

Driving Life Sciences Business In the UK Midlands Region



**INVEST
IN
GREAT**

BRITAIN & NORTHERN IRELAND



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Welcome

The Midlands Engine for Growth

Located in the centre of the United Kingdom, the Midlands Engine is the heartbeat of the nation's economy.

The Midlands Engine is the place to do business, with a world-class research and innovation infrastructure including science and technology parks and business incubation facilities, alongside the delivery of knowledge exchange programmes.

Home to the largest number of medical technology service and supply companies in the country, with a strong life sciences pedigree that stretches from Nottingham, with BioCity as its centrepiece, to Birmingham and the Institute for Translational Medicine. The region is also underpinned by a strong private sector base containing globally significant companies such as 3M, Abbott Healthcare, Orion Pharma, Parexel, Walgreens Boots Alliance, Reckitt Benckiser, Catalent Pharma Solutions and Quotient Sciences, as well as key manufacturers Jaguar Land Rover, Rolls Royce (Aerospace) and JCB, to name but a few.

The Midlands Engine has over 1,200 life sciences businesses supporting over 33,000 high skilled jobs. Of the 5.2 million people working in the Midlands Engine, 41.6% are in knowledge intensive sectors.

The Midlands Engine links the UK to the rest of the world through its network of freight and passenger airports, and connects the country through its road network and rail links. 90% of all UK businesses are within 4 hours' drive from the Midlands.

The Midlands has a rich set of research and innovation assets. Home to 20 Universities, with 2 of these in the Top 15 UK Universities, supported by a network of 40 Further Education Colleges, the 2014 Research Excellence Framework found world leading research in 281 University departments. One of our Midlands Engine Universities ranks in the UK top 10 for research power.

The Midlands Engine contributes over £200 billion a year to the UK economy, with a fifth of all UK manufacturing jobs being based in the Midlands.



Within top 3

for UK Life Sciences

14% of all UK Life Sciences employment is in the Midlands (33,964 Jobs), identified as within the top three by the Office of Life Sciences (OLS).

The Midlands particularly excels in MedTech specialist service and supply businesses, ranking first ahead of the South East and East of England, with over 12,000 jobs and 14% of the national employment total (12% in BioPharma and nearly 20% in MedTech)

Ranked 2nd

for specialist service and supply companies

Second largest

UK employer in MedTech

The Midlands Engine has strength in core MedTech industry, with 7% of employment (18,417 jobs) in Medical Technology, making the Midlands the second largest UK employer in MedTech - This is further strengthened by the Defence Medicine Rehabilitation Centre's location in the region.

In 2018/19, the Midlands Engine region attracted 224 Foreign Direct Investment projects in total across the region, creating over 6,000 new jobs and safeguarding a further 1,056. The region accounted for 16% of the UK's overall exports in 2013, selling to over 178 countries worldwide. Exports increased by 38% between 2010 and 2013

16%

of the UK's overall exports

Stable population

Large, ethnically diverse and stable population

It is recognised that the Midlands Engine is home to a large, ethnically diverse and stable population with the largest non-white British population outside of London. This large and stable, diverse ethnic population and demographic mix provides a perfect platform for medical research and clinical trials

The Midlands Engine has 6 medical schools; each benefiting from proximity to, and close working with, NHS Trusts. 1 in 7 (14%) of the UK's Medical Schools are based in the Midlands.

14%

14% of all UK Medical Schools are based in the Midlands

Why locate here?

The Midlands Engine has a compelling offer of commercial opportunity, affordability, connectivity and quality of life.

The Midlands Engine is home to extensive research and development facilities, as well as one of Europe's largest and most diverse populations.

The availability of land and development opportunities within the region for companies looking to expand or invest in the life sciences sector and take advantage of accelerated clinical programmes, along with an established and well-connected life sciences community, provides exciting opportunities to new and existing businesses. This, combined with state of the art clinical and global healthcare facilities, drives strong collaboration between academia, industry and health to give the region's life sciences industry a competitive advantage. For companies operating on a global level, the Midlands Engine is a catalyst for extending supply chains and a key to long term growth.

Connectivity & Accessibility

At the heart of road and rail infrastructure, the Midlands strategic road and rail networks such as the M6, the M1, the West Coast Mainline, the East Coast Mainline, and the Midlands Mainline are all of national importance. The East Midlands Gateway project provides a Strategic Rail Freight Interchange with up to 6 million sq ft of new distribution and storage buildings, built next to the UK's only 24 hour Air Freight Terminal airport with links to the motorway network allowing goods to be shipped easily anywhere across the UK, an import and export advantage.

Manufacturing & Supply Chain

- The Midlands has a strong advanced manufacturing and engineering base which employs 614,000 people and accounts for one fifth of the UK's manufacturing employment.
- 664 core medical technologies businesses and a further 313 associated service and supply businesses - 23% of the UK total.

Skills Base

- A knowledgeable and collaborative life sciences skills base
- 20-29 year olds are the largest demographic group
- Around 5.2million people (15.9%) In the Midlands are in employment, with 41.6% judged to be in knowledge intensive sectors.
- 33,964 highly skilled jobs in life sciences
- 46,111 A level students in the Midlands Engine
- Percentage of students achieving grades AAB or better at A level: 15.1%

Clinical trials

- 86 Clinical Trial facilities - one in five UK Clinical Trial Facilities are in the Midlands and the Midlands has
- Unique population - a large and stable, diverse ethnic population and demographic mix provides a perfect platform for medical research and clinical trials (largest non-white British population outside of London);
- The Midlands has more clinical trial facilities than any other English region

52 NHS Trusts

- 42 Clinical Commissioning Groups
- 10 Sustainability and Transformation Partnerships (22.7% of UK STPs)
- Serving a footprint of over 10 million people

21 Innovation Centres

20 Universities with 18 out of 20 Universities offering courses connected to health

7 Enterprise zones within easy reach of the motorway network and Airports

2 Airports including one 24 Hr Air Freight Airport Terminal

7 Rail freight terminals

#1 UK's largest cargo tonnage port

Liveability & Affordability

- Wide range of residential properties available in a mix of urban and rural locations
- Average house price £213,481 (London £625,817 / South East (Oxford) £412,125 / East of England (Cambridge) £315,176). (Source: Rightmove, 28/02/2020)
- Region boasts Areas of Outstanding Natural Beauty such as the Peak District and the Cotswolds
- Cost of living on average 22% lower than London, 22% lower than the South East (Oxford), 10% lower than the East of England (Cambridge) and 10% lower than the national average

Infrastructure & Capacity

- Wide range of accommodation available from new build to established research & development facilities
- 1209 life sciences & healthcare businesses
- 9 Growth Hubs

Academia

- 18 out of 20 Universities offer courses connected to health
- 6 Schools of Medicine
- Midlands Engine Institutions secured over 20% of all UK Research Council Funding in 2019, over £246m.
- World-leading research in 281 University departments
- 666 Secondary Schools - 15.1% achieve AAB or better at A Level

Multibillion pound transport and infrastructure investment projects such as HS2 & Strategic Rail Freight Interchange are underway.

Strengths of the Midlands

The Midlands Engine offers an unparalleled blend of businesses, Universities and research translation centres, coupled with strong collaboration, research and clustering activities which combine to make an established and well-connected eco-system.

The Midlands Region is home to notable high growth companies indigenous to the Midlands, including the Binding Site, Salts Healthcare, Quotient Sciences, Sygnature Discovery, Charnwood Molecular, Kimal Plc, Pennine Healthcare, Alliance Medical, Biocomposites, Thea Pharmaceuticals, and XenoGesis.

Alongside these local companies, there are established multinationals including Parexel, McKesson UK, Clinigen Group, Worldwide Clinical Trials, 3M, Fresenius Medical Care, Catalent Pharma Solutions and Walgreens Boots Alliance. This sub-sector is further strengthened by the expansion of Almac with the move from their Northern Ireland Headquarters on to the Charnwood Campus in Leicestershire, as well as by the move of Abbott Healthcare from Stratford to Solihull.

