and physical health among the population</p>
<p>Accessible, inclusive and sustainable transportation</p>	<p>Diverse participation with personal rights, freedoms and choice</p>	<p>Access to education, job training and secure employment</p>	<p>Climate resilient and sustainable communities</p>	<p>A safe and secure community</p>
<p>Good and equal access to community resources, recreation and culture</p>	<p>Equality between people of different socio-demographic characteristics</p>	<p>Digitally enabled, with access to information and communications</p>	<p>Access to sustainable energy, water and sanitation systems</p>	<p>Access to good quality, comprehensive health and social care services</p>

We have created our social outcomes framework, which is a core set of principles to guide the design and delivery of projects that leave a positive legacy. The set of 15 indicators provides a definition of an inclusive community and the outcomes to which we want to contribute through our projects.

These social outcomes deliberately align with the legislative requirements of many of the countries in which we operate, the UN Sustainable Development Goals, academic research, and the demand and insights from our clients.

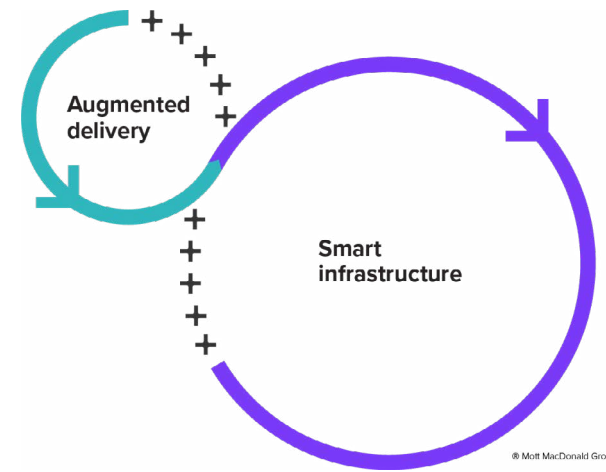
Embedding social outcomes in projects involves consciously thinking about users, communities and local people at the outset of a commission and maintaining this focus throughout the whole project lifecycle.

# Moata is Mott MacDonald's digital solutions platform

Moata hosts solutions that use the power of data to solve today's most pressing infrastructure problems across the asset lifecycle.

Moata is open, secure, scalable and adaptable, delivering predictive power in a geospatial context through advanced analytics and machine learning.

Smart infrastructure and augmented delivery are our complementary propositions operating across the full lifecycle of an asset.



## Augmented delivery explained

Augmented delivery solutions are for capital delivery. They focus on combining our deep domain experience in engineering design and delivery with digital expertise – to achieve our core purpose of supercharging delivery for the industry.

We pride ourselves on the exceptional talent of our people, and the value of digital technology lies in augmenting their skills and capabilities to liberate their creativity and innovation in delivery, creating better infrastructure. This is our augmented delivery value proposition – **integrate, enhance, liberate.**

Our augmented delivery solutions cover:

- Land
- Surveys
- GIS
- Design
- Carbon
- Project and programme controls

## Smart infrastructure explained

Smart infrastructure solutions are for operations and maintenance. They enhance the physical world with digital insights, improve efficiency, help make better decisions and pinpoint errors before they happen. Smart infrastructure is always on and always learning. The more data it receives, the more opportunity it reveals.

Our smart infrastructure offering allows you to see the unseen so you can act with conviction and drive social, economic and environmental progress.

Our smart infrastructure solutions cover:

- Resilience
- Workflow management
- Supply and demand modelling
- Monitoring
- Predictive maintenance
- Digital twins

## Current solutions





# Digital outcomes

How have Moata solutions helped?

Reduced costs

## 55%

saved on a two-year major energy project

**Moata Insights**

Improved efficiency

## 90%

faster delivery of 4D and 5D schedules

**Moata Intelligent Content**

Better outcomes

## 30%

embodied carbon reduced at final design stage

**Moata Carbon Portal**

## >40%

reduction in engineering design cost

**Moata Route Optimiser**

## 80%

reduction in document authoring time

**Moata Information Architect**

## 25%

improvement in demand forecasting accuracy

**Moata Demand Forecaster**

## £100k

efficiency savings in a single project

**Moata Geospatial**

## >90%

faster calculation of carbon footprint

**Moata Carbon Portal**

## >20%

reduction in aborted surveys

**Moata Land Management**



[Click to learn more](#)





# Built environment

## Our projects

A good building is all about the people who design and build it, who own and operate it, but most of all, who use it. A good building is simple to create, operate, adapt and ultimately remove; it's cost effective over its lifecycle; it respects its environment; and it is appropriately functional.

Every building has a role to fulfil – for working, playing, making journeys, learning, healing... for living. Each function has its own technical requirements. But human health and happiness also have a significant bearing upon a building's successful performance.

Success can be measured by outcomes achieved. Is there a formula for achieving it? We think so, and call it 'building performance engineering'. It's about striking the right balance between science, art and economics, and applying ingenuity for enhanced outcomes.

We can offer fully integrated cross-disciplinary engineering, or services in a single discipline if that is your preference. Whatever your chosen procurement strategy, we will always be looking for opportunities to think across boundaries for the benefit of the project.

### Project

Midland Metropolitan Learning Campus

### Location

Sandwell

### Client

Sandwell and West Birmingham NHS Trust

### Expertise

Project management, cost management, business case, full service engineering, town planning, landscape architecture, sustainability

## Closing the health sector skills gap

We're leading a multidisciplinary team for a learning campus at the Midland Metropolitan hospital. It will be a major health education and skills resource, focused on targeting hard-to-reach groups such as those who are homeless, out of work, or refugees with transferable skills.

The project will establish a university presence in Smethwick and is a key example of how we are applying our purpose.

Partners include Sandwell College, the University of Wolverhampton and Aston University. The building design aligns with the brand new NHS net-zero carbon standard which we authored and will achieve a BREEAM rating of Outstanding.





**Project**  
Sandwell Regeneration

**Location**  
Sandwell

**Client**  
Sandwell Metropolitan Borough Council

**Expertise**  
Business case and economics, urban development, transport planning, project and programme management

# Making the case for regeneration in Sandwell

We supported Sandwell MBC to take advantage of once-in-a-generation funding, successfully justifying £100M of public investment across 11 projects, including the Sandwell Aquatics Centre used for the Birmingham 2022 Commonwealth Games, a refurbished town hall, and town centre regeneration in West Bromwich and Tipton.

Additionally, we have supported regeneration through developing master plans for West Bromwich and Carters Green, leading multidisciplinary teams for the Midland Metropolitan University Hospital Learning Campus and Urgent Treatment Centre, and developing a net-zero neighbourhood strategy for Tipton.

Together, these projects will transform the life chances of people in some of the most socioeconomically deprived areas of the West Midlands.



**Planning Awards**  
Winner of the plan making award



© Hawkins\Brown



© Benoy (2021)

# Creating sustainable access to Solihull town centre

**Project**  
Solihull Station Integrated Transport Hub

**Location**  
Solihull

**Client**  
Solihull Metropolitan Borough Council

**Expertise**  
Business case development, demand assessment and economic appraisal, funding and financial modelling, full service engineering, cost estimation, optioneering and consultation, transport planning, architectural and landscape design, diversity impact assessment, constructability and sustainability

More capacity is needed at Solihull Station. We took the opportunity to reimagine the area, with high quality transport interchange and improved passenger experience. Through stakeholder engagement and public consultation, we developed a sustainable vision and business case for an integrated transport hub at Solihull Station.

The station will provide clear priority for active modes with a significant investment in a cycling hub; improved public realm with opportunities for ongoing community activities; improved accessibility to the station for all users; improved passenger facilities including baby changing space in new toilets; and improved safety and security including halving platform clearance times.





**Project**  
Arden Cross

**Location**  
Solihull

**Client**  
Arden Cross Limited,  
Muse Developments Limited

**Expertise**  
Cost consultancy, economics,  
infrastructure, social and  
community, sustainability

## Reimagining the opportunity from HS2

HS2's Interchange Station in Solihull will be a crucial node on the high speed rail network. Combined with unrivalled classic rail, strategic road network and airport links, Arden Cross will be one of the most connected locations in the country.

We've collaborated to develop a master plan proposal to reimagine the opportunity and create a deliverable, sustainable vision for a mixed use development around the station.

Instead of surface car parking surrounding the HS2 station, the £3.2bn Arden Cross proposal will provide a world class environment for working, living, learning and leisure – a new strategic economic centre in the West Midlands.







© Associated Architects

**Project**  
University of Birmingham  
Molecular Sciences Building

**Location**  
Birmingham

**Client**  
University of Birmingham

**Expertise**  
Town planning

## Enabling world class local research in chemical, environmental and bio-molecular sciences

The West Midlands has one of the most dynamic healthcare, medical technology, and data driven health economies in the UK, employing over 17,000 dedicated professionals. It is a significant area of economic growth in the region, and that is in part driven by the 11,000 medical science students who graduate here every year.

We played our part in this success story by securing planning consent for the University of Birmingham's molecular sciences research and learning facility. We produced a phased planning strategy allowing a series of enabling works to be completed prior to commencement, accelerating delivery. We set out a substantial planning case, demonstrating the key opportunities and constraints as well as the sustainable nature of the proposals.



© Grimshaw

**Project**  
Birmingham International  
Integrated Transport Hub

**Location**  
Solihull

**Client**  
Solihull Metropolitan  
Borough Council

**Expertise**  
Multidisciplinary team  
including project management,  
engineering, transportation,  
business case, environment  
and stakeholder engagement

## Addressing the needs of the future, providing an integrated approach to travel and enhancing passenger experience

Birmingham International currently provides interchange between a diverse range of transport links (rail, road and air) and will in the future be connected to HS2 and the West Midlands rapid transit network.

In collaboration with Grimshaw Architects, we developed a proposal to expand and modernise the 1970s station in an innovative way, embracing sustainable approaches and technologies and providing a coherent transport interchange. We led stakeholder engagement with Birmingham Airport, Network Rail and the NEC.

The focus of the design was to enhance the passenger experience, and this was achieved while demonstrating value for money in a robust business case.



# Transport

## Our projects

Sustainable transport is fundamental to cities. Transport connects people with the services and amenities they need on a daily basis like education, healthcare, employment, leisure, green spaces and retail, as well as strategic locations like city centres, culture, universities and hospitals. Efficient transport unlocks social cohesion and improves productivity. We believe that enhancing transport in the West Midlands is key to achieving regional priorities including net-zero carbon, unlocking regeneration potential, reducing congestion, improving air quality and promoting healthier lifestyles.