The further success of local companies can also be evidenced through the healthy level of company acquisitions.

Of the 38 UK local Enterprises Partnerships (LEPs), 9 are located in the Midlands Engine. LEPs provide a range of activities and services with the aim of adding significant value to local delivery and maximising the collective impact of the Midlands Engine. To facilitate enterprise development they operate:

- Growth Hubs
- Enterprise Zones
- European Structural and Investment Funds Programmes

There are 21 Midlands innovation centres dedicated to speeding up the growth and success of start-up and early-stage companies. In 2017/18, Innovate UK awarded Grant Funding totalling £300m to the Midlands, representing over 25% of the UK Total.

Academic Collaborations

Midlands Innovation (www.midlandsinnovation.org.uk)

A collaboration of eight research-orientated Universities (Aston, Birmingham, Cranfield, Keele, Leicester, Loughborough, Nottingham, and Warwick) combining their collective excellence to unite the power of University research with the unique strengths of Midlands industry to drive cutting-edge research, innovation and skills development.

3 Midlands Innovation Universities are in the Top 100 QS World University rankings.

4 noted in the top 20 for the 2020 The Complete University Guide.

The 8 Midlands Innovation Universities generated £550m in consolidated research grants and contracts in one year.

10% of all UK postgraduate students are at Midlands Innovation Universities

Midlands Enterprise Universities (www.midlandsenterpriseuniversities.co.uk)

A partnership of seven entrepreneurial Universities (Birmingham City, Coventry, Nottingham Trent, Derby, Lincoln, Wolverhampton and De Montfort) working together to drive productivity and economic growth across the Midlands through skills, innovation and enterprise have come together to:

- Enable innovation and to stimulate an innovation ecosystem
- Deliver focused support to Midlands Engine Small and Medium sized businesses (SMEs)
- Provide multi-billion-pound investment into new facilities for students and businesses

Clinical Collaborations

The region's two Academic Health Science Networks (AHSNs) lead, catalyse and drive co-operation and productivity between Academia, Industry, Health and care providers and commissioners and citizens, helping to accelerate the adoption of innovation to generate continuous improvement in the Midlands Engine health and wealth. They both have specific Themes and Priorities in which Clinical, Academia and Industry collaborate in order to provide solutions to health and social care challenges. Three solutions that have evolved to address these challenges with clinical and industry collaborations are:

SCRIPT Medicines Management - To address the training need relating to medicines management and medicines optimisation, an eLearning programme for nurses was developed, based on the established successful SCRIPT programme for Foundation trainee doctors. Partner Organisations: University of Birmingham; Coventry and Warwickshire Partnership NHS Trust; Health Education England.

Atrial Fibrillation - AF Advance Programme - Atrial Fibrillation (AF) is one of the most common forms of abnormal heart rhythm and a major cause of stroke. Working with CCGs, the EMAHSN has engaged with healthcare professionals to put in practices new approaches to improve diagnosis and treatment. Since the launch of the project 896 devices have been deployed to participating practices and support services in the East Midlands to increase detection and protection rates. The AF Advance Programme has seen an increase in detection with an additional 6,247 people diagnosed with AF in 2018/19 and an additional 5,510 East Midlands patients being treated for AF (2018/19). On average this has contributed to 220 people avoiding a stroke and a reduction of 73 deaths.

The Transfer of Medicines Programme aims to implement a process that can facilitate the safe transfer of medicines at both the interface and handover of care. The process will support the medicines reconciliation process to reduce medication-prescribing errors. Partner organisations: University Hospitals Birmingham NHS Foundation Trust; Heart of England NHS Foundation Trust; Pfizer Ltd. Additionally 3,063 patients in the East Midlands have received extra support with their medicines on discharge.

The regional AHSNs are engaging with industry to facilitate Digital Health and healthcare innovations by providing advice and support around Clinical Trials, Evaluation, IP Protection, Market Entry, Adoption, Inward Investment and Wealth Creation.

*77 private hospitals
159 NHS Hospitals*

Business Support Medilink Midlands

The Life Sciences Industry Association, with offices in both East and West Midlands, supporting the regions Life Sciences Sector for over a decade



>1200

Life sciences & healthcare businesses within the Midlands Engine Region

£246 m

With 20 Universities, Midlands Engine Institutions secured over 20% of all UK Research Council Funding in 2019, over £246m.

£4 bn

Midlands Enterprise Universities collectively contribute more than £4 billion to the region's economy

14%

The Midlands Engine's 6 Medical Schools account for 14% of the UK total.

10 Universities train Midwives; 11 Universities train Nurses; 15 regional Universities offer clinical related & professions allied to medicine courses

£3.9 bn

Industrial R&D is core to the Midlands Engine. Businesses invested over £3.9 billion in R&D in 2017 with 47,000 employees engaged in R&D activity

Strengths of the Midlands

The Midlands Region offers an unparalleled blend of businesses, universities and research translation centres, coupled with strong collaboration, research and clustering activities which combine to make an established and well-connected eco-system.

Over 20% of the UK's manufacturing employment is in the region, providing 614,000 UK manufacturing jobs.

The Midlands Engine is the epicentre of advanced manufacturing and engineering in the UK, including innovative leaders in digital and collaborative production processes. Its extensive supply chain is reshaping chemicals, base and fabricated metals, electrical items, prefabrication and subcontracting including machinery for Life Sciences as well as other sectors.

The region is home to the largest number of MedTech service and supply companies and also home to over 20% of the UK's manufacturing employment which provides 614,000 UK manufacturing jobs. This market is fed by a highly-skilled talent pool and links to vibrant, world-class research bases such as the four 'Catapult' centres that bring together clinicians, scientists, engineers and business to evolve medicines, manufacturing, transport and energy systems. The Manufacturing Technology Centre (MTC) in Coventry is part of the High Value Manufacturing Catapult group and develops innovative manufacturing processes and technologies to support a range of manufacturing sectors across the region and further afield.

Catapult centres

The Catapult Centres are a network of world leading centres designed to transform the UK's capability for innovation in specific areas and help drive future economic growth.



Medicines Discovery Catapult laboratory - A new innovative Medicines Discovery Catapult facility targeted at developing new complex biological assays and advanced biochemical analysis.



High Value Manufacturing Catapult HVM is the application of leading edge technical knowledge and expertise to the creation of products, production processes, and associated services.



Energy Systems Catapult Transformation of our whole energy system and capture the new commercial opportunities created (covering electricity, heat and combustible gases).

Data-Driven Healthcare

A critical emerging sector for the Midlands is Data-driven Healthcare and Digital Healthcare, with the region hosting a rapidly-growing cluster of digital health companies and more digital start-ups than any UK area outside of London. The Midlands also attracts global companies to relocate here through our distinctive NHS-partnering ecosystem, cutting-edge facilities and world-leading expertise, as well as critical focal sites including two UK Life Science Opportunity Zones (Charnwood Campus and Birmingham Life Science Park). The Midlands is a health data and AI powerhouse, as recognised by the UK Sector Deal. Within this area, there are two concentrations of activity:

Accelerating disease focused industrial research: Utilising close relationships between academic/clinical excellence and ethnically diverse population, and world-leading data science expertise, the Midlands environment delivers the unparalleled opportunity to reduce development time and costs of clinical trials to innovate faster. This is demonstrated through our regional infrastructure including: the UK's only Centre for Patient Reported Outcomes, the Midlands HDRUK Substantive Site, the Centre for BME Health, the Midlands-Wales Advanced Therapy Treatment Centre, two UK Digital Innovation Hubs (participating in a third), a fully integrated NIHR infrastructure coordinated by the three Midlands Biomedical Research Centres, and some of the UK's foremost diagnostic and experimental medicine capabilities (e.g. the UK's largest NHS genetics service, Genomic Medicine Centre and NIHR award for the joint adult-paediatric facilities). All working collaboratively with companies to develop technologies that support prevention, early diagnosis and treatment of chronic diseases.