With a deep understanding of urban planning, engineering, environmental sciences, project and contract management, and policy and strategy development, we offer a comprehensive range of professional services that cover the whole project lifecycle. From conceptualisation and planning through to design, implementation and ongoing management, we are committed to delivering high quality solutions that improve connectivity and drive inclusive economic growth.

We have expertise in:

- Active modes
- Public transport
- Rail
- Rapid transit
- Highways
- Aviation
- Transport planning
- Behaviour change
- Transport modelling
- Engineering
- Transport systems
- Policy and strategy
- Project and contract management

**Project**  
M42 Junction 6 Improvement

**Location**  
Solihull

**Client**  
Skanska,  
National Highways

**Expertise**  
Transport planning,  
multidisciplinary engineering,  
sustainability

## Driving forward a West Midlands economic powerhouse

The M42 corridor is an economic powerhouse in the West Midlands, with Jaguar Land Rover, Birmingham Airport, the NEC and Birmingham Business Park all grouped around Junction 6. In the future, HS2 Interchange Station and the surrounding Arden Cross development will add to this cluster. However, congestion and poor journey reliability have constrained investment and economic growth. Having almost reached capacity, the junction has become a bottleneck, causing delays across the network.

The junction improvement will enable the safe and reliable operation of the network, reduce congestion and improve access to key businesses and development sites. It will also improve walking and cycling connectivity.







## Lighting the fuse for integrated transport

**Project**  
Project Fuse

**Location**  
West Midlands

**Client**  
Transport for West Midlands

**Expertise**  
GIS, public transport modelling, transport planning, transport policy

Delivering an integrated public transport system is part of Transport for West Midlands' strategic vision, and Project Fuse aimed to articulate what a good integrated public transport network should look like. We analysed international best practice to develop a series of success factors and benchmarked these to current local conditions before modelling the impacts of implementing key principles on the network.

We delivered a comprehensive evidence base to highlight the levers for change to deliver a world class integrated public transport network, tailored to the West Midlands, and provided practical recommendations to help modernise the network and maximise social outcomes.

## A new gateway to health and education

**Project**  
University Station

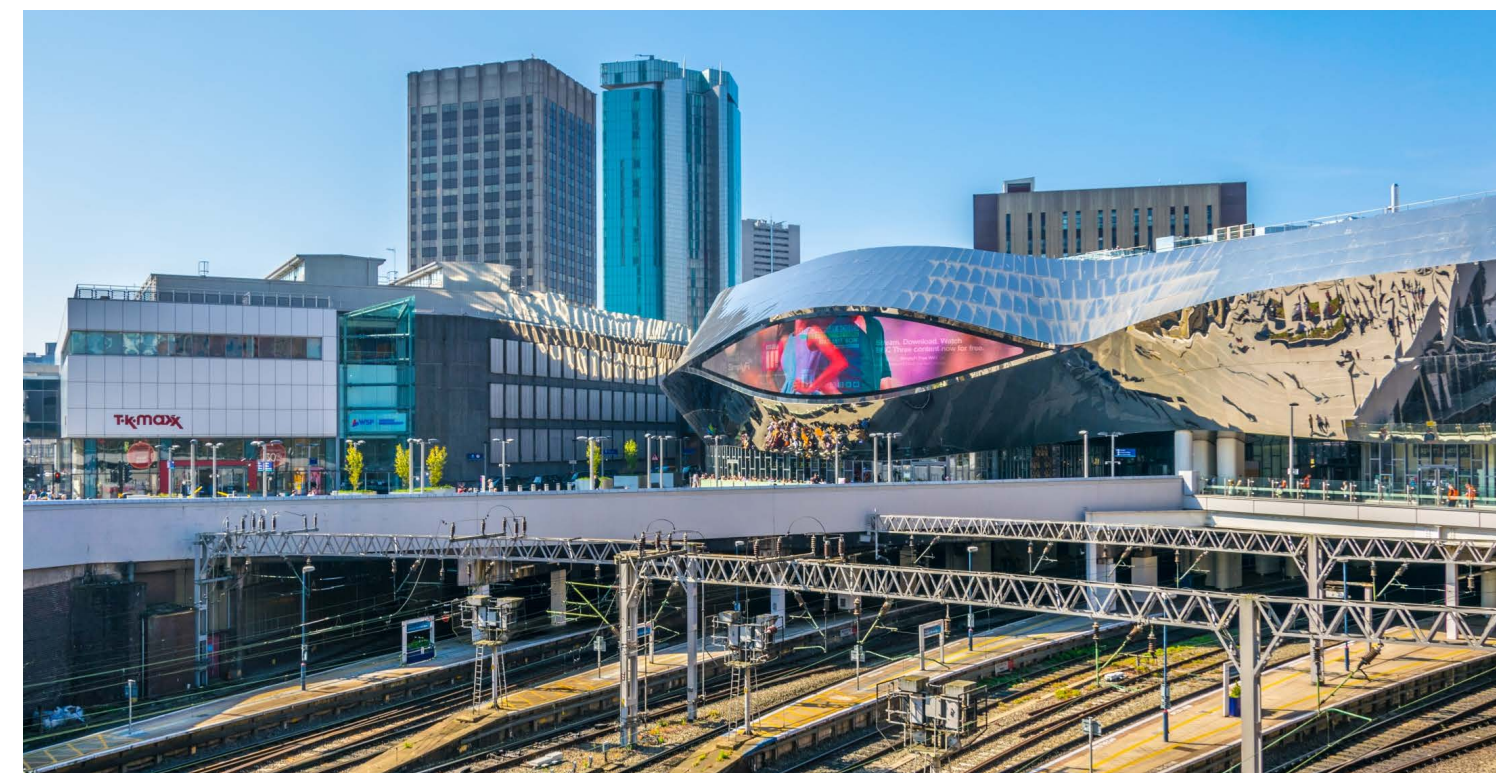
**Location**  
Birmingham

**Client**  
Volker Fitzpatrick,  
Transport for West Midlands

**Expertise**  
Project management, design management, civil, structural and geotechnical engineering, site support, BREEAM, town planning, ecology

University Station is the fourth busiest station in Birmingham, providing access to the University of Birmingham, Queen Elizabeth Hospital and the wider area. Passenger numbers far exceed the station's capacity, requiring significant upgrade. The first phase of the redevelopment facilitated public transport for the Birmingham Commonwealth Games.

The project provides accessible and inclusive passenger facilities within two landmark pavilion buildings, public realm sympathetically reflecting the Roman archaeology, widened platforms with full length canopies, and a low acuity healthcare facility integrated within the new station building. We used our skills and experience to design the station so it remained operational throughout construction, facilitating continued access to key regional health and education facilities.





# Bringing trams back to the streets of Birmingham



## Project

West Midlands Metro

## Location

Across the Midlands

## Client

Transport for West Midlands

## Expertise

Light rapid transit, active travel, placemaking, multidisciplinary design, rolling stock, sustainability, technical advisory, Transport and Works Act Order



## Global Light Rail Awards

Consistent success since 2010

Trams connect people in a safe, environmentally sustainable way and are really popular with riders. We have supported the West Midlands Metro network for over three decades, including for the original line between Wolverhampton and Snow Hill Station and all network expansions. We've planned the expansion of the depot twice, procured new vehicles (including the UK's first battery powered trams) and keep the network running through asset inspections and technical assurance.

The combination of our light rail expertise, local knowledge and a full range of technical and advisory services means we have an award winning formula, achieving consistent success at the Global Light Rail Awards with 21 awards over the last 10 years.





## Safer, faster cycling around Birmingham

**Project**  
Birmingham Cycle Revolution

**Location**  
Birmingham

**Client**  
Birmingham City Council

**Expertise**  
Active travel, transport planning, highways, drainage

Birmingham City Council's ambition to create a well connected cycle network in 'the city designed for the car' is being made into reality through our designs and contract management. We are delivering a faster and safer network within the existing highway infrastructure while being sensitive to the existing traffic – a challenge our team meets head on.

Through careful coordination of the multidisciplinary design team, and especially attention to drainage and highway requirements, we have delivered with minimal disruption on some of Birmingham's busiest arterial routes.

The result is shorter journey times and better cycle routes in and around the city.

## Five interventions to improve rail connectivity across the region

Midlands Rail Hub is the region's biggest and most ambitious rail improvement scheme in a generation. It is a £900M to £1.5bn blueprint for faster, better and more frequent connections across the Midlands. It will bring 1.6M more people to within an hour of the region's biggest towns and cities by public transport, transforming economic opportunities and social outcomes for many.

We are providing multidisciplinary support to Network Rail in the optioneering and development of five major interventions to the rail network. These works will significantly improve the operation and functionality of the railway in central Birmingham, providing new connections and services into Birmingham Snow Hill and Moor Street.

**Project**  
Midland Rail Hub

**Location**  
Midlands

**Client**  
Network Rail

**Expertise**  
Project management, design management, civil, track, signalling, electrical and telecommunications engineering





# Energy

## Our projects

### The energy sector is transforming at an unprecedented rate.

The forces shaping the need for change include:

- **Decarbonisation:** Urgent action is required globally to help reduce the causes of climate change.
- **Digitalisation:** The use of digital technologies and tools to manage supply and demand from electrified buildings and vehicles is leading to new business models
- **Decentralisation:** Consumption of energy near industrial production sites omits the need for production in plants.
- **Democratisation:** Defined as consumers in developed countries wanting greater control and choice in their energy consumption.

Scaled renewables, storage options, information technology, smart technologies, policy frameworks and market instruments are enabling the global energy transition, which brings the potential for significant change in the West Midlands.

A whole energy systems approach is the most effective way to meet climate targets and reduce air pollution. This means developing a portfolio of options for clean energy in all forms – electricity, heating and transport – and finding the best combinations to deliver value for business and consumers.

We provide integrated engineering and project management services across the project lifecycle – from concept and design, to construction and operations, to decommissioning or repowering and life extension.

## Taking a whole neighbourhood approach to achieving net-zero

### Project

Sandwell Net-Zero Neighbourhood Demonstrator

### Location

Sandwell

### Client

Sandwell Metropolitan Borough Council

### Expertise

Net-zero, retrofit, low carbon mobility, placemaking, master planning, regeneration, stakeholder engagement

We identified and prioritised how net-zero can be achieved at a neighbourhood scale, developing a compelling investment case for community actions in building retrofit, low carbon mobility, smart generation, green space and regeneration. Some 300,000 homes in the region will need retrofit, alongside measures to implement low carbon mobility, increase green space and achieve positive social outcomes.