Delivering unrivalled digital infrastructure: To support collaboration, mobilise NHS data and give patients across the UK faster access to pioneering new treatments, the region has developed a locally developed and internationally leading digital health infrastructure. This features two Alan Turing Institute sites, four NHS England Global Digital Exemplars, the High Performance Computing Midlands Plus centre, the PathLake Centre of Excellence, one of the world's largest Arm-based supercomputer deployments and the UK's largest IBM Power9 AI cluster. The Midlands offers an unrivalled ability to link and analyse patient data, leverage our translational research infrastructure to trial and validate new health interventions, and bring those impacts back to the patient (as well as our industry collaborators) at sufficient scale and pace to meet the Grand Challenges set by the UK Industrial Strategy.

Core Life Sciences

Business Resources

The Midlands Engine region is a distinctive UK centre for clinical trials, and research and development, having a wealth of experience across a wide range of diseases, conditions and clinical settings, all of which need specific trial designs to test and evaluate them accurately and sufficiently. To facilitate the needs of Industry and to satisfy their regulatory requirements in order to bring ideas and concepts to market, the region has evolved a wide range of industry medical support organisations, both public sector NHS and Academic as well as commercial.

Regional Centres of Clinical Research Excellence

- Advanced Therapies Facility (University of Birmingham)
- Anthony Nolan Cell Therapy Centre (Nottingham Trent University)
- Arden Tissue Bank (University Hospital Coventry)
- Birmingham University Imaging Centre (University of Birmingham)
- Cancer Research UK Birmingham Centre (University Hospitals Birmingham)
- Cancer Research UK Clinical Trials Unit (University of Birmingham)
- Cancer Research UK Experimental Cancer Care Medicine Centre (University of Birmingham)
- Centre for Analytical Science (Loughborough University)
- Centre for Biological Engineering (Loughborough University)
- Centre for Biomolecular Sciences (University of Nottingham)
- Centre for Clinical Haematology (University Hospitals Birmingham)
- Centre for Computational Biology (University of Birmingham)
- Centre for Healthcare Technologies (University of Nottingham)
- Centre for Healthcare Technology Assessment (CHEATA),
- Centre for Patient Reported Outcome Research (CPROR)
- Centre for Prognosis Research (Keele University)
- Centre for Rare Diseases (University Hospitals Birmingham)
- Centre for Translational Inflammation Research (University of Birmingham)
- Centre for Vision & Hearing Research (Aston University)
- Centre of Precision Rehabilitation for Spinal Pain (University of Birmingham)
- Clinical Immunology Service (University of Birmingham)
- East Midlands Congenital Heart Centre (University Hospitals of Leicester NHS Trust)
- Elite Centre for Manufacturing Skills (The Black Country LEP, West Midlands)
- EPSRC Centre for Innovative Manufacturing in Regenerative Medicine (Loughborough University)
- EPSRC and MRC Centre for Doctoral Training in Regenerative Medicine (Keele University)
- EPSRC and MRC Centre for Doctoral Training in Regenerative Medicine (University of Nottingham)
- European Association for Cancer Research (University of Nottingham)
- European Centre of Excellence in Tissue Engineering (Keele University)
- Health Services Management Centre (University of Birmingham)
- Henry Wellcome Building for Nuclear Magnetic Resonance
- Human Biomaterials Resource Centre (University of Birmingham)
- Institute for Mental Health (University of Birmingham)
- Institute for Mental Health (University of Nottingham)
- Institute of Digital Healthcare (University of Warwick)
- John Van Geest Cancer Research Centre (Nottingham Trent University)
- Keele Anatomy and Surgical Training Centre (Keele University)
- Leicester Bone Bank (University Hospitals of Leicester)
- Leicester Precision Medicine Institute (University of Leicester)
- Medical Technologies Innovation Facility (MTIF) (Nottingham Trent University)
- MindTech Healthcare Technology Co-operative (Nottinghamshire Healthcare NHS Foundation Trust)
- MindTech national centre for mental healthcare and dementia.
- Motion and Performance Centre (MPC) (University of Worcester)
- MRC Arthritis Research UK Centre for Musculoskeletal Ageing Research (University of Birmingham)
- National Pollen Research and Aerobiology Centre - Darwin Centre (University of Worcester)
- NHS Blood and Transplant Service (NHSBT) (University Hospitals Birmingham)
- NHS Global Digital Exemplar (University Hospitals Birmingham)
- NIHR Applied Research Collaboration East Midlands
- NIHR Applied Research Collaboration West Midlands
- NIHR Biomedical Research Centre in Inflammation
- NIHR Birmingham Clinical Research Facility
- NIHR Coventry and Warwickshire Clinical Research Facility
- NIHR Global Health Research Group on Global COPD in Primary Care (University of Birmingham)
- NIHR Global Health Research Unit on Global Surgery (University of Birmingham)
- NIHR Leicester Biomedical Research Centre - Respiratory, Lifestyle, Precision Medicine & Cardiovascular (University Hospitals of Leicester NHS Trust, University of Leicester and Loughborough University)
- NIHR Leicester Clinical Research Facility
- NIHR Nottingham Biomedical Research Centre - Respiratory, Mental Health & Technology, Musculoskeletal, Hearing, Gastrointestinal & Liver and MRI Imaging (Nottingham University Hospitals NHS Trust and the University of Nottingham)
- NIHR Nottingham Clinical Research Facility
- NIHR Surgical Reconstruction and Microbiology Research Centre
- NIHR Trauma Management MedTech Co-operative
- NIHR Wellcome Trust Clinical Research Facility (University Hospitals Birmingham)
- Phenome Centre Birmingham (University of Birmingham)
- Precision Medicine Institute (University of Leicester)
- Royal Centre for Defence Medicine (University Hospitals Birmingham)
- Science, Technology and Prototyping Centre (Black Country LEP)
- Tommy's National Centre for Miscarriage Research (University of Birmingham and Birmingham Women & Children's Hospital)
- Transplant Unit Cardio-Thoracic, Liver, Kidney (renal), and Intestinal (University Hospitals Birmingham)
- Transplant Unit Kidney (renal) (City Hospital, Nottingham)
- Transplant Unit Liver (Birmingham Children's Hospital)
- UK's National Sperm Bank (Birmingham Women's Hospital)
- West Midlands Genomics Medicine Centre (University Hospitals Birmingham)
- West Midlands Regional Genetics Laboratory (Birmingham Women and Children's Hospital)

Trauma & Defence Medicine

The Midlands Engine is the UK's centre for Trauma & Defence Medicine



Major Trauma - Civilian

East Midlands Major Trauma Centre (EMMTC) - Nottingham University Hospitals NHS Trust



Since the East Midlands Major Trauma Centre (MTC) opened in April 2012, 645 lives have been saved that

without the advanced skills and interventions received would otherwise not be expected to survive their injuries. The East Midlands MTC is the busiest in the country and has the strongest clinical outcomes nationally.



University Hospitals Coventry & Warwickshire - MTC



UHCW is proud to have been successfully re-certified as a 'Centre of Excellence (CoE)' for Gastro-entero-pancreatic (GEP)

Neuroendocrine Services by the European Neuroendocrine Tumour Society (ENETS). The Trust is also delighted to have been newly certified as a CoE for Lung Neuroendocrine Tumours. Both of these accreditations highlight prestigious services and establish UHCW as a leading Trust in treatment for patients in these areas.

University Hospitals of North Midlands - MTC



UHNH was the first acute NHS Trust to provide job planned pre-hospital time for trauma anaesthetists and enter into a formalised partnership

with pre-hospital providers to supply pre-hospital emergency medicine consultants on a regular basis. UHNH receives patients from all across the North Midlands - Staffordshire, Shropshire, Cheshire - as well as further afield from North Wales.