This requires a systems thinking approach, as well as considerable stakeholder engagement and community co-design and consultation. Our work enabled Sandwell to apply for demonstrator project funding from the West Midlands Combined Authority, as well as convening a consortium in developing an Ofgem funding application for a community energy flexibility study through a localised virtual energy network.





“The nature of this project meant that we needed an awful lot of work doing in a very short time, yet we needed flexibility and expert insight in the subject matter... The intelligence gained now sets us in great stead to develop our plans for a much cleaner, greener railway.”

Decarbonisation programme lead  
Network Rail

## A cleaner, greener railway

Network Rail is the UK’s fourth largest landowner and one of the country’s largest energy consumers.

We helped Network Rail achieve its decarbonisation goals by identifying opportunities to supply its assets with renewable energy across the whole country. This could help save over 100,000t of CO<sub>2</sub>e each year, while also reducing cost.

A data driven approach enabled us to identify over 100,000 separate land parcels, totalling 6M ha, suitable for the development of wind, solar photovoltaic and hydropower energy projects. We then prioritised 10 commercial-scale renewable energy projects, 20 megawatt-scale rooftop photovoltaic sites, and 50 smaller opportunities (50kW to 250kW) for further technical, environmental and economic feasibility evaluation.



**Project**  
Renewable energy integration feasibility study

**Location**  
UK-wide

**Client**  
Network Rail

**Expertise**  
Renewable energy, energy systems, economics, GIS, traction power

**Project**  
Borough-wide renewable energy strategy

**Location**  
Solihull

**Client**  
Solihull Metropolitan Borough Council

**Expertise**  
Renewable energy, open data, analytics, spatial data science, process automation, GIS, planning



## Maximising renewable energy potential, combining a data led approach and domain expertise

Our challenge was to identify the best renewable energy technologies for a large portfolio of land across the whole of Solihull borough. We combined our energy sector expertise with a data driven, geospatial, desktop screening process in collaboration with the council.

We ranked opportunities using an automated scoring system that considered their annual potential energy output as well as intersection with and proximity to various additional potential constraints.

We identified and prioritised over 4000 potential renewable energy generation and storage opportunities, which would provide almost double the annual demand.

We reviewed the top scoring sites, recognising neighbouring consumption, tandem opportunities and nearby infrastructure, to provide informed recommendations – all shared as a digital report and mapping.



# Water and wastewater

## Our projects

The water and wastewater sectors face unprecedented challenges – ageing infrastructure, population growth, water scarcity and climate change. Our specialist teams can guide you through them all.

We search for the opportunity to add value – technical, economic, environmental and social. We constantly stretch our thinking to cut costs, increase efficiency, reduce risk and improve resilience and reliability.

We do this through close collaboration with our clients – we understand their business environment and the needs of their end users. We also work with others in our clients’ supply chains, harnessing our collective skills and ingenuity to forge delivery models that provide end-to-end service and support.

Our asset management experts assist owners and operators to maximise the long term value of their infrastructure, increase resilience and improve service delivery for their customers. We have a proven track record of reducing risk, optimising maintenance expenditure and improving the performance of water assets.

## A spellbinding, nature based solution improving water supply, resilience and biodiversity

**Project**  
Witches Oak Green Recovery

**Location**  
Derbyshire

**Client**  
Severn Trent Water

**Expertise**  
Nature based solutions, water resources, biodiversity

An 80ha network of lakes next to the River Trent used to be part of the region’s water supply, but the requirement for energy intensive water treatment led to its retirement. We are recommissioning the existing infrastructure, providing up to 5% of the region’s daily water supply during dry spells, and using innovative floating wetlands as a nature based solution. The first of their kind in the UK, they will reduce the amount of energy and

chemicals used in the water treatment process and boost biodiversity. The floating wetlands will provide new habitats for nesting birds, fish and eels. Retained coppiced woodland will create further habitat on the banks, and natural willow wall revetments will assist in controlling the water flow pathways.





# Improving water quality in rivers for everyone

**Project**

Walsall Wood Sewage Treatment Plant

**Location**

West Midlands

**Client**

Severn Trent Water

**Expertise**

Design and build contracting, low carbon infrastructure, asset integration

Water quality in rivers is coming under increasing focus. Using groundbreaking technology, we upgraded the Walsall Wood sewage treatment plant so it would comply with stringent new standards for phosphorus and ammonia levels in wastewater.

We demonstrated that this new technology would not only deliver the lowest whole life cost but also reduce the whole life carbon footprint by a third, compared with a standard solution.

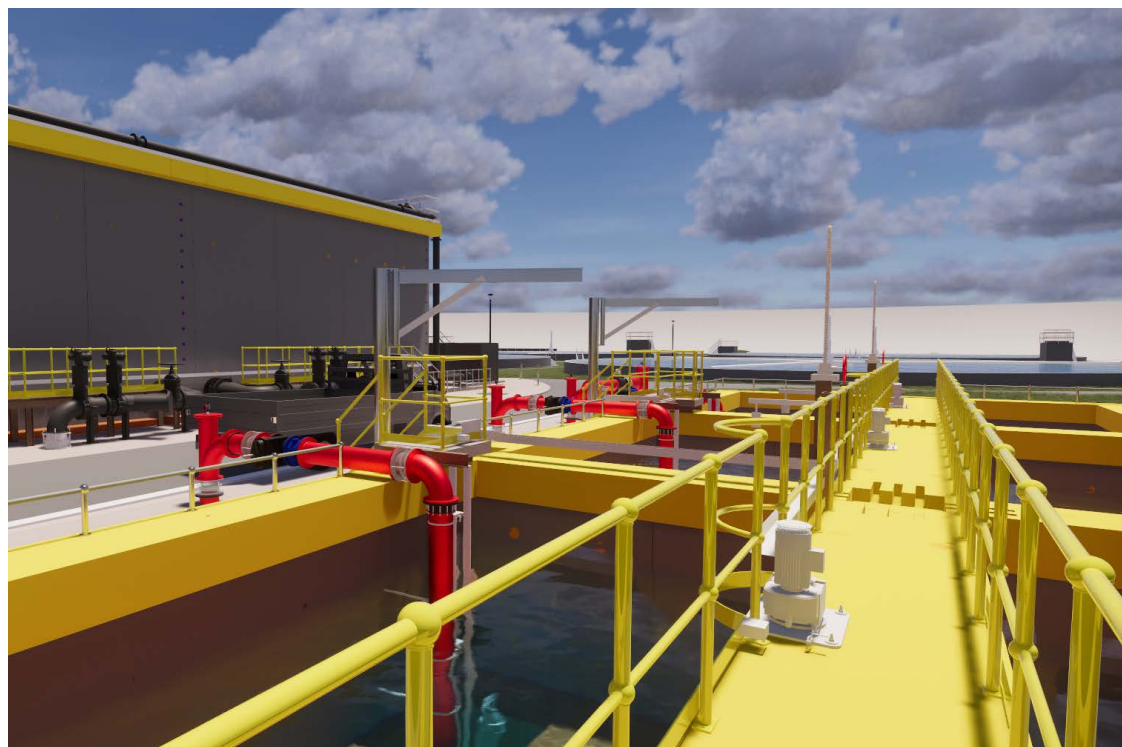
The creation of a sharing group between client and supply chain partners delivering similar schemes led to collaborative working and knowledge sharing, resulting in significant benefits including efficiencies in design, procurement and contract management.



**Institution of Civil Engineers East Midlands**  
Multiple award winner



**Institution of Civil Engineers West Midlands**  
Winner of the sustainability award



# Using waste to decarbonise the region's energy

**Project**

Stoke Bardolph Advanced Anaerobic Digestion Plant

**Location**

East Midlands

**Client**

Severn Trent Water

**Expertise**

Design and build contracting, low carbon infrastructure, asset integration

The new advanced anaerobic digester at Stoke Bardolph Sewage Treatment Works turns sewage into biogas that is exported to the gas network, helping decarbonise the region's gas supply.

With an ambitious programme – from contract award to substantial completion in just two years – collaborative working and planning have been key to ensure efficient project delivery with a focus on getting it right first time.

We have championed design for manufacture and assembly, digital and innovative solutions for construction to keep a streamlined programme while maintaining world class health and safety and the highest quality end product.



# Creating better outcomes for people and planet

We're working with partners to design HS2 in the Midlands. Our designs reduced the necessary diversion of Canley Brook near Kenilworth from 700m to just 80m. That saved 600,000m<sup>3</sup> of excavated material and 28,000m<sup>3</sup> of concrete, as well as 2500 lorry movements removed from local roads, reducing cost, carbon and noise and disruption to the local community. It also preserved the homes of protected wildlife such as otters and bats.

Replacement of 2km of retaining walls with cutting slopes will also reduce the barrier effect of the scheme for species and provide additional opportunities for new habitats and grassland for newts and reptiles. There are also plans for improved integrated landscape design.

**Project**  
HS2

**Location**  
West Midlands

**Client**  
Balfour Beatty Vinci JV,  
HS2 Limited

**Expertise**  
Multidisciplinary design

## 600k

cubic metre reduction in excavated material

## 2500

lorry movements removed from local roads





# Advisory

## Our projects

Our fast changing world challenges organisations to operate in increasingly complex and multifaceted environments, become smarter, greener and leaner, and deliver better social, environmental and commercial outcomes.

We combine strategic and specialist advisory expertise with our deep engineering heritage to help clients overcome obstacles, manage risks, set objectives and achieve goals.