Birmingham Children's Hospital - Paediatric MTC



Birmingham Children's Hospital is the UK's leading specialist paediatric centre, caring for sick children and young people up to the age of 16.

Rated as 'Outstanding' by the CQC in February 2017, it is a world leader in some of the most advanced treatments, complex surgical procedures and cutting-edge research and development.

University Hospitals Birmingham (UHB) - Major Trauma & Critical Care

University Hospitals Birmingham NHS Foundation Trust The Queen Elizabeth Hospital

Birmingham (QEHB) has the largest single Critical Care Unit in Europe, with 100 bed spaces. To date 75 of these are open. Critical Care provides 24/7 treatment to adults, in a separate and self-contained area of the hospital. It is dedicated to the management and monitoring of patients with life threatening conditions. It provides specialist skills which include medical, nursing and other personnel experienced in the management of these patients. UHB are specialist providers of a wide range of disciplines which include neurosurgery, burns, liver surgery, oncology, cardiac surgery, transplants and organ donation, plastic surgery, dermatology, maxillofacial, renal surgery, stroke, vascular surgery and urology.

The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust (RJAH)



The Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation

Trust (RJAH) is a leading orthopaedic centre of excellence. A specialist hospital with a reputation for innovation, the Trust provides a comprehensive range of musculoskeletal (bone, joint and tissue) surgical, medical and rehabilitation services; locally, regionally and nationally. RJAH is a founder member of the Specialist Orthopaedic Alliance (SOA)

The Royal Orthopaedic Hospital NHS Foundation Trust



The Royal Orthopaedic Hospital NHS Trust in Birmingham is one of the largest orthopaedic centres in Europe. The Trust offers planned specialist care for all of the orthopaedic

subspecialties, from elective arthroplasty for local patients, through to regional and supra-regional services (for example in spinal surgery and oncology).

The Midlands Engine is the UK's centre for Trauma & Defence Medicine, with the tri-service Royal Centre for Defence Medicine (RCDM) located at University Hospitals Birmingham NHS Foundation Trust in Birmingham, and the Headquarters of the Surgeon General together with the Joint Medical Command at Lichfield. Completing the region's unparalleled expertise, The new Defence Medical Rehabilitation Centre - known as 'DMRC Stanford Hall' - near Loughborough, started treating patients in October 2018.

Trauma & Defence Medicine

The Midlands – The Home of Military Medicine

The centre of gravity of Defence Medicine is now firmly established in the Midlands, with the Royal Centre for Defence Medicine located at University Hospitals Birmingham NHS Foundation Trust, and the Defence Rehabilitation Centre, based at Stanford Hall Estate near Loughborough since 2018. The Headquarters of the Surgeon General and the Defence College for Healthcare Education and Training are located at Defence Medical Services (Whittington), the site of the former Staffordshire Regiment Headquarters south of Lichfield. Although the Defence Medical Services, comprising personnel from the Royal Navy, Army, Royal Air Force, and Civil Service, are spread widely throughout the UK and overseas, the geographical focus of the components above consolidates the region's position as an international centre of excellence for Defence Medicine.

Medical Directorate

The Medical Directorate is located within the University of Birmingham Research Park and is the home for military medicine Academic Departments and clinical expertise for UK Defence. The Directorate's mission is to improve patient care within Defence through Innovation, Research & Development, and Healthcare Engagement, regionally, nationally and internationally. The nine academic departments are Mental Health; Nursing; General Practice and Primary Care; Anaesthesia and Critical Care; Surgery; Medicine; Trauma & Orthopaedics; Emergency Medicine; and Military Rehabilitation. The Directorate has built a world renowned reputation for trauma innovation following recent campaigns in Afghanistan and Iraq. Current health and health science research is focused on rehabilitation of musculo-skeletal injury, prolonged care (both pre-hospital and deployed hospital care) and military mental health.

Royal Centre for Defence Medicine (RCDM)



Established in 2001, the RCDM's primary role is the focal point for the reception of military casualties from overseas, providing a 'front door' from the battlefield into the NHS.

Nested within the Queen Elizabeth Hospital Birmingham (QEHB), the RCDM supports the QEHB in its role as the principal acute receiving hospital in the UK. It does this through the provision of military manpower and specialist military expertise in order to facilitate the military patient care pathway.

This means that while the NHS leads in the delivery of the clinical capability, it benefits from the co-location of the RCDM and its ability to enhance NHS services with, for example, military focused rehabilitation and occupational health for military patients. In addition, the RCDM is able to reassign military clinical staff to assist the NHS in the treatment of military patients when required.

Ideally, care should extend beyond the patient's immediate clinical needs. As such, the RCDM is uniquely enhanced to provide medical administration and welfare support to military patients (and their families) admitted to the QEHB. This 'military bubble' concept is necessary for the well-being of the military casualty and forms a key component of our duty of care to our wounded, ill and sick. It is also something that the RCDM can provide to other NHS specialist hospitals if required.

Finally, the RCDM also functions as a conventional Defence Medical Group regional hub: military clinical staff maintain their skill-sets in NHS Trusts across the UK including Birmingham, Oxford, Stoke, Nottingham, Peterborough, Cardiff and East Grinstead.



Defence College of Healthcare Education and Training (DCHET)

The Defence College of Healthcare Education and Training is based at the Defence Medical Services (DMS) Whittington near Lichfield. It delivers individual medical training and education to agreed standards and in accordance with current Defence (including Reserves & Civil Service Clinical staff) policies, on behalf of the Royal Navy, Army and Royal Air Force.

It facilitates, through extensive relationships with Midlands-based and other academic institutions, all external DMS Medical Officer, General Practitioner, undergraduate Nurse and Allied Healthcare Professionals specific training and education. In addition, DCHET's courses are distributed under licence and franchise on a global scale. This is achieved while maintaining a strong military ethos, alongside military and physical development, to deliver appropriately trained and prepared military healthcare professionals.

The education delivered by DCHET supports military operations worldwide, and the effects of its training have seen a positive impact on operational effectiveness.

Providing 127 different courses to 8,600 students each year, DCHET is as unique as it is diverse. DCHET delivers over 40,000 high quality training days annually, facilitating training in a professional, safe and compliant environment, which instils in its students a confidence in both their training and themselves and, most importantly, an ability to deliver high levels of care wherever and whenever they are required to do so.

Defence and National Rehabilitation Centre

The DNRC programme is the late Duke of Westminster's vehicle to deliver his vision of a pan-Government rehabilitation capability for Defence and the Nation, through the Black Stork Charity, on the Stanford Hall Estate near Loughborough. The establishment of the Defence component of the DNRC provides a state-of-the-art facility that will ensure the continued provision of world-leading rehabilitation for our sick and injured Service personnel. The Defence facility opened in 2018 and replaced the former Defence Medical Rehabilitation Centre at Headley Court, Surrey.



Clinical Trials, Testing and Research

Clinical Services, Activity and Facilities

Midlands Engine NHS Trusts conduct a wide range of research work on behalf of and in association with industry.

Last year regional health organisations conducted over 4,100 portfolio studies with over 136,000 patients and this does not include the direct commercial work that was performed for companies.

Research undertaken for industry takes various forms related to patient care, outcomes and service delivery. These studies and trials can be: Clinical Trials of an Investigational Medicinal Product (CTIMPs) from phase I to IV, Human Factors Studies, Human Tissue Studies: tissue sample studies including the 100K Genome Project, Questionnaires and other Qualitative Studies, through to Research Database Studies such as de-nominalised NHS patient data via specialist NHS centres such as the Clinical Research Informatics Unit; Data to Knowledge Unit (including the advanced IT link between the University of Leicester and UHL facilitating the utilisation of patient information for research).