- **Social outcomes**
- **Environment**
- **Climate change**
- **Cities**
- **Digital transformation**
- **Asset management**
- **Project, programme and commercial management**
- **Economics and infrastructure finance**



Click subheadings to learn more

# Supporting the region to deliver the best Commonwealth Games yet

**Project**  
Commonwealth Games

**Location**  
Birmingham

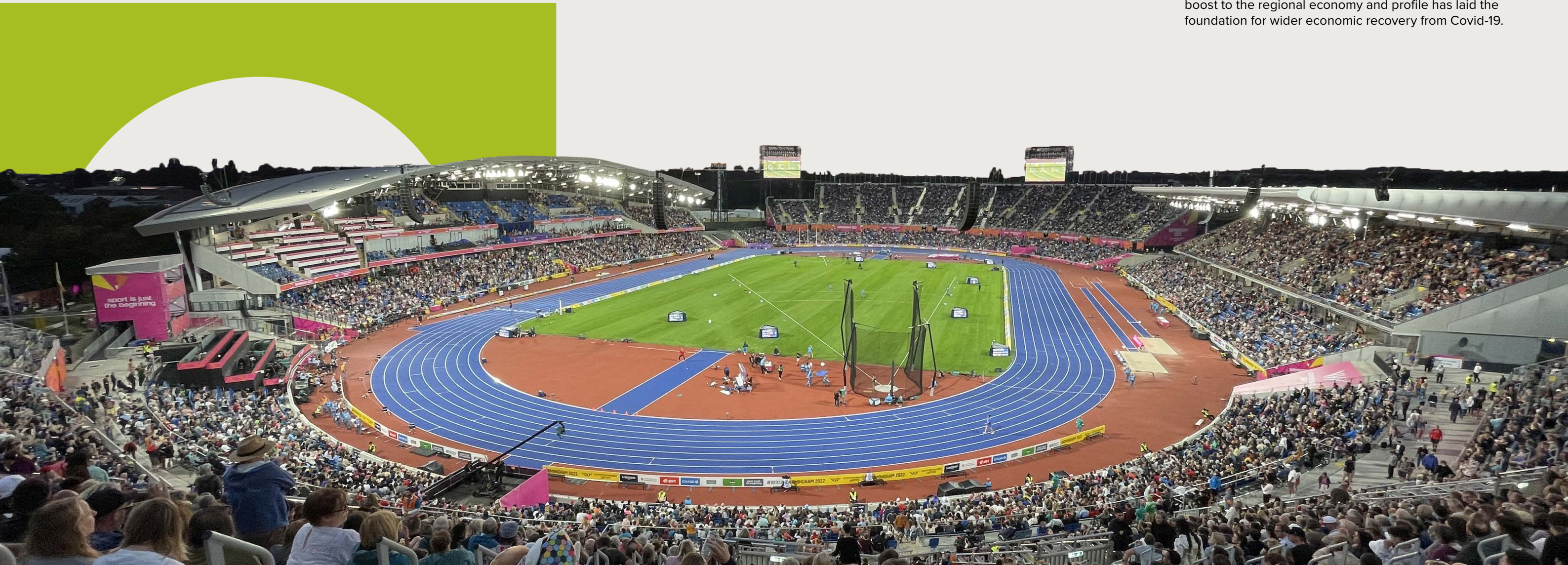
**Client**  
Transport for West Midlands, Birmingham City Council

**Expertise**  
Programme management, event operations planning and delivery, transport planning, transport modelling, traffic engineering

Birmingham hosted the Commonwealth Games in 2022, the largest multisport event to be held in England in 10 years. The region welcomed millions of visitors from across the country and the world.

Over four and a half years, more than 150 colleagues provided expertise supporting the successful bidding, planning and delivery of the Games.

Keeping the region moving was a key success of the Games. Birmingham welcomed over 2M people through New Street Station, while 650,000 spectators travelled by shuttle buses and 28,000 journeys were made on the West Midlands Cycle Hire scheme. The huge boost to the regional economy and profile has laid the foundation for wider economic recovery from Covid-19.





# Preserving a terracotta temple to justice



**Project**  
Birmingham Victoria Law Courts

**Location**  
Birmingham

**Client**  
Ministry of Justice

**Expertise**  
Project management and multidisciplinary technical advisory

**Project**  
Department for Education  
New Schools Framework

**Location**  
Across England

**Client**  
Department for Education

**Expertise**  
Heritage and archaeology advisory



# De-risking, managing change and opening up opportunities for historic schools

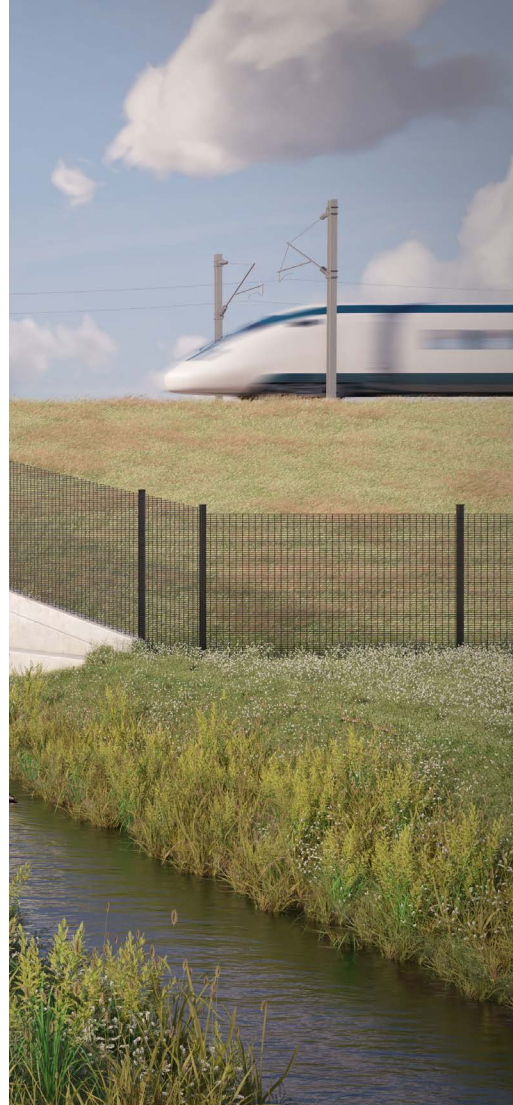
Schools are often at the heart of a community, and for many areas heritage buildings can define a sense of place and belonging. The Department for Education consistently seeks to improve and upgrade its schools and sites, many of which have heritage interest.