Whilst the majority of the trials conducted within Midlands Engine Trusts are for Pharmaceutical Studies there is a growing activity in Clinical Evaluation and Human Factors work for medical devices, technology and systems by the Centre for Healthcare Technology Assessment (CHEATA), Nottingham and the recent Medical Device Technology Evaluation Centre (MD-TEC), Birmingham who lead much of this work and activity together with many of the larger regional NHS Trusts.

The region houses four Tissue Bank centres; Arden Tissue Bank, based at University Hospitals Coventry & Warwickshire, which provides researchers with access to a diverse range of high quality human tissue; the Human Biomaterials Resource Centre (HBRC) Birmingham is a (HTA) licensed human sample biorepository with facilities for: bespoke tissue collection, high quality storage space for large collections and access to archived diagnostic fixed tissue blocks and associated data; Nottingham Health Science Biobank (NHSB) provides a centralised, quality assured, biofluid and tissue resource to underpin translational studies and adding value to clinical trials with a specialist area concerning Breast Cancer samples; Leicester Biobank is equipped with robotic equipment capable of processing and storing biological samples from up to 100,000 individuals.

Midlands Engine NHS Centres

The 80+ Midlands Engine NHS centres that provide commercial research services also have a plethora of facilities in which to support and facilitate their investigations and trials from; Imaging (MRI Scanning to DEXA Scanning), Laboratory Work (Histology, Pathology etc.) to Data Analysis and Health Economics. There are also 42 regional CCG (Clinical Commissioning Groups) that are conducting community and delivery based studies - the majority of which are portfolio work but some of these are engaged in commercial studies.

Leicester Bone Bank

Leicester Bone Bank is a bone and tissue bank which stores and supplies bones and other tissues to transplant surgeons all over the United Kingdom as well as for research. It is now the largest NHS hospital based tissue bank in the country. They collect bones from many hospitals across the country and supply surgeons throughout the UK and are regulated by the Department of Health's Human Tissue Authority.

100K Genome Project

Midlands Engine Trusts have intensely embraced this UK project which has successfully sequenced 100,000 genomes from around 70,000 people. To date, actionable findings have been found for 1 in 4/1 in 5 rare disease patients, and around 50% of cancer cases contain the potential for a therapy or a clinical trial.

Transplant Units

There are 5 specialist Transplant Units within the region - these are: Queen Elizabeth Hospital, Birmingham - Cardiothoracic, Liver, Kidney (renal) and Intestinal; Coventry University Hospital - Kidney (Renal); Leicester General Hospital - Kidney (Renal); Birmingham Children's Hospital - Liver and City Hospital, Nottingham - Kidney (renal). These centres engage in various aspects of research in relation to the safe removal (harvesting), transportation and transplantation of these organs and tissue.

The Anthony Nolan Cell Therapy Centre

The Anthony Nolan Cell Therapy Centre is based at the Clifton Campus of Nottingham Trent University. The Centre processes and stores cord blood for national and international clinical transplantation centres.

The centre also carries out world-class research using blood of non-clinical standard, and supplies cord blood to other approved research programmes throughout Europe.

Clinical Trials

The Midlands Engine is driving up business innovation and improving productivity and competitiveness. Our Universities and businesses work together to bring forward innovations that support our key sectors and their supply chains.

Regional NHS Trusts are conducting research for Blue Chip Multi-nationals together with leading national and international companies, such as:

- | | | | |
|---------------------------|------------------------|---------------------|-----------------------|
| • AB Sciences | • Bayer | • Hoffman-La Roche | • Parexel |
| • Abbott | • Boehringer Ingelheim | • INC Research | • Pfizer |
| • Abbvie | • Boston Scientific | • Intel | • PRA Health Sciences |
| • Alexion Pharmaceuticals | • Bristol Myers Squibb | • Janssen-Cilag | • Roche Products |
| • Allergan | • Celgene Corporation | • Medimmune | • Sandoz |
| • Amgen | • Diiachi Sankyo | • Medtronic | • Sanofi-Aventis |
| • Arthrys | • Eli Lilly | • MSD | • Servier |
| • Astellas Pharma | • Genentech | • Novartis | • Shire |
| • AstraZeneca UK | • Gilead | • Novo Nordisk | • Sorin |
| • Baxter Healthcare | • GSK | • Onyx Therapeutics | |

CRO's & Product Testing Facilities

There is a significant array of Clinical Research Organisations (CRO's), product testing facilities and regulatory affairs organisations within the Midlands Engine region to meet any life sciences organisations' manufacturing or regulatory requirements; from materials and product testing to drug discovery and testing; and from laboratory to 1st in man clinical trials to provision of completed regulatory certification.

Many of the Midlands Engine companies that support, facilitate and service the Life Sciences sector with testing and clinical trials for validation and certification are listed below. These services can work with local regulatory experts and notifiable bodies to provide the legal requirements to market products within the UK, Europe, USA and elsewhere within the world. These complement the equally large number of University, NHS and hospital based trials and testing facilities, with additional healthcare and clinical industry related services.

- | | | | |
|---|---|-------------------------------|---|
| • Adkins Medical Market Research | • Crown Bioscience UK | • Paracelsis | • Wolfson Labs |
| • Alta Bioscience | • Drugs with a Difference | • Parexel Informatics | • Worldwide Clinical Trials |
| • Archimedes Development Ltd | • Eady Project Services | • Peakdale Molecular Ltd | • WRK Design Services Ltd |
| • Astrimmune | • Fleming Polymer Testing & Consultancy | • Pepceuticals Ltd | • XenoGesis Ltd |
| • Aurelia Bioscience | • Food & Drug Analytical Services Ltd | • PharMomentum Ltd | |
| • BCM Specials (a member of Alliance Boots) | • Gammadot Rheology | • Pure Drug Safety Ltd | Regulatory Organisations |
| • Biopharma Stability Testing Laboratory | • Haemostatix Ltd | • Pyrus Pharma Ltd | • Advena Ltd |
| • Birmingham Health Partners (BHP) | • Histologix Ltd | • Quotient Sciences Ltd | • Birmingham Quality UK NEQAS |
| • Catalent Pharma Solutions Ltd | • Ian Wilding Associates | • RAPRA | • Formpipe Life Science |
| • CellAura Technologies Ltd | • Inocardia Ltd | • Reach Separations Ltd | • Lloyds Register Quality Assurance Ltd |
| • Cellomatics Biosciences Ltd | • Intelligent OMICS Ltd | • Renasci Consultancy Ltd | • Medical Device Consultancy |
| • Charnwood Molecular Ltd | • Lucideon | • Retrogenix | • Maetrics |
| • CHEATA | • MD-TEC | • Sequani Ltd | |
| • Chembiotech Laboratories | • Medsyndesign Ltd | • Source Bioscience | |
| • Clinigen | • Mercian Science Ltd | • Sygnature Discovery | |
| • Co-Formulate Ltd | • Morningside Pharmaceuticals | • TumorTrace | |
| • Critical Pharmaceuticals Ltd | • National Pollen and Aerobiology Research Unit (NPARU) | • Synexus Ltd | |
| | • Neurosolutions Ltd | • TRW Conekt | |
| | | • TUV SUD Product Service | |
| | | • Tyg Oncology | |
| | | • Upperton Ltd | |
| | | • Winnats Scientific Services | |

Clinical Trials, Testing and Research

100 & Rising

There are over 100 NHS based organisations engaged in clinical research, with at least 1 commercial trial or evaluation being conducted by each establishment. These organisations range from Acute to Community Care through to the specialist Hospitals such as Children's, Women's, Dental, Orthopaedics and Trauma.

0.25m Students

Over 0.25 million students are taught by the 20 Universities within the Midlands Engine. 18 Universities provide Medical and Life Sciences Courses, with 15 courses training health professionals (Doctors, Nurses, Midwives, Professions Allied to Health). 6 Schools of Medicine possibly the greatest density of Medical Schools in the UK. A Rich source of talent.

159 / 52

There are 159 NHS Hospitals and 52 NHS Trusts within the Midlands Engine region. With a number of Specialist Trusts such as the Women's (1 of only 4 in England) who also host the UK's National Sperm Bank, a modern, NHS based, fully-integrated donor recruitment, screening and banking centre to meet all donor sperm requirements.

Clinical Trials Strength

The Midlands strength lies in the spectrum of research undertaken in the region and the opportunities that exist for collaborations. The region's unique infrastructure offers an integrated research and innovation platform that spans discovery, development, validation, clinical implementation and ultimately evaluation, making the Midlands the go-to location for accelerated execution and adoption of clinical trials. The Midlands has one of the largest and most stable and diverse populations in the UK with a demographic mix that gives the region an unrivalled patient catchment area making it an unparalleled clinical research base for Life Sciences businesses. Thus the large stable population (multiple generations of key ethnic groups) provides an ideal 'living laboratory' for supporting translational medicine and, more widely, the balance of market push and pull that keeps life sciences innovation relevant

NHS - Trials, Testing & Research

- ▲ Acute Health Hospital
- ▲ Ambulance Service
- ▲ Children's Health Hospital
- ▲ Community Health Hospital
- ▲ Community Health Specialist Centre / Clinic
- ▲ Dental Hospital
- ▲ Mental Health Hospital
- ▲ Mental Health Specialist Centre/Clinic
- ▲ Ophthalmic Hospital
- ▲ Orthopaedic Specialist Hospital
- ▲ Other Specialist Treatment - Specialist Centre/Hospital
- ▲ Trust Research Centre - Other
- ▲ Women's Health Hospital

Commercial - Trials, Testing & Research

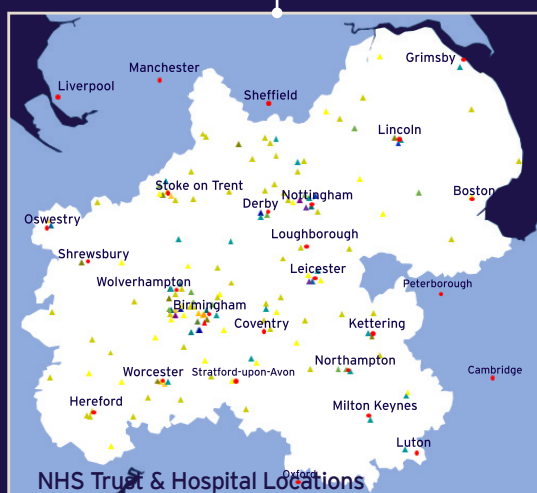
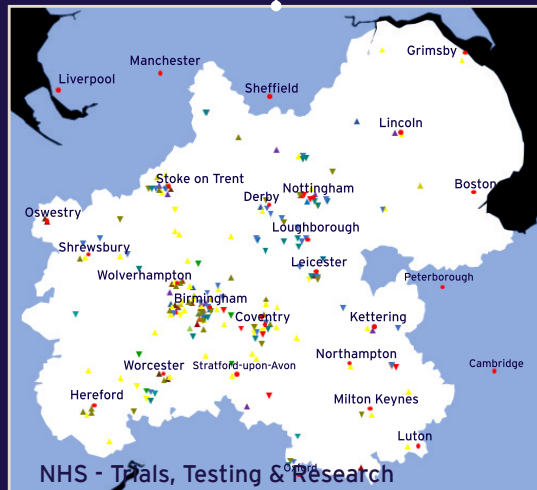
- ▼ Clinical Test/Diagnostic Laboratory Services
- ▼ CRO Consultancy / Service
- ▼ Industrial Test & Evaluation
- ▼ Industrial Test & Evaluation - Quality Standards
- ▼ Laboratory Services
- ▼ Laboratory Technology
- ▼ R&D - Drugs / Vaccines / Diagnostics / Biomarkers
- ▼ R&D - Other
- ▼ Research Engineering Design Consultancies

Academic Centres

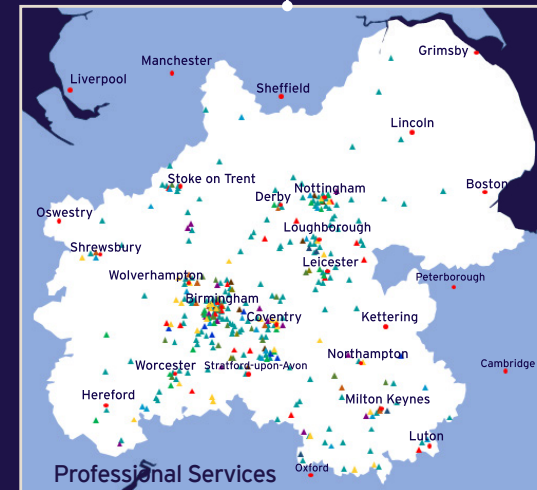
- ▲ Medical Schools
- ▲ University
- ▲ University Clinical Trials Centre
- ▲ University Life Sciences Research Centre

NHS Trust & Hospital Locations

- ▲ Acute Hospital
- ▲ Acute Hospital & Trust Main HQ
- ▲ Acute Hospital / Specialist Treatment Centre
- ▲ Ambulance Service & Trust Main HQ
- ▲ Children's Hospital
- ▲ Children's Hospital & Trust Main HQ
- ▲ Community Health Trust Main HQ
- ▲ Community Hospital / Specialist Treatment Centre
- ▲ Community Hospital / Specialist Treatment Centre & Trust Main HQ
- ▲ Dental Hospital
- ▲ Mental Health - Hospital / Treatment Centre
- ▲ Mental Health & Trust HQ
- ▲ Ophthalmic Hospital
- ▲ Orthopaedic Specialist Hospital
- ▲ Orthopaedic Hospital & Trust Main HQ
- ▲ Trust Research Centre
- ▲ Women's Hospital & Trust Main HQ

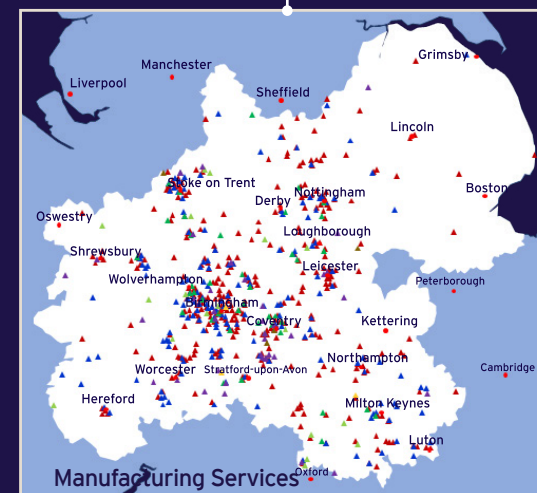


Medical Supply Chain



Professional Services

- ▲ Accountants & Tax Advisors
- ▲ Advertising & Marketing Consultancies
- ▲ Business Development / Support Consultancies
- ▲ Funding - VC's, Angel, Finance & Investment Companies
- ▲ Insurance Brokers - Medical Technology/ Life Sciences
- ▲ IP & Legal Services
- ▲ Market & Data Analysis Service / Consultancies
- ▲ Marketing & Sales Consultancy
- ▲ Public Relations and Communication Consultants
- ▲ Regulatory Affairs Consultancies, Notifiable Bodies & Quality Assurance 24
- ▲ Translation & Interpretation
- ▲ Writer - Technical / Regulatory Info / Communication



Manufacturing Services

- ▲ Contract Manufacturer / Sub Assembly
- ▲ End Product Distributor / Supplier
- ▲ Environmental Consultants / Contractors
- ▲ Industrial Design Consultancies
- ▲ Lean Management / Six Sigma Consultancies
- ▲ Manufacturers - Drugs / Vaccines / Cements / Contrast Agents - Pharma - Biotech
- ▲ Material & Component Distributors



Transport, Packaging & Logistics

- ▲ Automation Packaging / Dispensing and Assembly Equipment - Design & Build - Sales
- ▲ Logistics & Warehousing Services
- ▲ Medical / Clinical Packaging Services & Supplies
- ▲ Rail Freight
- ▲ Main Airports
- ▲ Smaller Airports

22 & Growing

With changes to the Medical Devices Regulation and CE Marking there is growing demand and requirement for Regulatory matters and approvals. All the professions that assist companies to bring their products to market and maintain market share are here; from Reg Affairs, IP Lawyers & Insurance Firms to Translation, Market Analysis, PR and Sales, everything needed to ensure success.