To help development projects and de-risk sites, our archaeology and heritage team devised a bespoke assessment to provide effective, early and thorough advice on the historic environment. We can then offer ongoing support throughout the development process, protecting heritage assets while enabling enhanced educational outcomes and community wellbeing.

Many public buildings in Birmingham in the late 19th century were built from terracotta, and Queen Victoria laid the foundation stone of this one in 1887. The material became symbolic of Birmingham's Civic Gospel movement – a philosophy of municipal activism and social improvement promoted by legendary Birmingham mayor Joseph Chamberlain.

We've been helping renovate the building through significant investment, bringing together multidisciplinary technical expertise with our project management specialists. We've collaborated with heritage experts like Historic England to provide a safe and fully operational court for users and visitors. We've been bringing the building up to current standards while protecting its grade I listed status.





**Project**

HS2

**Location**

West Midlands

**Client**

HS2 Limited

**Expertise**

Land referencing

## Connecting HS2's giant jigsaw

Land referencing is an unsung but fundamental discipline for a huge project like HS2. It identifies people and organisations with legal interests and rights over land required. It also plays a role in minimising land take, lowering the number of affected parties as well as project costs.

We have been supporting HS2 for over a decade, land referencing, assembling land along the entire route, and arranging survey access.

The scale is unprecedented, so we created a holistic digital solution, Moata Land Management. It integrates geospatial, land ownership and stakeholder information, bringing together our domain knowledge with our digital expertise, saving time and money and becoming the single source of truth.

**Project**

Coventry Very Light Railway

**Location**

Coventry

**Client**

Coventry City Council

**Expertise**

Light rapid transit, digital consultancy, building information modelling, smart infrastructure

## A digital revolution in Coventry

Coventry City Council appointed us to develop the digital strategy for Coventry Very Light Rail (VLR). This is an innovation project led by the city council to create a new, low cost, autonomous rapid transit system that makes light rail affordable for regional cities.

We used our award winning light rail sector expertise (including the first detailed design of a light rail scheme in BIM), combined with our excellence in digital consulting, to highlight new ways of working, unlock efficiencies and deliver better outcomes.

We collaborated with the client and stakeholders to define:

- Organisational information requirements
- Asset information requirements
- Employer's information requirements
- VLR project information requirements
- Exchange information requirements



**Global Light Rail Awards**  
Consistent success since 2010

“We appointed Mott MacDonald to assist Coventry City Council in creating the employer’s requirements documents for the definition of the BIM model for our VLR project. The Mott MacDonald team covered all areas of work required and led the CCC team successfully through the processes and discussion to produce the documents. They were also happy to broaden out the discussion at any point to cover more general scheme and light rail related topics which might have a future bearing on the design, construction and operational processes. The CCC team found the whole process extremely useful.”

**John Cooper**  
Coventry City Council





# Our Midlands heritage

## Honouring Sir Arnold Waters

We can directly trace our heritage in Birmingham back to 1919, when Sir Arnold Waters set up as a consulting engineer following the end of the war. Later on, AHS Waters and Partners was established in 1955, which joined Mott Hay and Anderson in 1985. Mott Hay and Anderson then went on to merge with Sir M MacDonald and Partners to become Mott MacDonald.

### 1918

On 4 November, Major Waters with his field company came under close fire while bridging across the Sambre-Oise canal during the Second Battle of the Sambre in France. The success of the operation was entirely due to his valour and example.

### 1919

Awarded the Victoria Cross for his gallantry in the face of the enemy. Set up as sole practitioner consulting engineer in Birmingham.

### 1933-34

### 1943-44

President of the Institution of Structural Engineers (the only person to have had this accolade twice).

### 1949

Made Commander of the Order of the British Empire.

### 1954

Knighted Sir Arnold Waters.

### 1955

Set up AHS Waters and Partners.

### 1985

AHS Waters and Partners joined Mott Hay and Anderson.

### 1989

Mott Hay and Anderson merged with Sir M MacDonald and Partners to become Mott MacDonald.

Mott MacDonald Birmingham honoured the story of Sir Arnold Waters in 2018, when it was 100 years since he won the Victoria Cross for his gallantry constructing a bridge under fire across the Sambre-Oise canal during the Second Battle of the Sambre on 4 November 1918, and we celebrate his story.





# Here for you

Our creative thinkers find focus in our clients, find focus in you.

We are totally committed to this region – we remain local.

You really can come and see us, pick up the phone, send an email or meet for a coffee just to share an idea or look for an answer.

Eighty percent of the work we do is for long term or repeat clients; we think this underlines the success of the great service we offer.

It can be surprising where that first conversation can get you.

## Talk to us:

**Tim Fawcett**  
**Birmingham Cities lead**  
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