20,000 Staff

12,000 people employed in the Midlands are engaged in Life Sciences, just over 10% making us the 2nd largest employer of MedTech staff in the UK. The breadth of employment and range and number of regional University graduates indicates the exceptional opportunities available to support the entire supply chain. For R&D and manufacturing as well as businesses requiring professional consultancy support.

6m sq ft distribution

Logistics and shipping into and across the UK is being super enhanced. East Midlands Gateway provides a Strategic Rail Freight Interchange which accommodates up to 6 million sq ft of distribution and storage buildings. Built next to the UK's only 24 hour Air Freight Terminal Airport with links to the motorway network with the ability to ship goods anywhere in the UK.

Supply Chain Strength

Through the diversity of Life Sciences businesses from MedTech, Diagnostics, Biotech and Pharmaceutical there has developed an equally diverse and adaptable supply chain, this is further enhanced by the academic research bases not only within the Life Sciences sector per se but within the Engineering, Sciences, Computing and Business Schools. The broad diversity of companies in the region are also a magnet to attract and retain high paid, qualified staff through broader career opportunities with concomitant benefit to the regional economy. This diversity of companies also provides sustainability in the sector as it is not dependent on one principal company and prevents susceptibility to any impacts on the regional economy by a loss of any major player. The region is particularly well placed to take advantage of the trend towards outsourcing which is reflected in the Midlands Engine's strengths in its service and supply chain across the pharmaceutical, biotech and medical technology sectors. The long medical technology heritage of the region also makes us well prepared for the challenges of escalating regulatory requirements within the medical sector.

Trading Stories

Highlighting the strength of our supply and distribution chains The Midlands Engine Region

The Midlands has been conducting International Trade since the birth of the Industrial Revolution, with the establishment of 1000 trades in Birmingham and the world's Capital of Lace production in Nottingham in the 19th and 20th Centuries resulting in their products being exported all over the world. These amongst the other trades resulted in the rise of multiple design and engineering skills which are growing and flourishing today.

These activities have been shown to be driving growth in inward investment, with the "World's Most Competitive Cities Report 2017" ranking Birmingham as the highest performing city in Western Europe for its competitiveness in the automotive industry, comfortably beating cities such as Barcelona, Berlin and Stuttgart, an accolade which we hope will surprise many. It also ranked number 2 for machinery & equipment and number 2 for metals; highlighting the strength of our supply and distribution chains within the Midlands Engine.

Businesses based here in the heart of the UK - the Midlands Engine is delivering the power for trade and export whether that evolves from OEM manufacturing, sub-contracting, value adding or straight trading and shipping. All the support, services and space requirements are here close to hand to succeed, as can be seen from our Trading Stories.

£200bn+

Midlands Engine economy

With an economy worth over £200 billion, the Midlands Engine is at the heart of growth.

Kimal

An innovative and trusted developer and manufacturer of vascular access devices and customised procedure packs for use across a range of clinical disciplines.

Their commitment to supporting product development is exemplified by their continuous focus on innovation of not just products but also materials and processes. In addition to this is their ever-evolving partnership approach as they work together with the NHS, other global healthcare systems / providers, clinicians and suppliers to utilise their facilities to best effect and to the benefit of their customers and patients.

Kimal's turnover has exceeded £50m for the last two years and in the past year alone, over a third of this was as a result of exporting their products to over 70 countries worldwide. Investment in their infrastructure is a key element to support this growth and this has been highlighted in the last two years with the opening of both a new 140,000 square foot distribution facility and a new BSi accredited greenfield vascular access manufacturing facility.

Export is paramount for the continual growth of the Kimal business



Morningside Pharmaceuticals

Morningside Pharmaceuticals Ltd is an established manufacturer, supplier and exporter of generic and branded medicines. With a service offering of over 28 years, they have become a trusted name in the pharmaceutical industry. The Morningside companies, based in Leicestershire, are also leading innovators of new generic medicines with a strong emphasis on patients' needs.

With 230 licensed generic and branded medicines in the UK and the EU, Morningside distributes twice daily to NHS hospitals and pharmacies. Globally, they are one of the leading suppliers of a wide range of quality medicines to aid agencies, charities and NGOs. This includes UNICEF, the Red Cross, the World Health Organisation (WHO) and Medicines San Frontier (MSF). Since inception the company has exported to more than 120 countries around the world.

Morningside's export success has been recognised by many awards including the UK's most prestigious accolade - the Queen's Award for Enterprise: International Trade in 2012.

Morningside's innovative approach embraces challenges with heavy investment, including Research & Development (R&D) and launching new niche generic molecules, resulting in greater choice for both pharmacists and patients. The company was the first to launch the generic version of the contraceptive pill (Levest) in the UK, in 2010, with further first generic launches, including Glycopyrronium Bromide tablets, Liothyronine 5 & 10mcg Sodium tablets and Diclofenac mouthwash.

Morningside has also developed modified 'slow release' or 'prolonged release' tablets and capsules and new ways for patients to take their medicine, such as dissolve in the mouth buccal and sublingual tablets, which are designed to help patients who have difficulty swallowing.

Morningside manages the entire end-to-end process from R&D, to registration, to sales, marketing and export, within the companies.

Over its long and illustrious history, Morningside has gone from strength to strength, with recent company successes including:

- Morningside's Chief Executive, Dr Nik Kotecha OBE, was named the Lloyds Bank National Business Awards Entrepreneur of the Year 2019. In the same year Dr Kotecha was named the Nat West Great British Entrepreneur Awards' national Innovation Entrepreneur of the Year.
- Board of Trade Award received from former Secretary of State for International Trade, Dr Liam Fox (2018)
- The Leicester Arena is renamed the Morningside Arena, as part of a major naming-rights deal, which also saw local charities gifted fundraising space for free, as part of the partnership.
- Winning the Innovation in Generics Award at the Pharmacy Business Awards 2017
- In 2016 Dr Kotecha was invited to join Prime Minister, Theresa May, on her first trade visit to India. He was among 30 captains of industry on the three day visit to Delhi and Mumbai, in order to drum up business and help negotiate a post-Brexit trade agreement. Following the trip £1.2 billion in trade deals were announced.



Trading Stories

The Binding Site

Binding Site leads the way in specialist protein diagnostics. Built on strong scientific foundations with extensive expertise in antibody specificity technology, Binding Site gives clinicians and laboratory staff the tools to significantly improve diagnosis and management of patients across a range of cancers and immune system disorders.

Binding Site was founded by a group of researchers from the Medical School at Birmingham University, UK. In the early 1970s, this group were researching innovative ways of producing antibodies. Today, Binding Site continues to build upon its specialist protein heritage offering an expanding menu of over 200 protein assays across a range of clinical diagnostic systems.

As demand has grown for The Binding Site's expanding range of specialist protein assays, the company introduced clinical diagnostic systems into its product offering. Together, its specialist protein systems, Optilite® and SPAPLUS®, and assays provide laboratories with a complete specialist protein solution.

Binding Site's flagship assay, Freelite®, is the only serum free light chain assay recommended by national and international guidelines for the diagnosis, prognosis and monitoring of Multiple Myeloma and other B cell dyscrasias (cancers of the plasma cells). The company's specialist protein systems are optimised for running Freelite® and other high sensitivity assays.

Binding Site sets itself ambitious targets, continuing to explore and challenge the status quo in diagnosing and monitoring treatment of myeloma and related B-Cell diseases as well as disorders of the immune system and vaccine responses.

The UK head office in Birmingham UK houses all product development, manufacturing, global distribution and marketing. The Binding Site has a direct presence in over 25 countries and product sales through business partners in more than 100 countries.

The Binding Site is represented in over 100 countries, with a direct presence in over 25 countries

Quotient Sciences

Quotient Sciences is a drug development services provider to the pharmaceutical industry, focused on helping clients reduce the time and cost of bringing a drug to market. From headquarters in Ruddington on the outskirts of Nottingham, the company has rapidly grown over the last 10 years and now operates from five sites, employing over 900 staff from state-of-the-art manufacturing and clinical facilities in the UK and USA.

Quotient's units conduct clinical testing on healthy volunteers (Phase 1 trials) rather than patients, enabling the business to work on molecules across many therapeutic areas. However Quotient's real ongoing global success and growth has been built around the development of their pioneering Translational Pharmaceuticals approach, which spans across the conventional pharmaceutical outsourced market, integrating drug formulation development, GMP drug product manufacturing and clinical pharmacology services.

The company began life as Pharmaceutical Profiles, a spin-out from the University of Nottingham led by Professor Bob Davis, Dr Ian Wilding and Dr Steve Newman over 25 years ago. In 2004 with the backing of an equity company a more robust platform for the business to drive growth was created. This development led to the evolution of Quotient's competitive advantage; Translational Pharmaceuticals.

A very successful period of rapid expansion and growth followed but with global ambition Quotient needed fresh investors if it was to build the business to the States following a new equity backer. In 2015 GH Capital, familiar with the US market, replaced Bridgepoint. In February 2017, Quotient acquired Seaview Research, a Clinical Research Organisation (CRO) in Florida and QS Pharma, a Contract Development Manufacturing Organisation (CDMO) in Philadelphia. In recent years Quotient has experienced growth rates in excess of 20%.



Salts Healthcare

Salts is one of the UK's oldest family-owned companies, founded in 1701. Brothers John and William started out as apprentice locksmiths before John became established as a surgeon's instrument maker and cutler.

In 1845, Salts became Cutlers to Her Majesty, Queen Victoria and two years later were also granted the Royal Warrant to become Cutlers to the Emperor of the French, by which time they also made surgical instruments and a wide range of appliances for conditions from amputations to back complaints. In the latter part of the century, Salts began to concentrate on medical products and ceased production of cutlery. With demand for medical products growing, the onset of World War One led to the manufacture of artificial limbs for survivors of the trenches.

The formation of the National Health Service in 1945 meant a refocus away from limbs and medical instruments, and in 1948 Salts started working with Birmingham General Hospital to hand-produce ostomy bags.

In 1956 Salts became the first UK manufacturer of ostomy appliances and had the idea for patient clubs, leading to the formation of the Ileostomy Association. It also became the first company to employ ostomists to help teach stoma care to new patients. The company is currently managed by 3 brothers from the 10th generation. Two of these brothers trained and practised as orthotists in the NHS.

The company is now focused on Stoma Care. Salts has a nationwide dispensing and home delivery service for ostomy and continence products which was launched in 1989 and in 1996 the company's new R&D facility developed modern hydrocolloid pouches. Having become one of the leading suppliers of stoma care products, in 2003 Salts became the first ostomy company to be recognised by The British Skin Foundation for its development of comfortable, secure and skin friendly adhesives. In 2010, Salts Community Stoma Care Nurses were introduced to give patients support in their own homes.

Today the company has a turnover of over £99m, employs over 700 people and has distributors in 25 countries.

International Vitamin Corporation (IVC)

International Vitamin Corporation (IVC) is a world-renowned vitamin and food supplement company with regional headquarters in China, the USA and the United Kingdom.

IVC is the parent company of the UK's leading manufacturer and distributor of vitamins, minerals and food supplements (VMS) which is made up of two major divisions, Contract Manufacturing and Branded.

In Swadlincote, Derbyshire, IVC Brunel Healthcare Manufacturing is the UK's largest manufacturing facility of VMS. The company specialises in the production of vitamin, mineral and nutritional supplements.

Their UK production facility produces a range of goods available on shelves worldwide and they have a wealth of knowledge covering both private label and contract manufacture, with a customer-base which include some of the globe's best-known retailers. IVC's UK base of operations is a state-of-the-art 20,000 m² facility in Derbyshire where some of the world's best-trusted and widely used supplements are developed

The future & in progress

Life sciences space opportunities

The Midlands is home to the largest number of medical technology companies in the UK and is the second largest clinical trials base in Europe, boasting a wide network of science and Medipark research, innovation, incubation and development facilities.

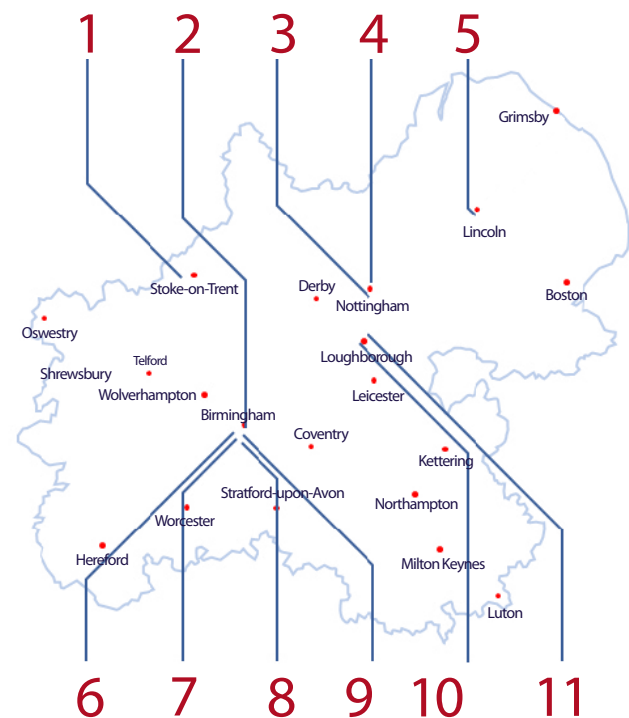
The Midlands is at the heart of the national road and rail network with international connectivity for both passengers and freight through excellent rail and airport hubs.

The region is ideally placed to capitalise on its 'ecosystem of assets', creating a world class resource for the life sciences industry. Its ambitious universities and hospitals, with active private sector businesses and support infrastructure, work in close collaboration to create opportunities for the dynamic global health and life sciences industry.

The availability of land and development opportunities makes life sciences market entry more readily accessible and economically attractive than in other regions in the UK. Furthermore, the Midlands has all the elements already in place for the growth of its successful life sciences cluster:

- Medical and academic excellence
- Knowledgeable and collaborative skills base
- Local and national government support
- Public/private sector collaboration
- Financial and business support
- Commercial space to grow
- Lifestyle infrastructure and green space
- An established supply chain network
- Outstanding regional, national and international transport links
- A large, ethnically diverse and stable population

The region has a demonstrably strong and effective collaboration between academia, business and clinical communities, coupled with extensive clinical and life sciences incubators and Medipark research facilities, making it an ideal life sciences business location.



A unique and picturesque 70-acre site, offering an exceptional choice of office, workshop and laboratory space. In close proximity to Keele University's world-leading research knowledge and academic expertise, it's the ideal place to enable your knowledge-intensive business to grow quickly, strategically and effectively
T: 01782 734496 | E: m.hornak@keele.ac.uk | W: www.kusip.co.uk



EMQ is at the hub of the healthcare and life sciences revolution taking place in the West Midlands. It home to a rapidly growing healthcare and life sciences community, supported by internationally-renowned research, training and educational facilities, eminent consultants and leading healthcare providers.
T: 0121 248 7676 | E: ngibberson@calthorpe.co.uk | W: www.calthorpe.co.uk/emq



Situated within an Art Deco Grade 1 listed building is MediCity Nottingham, the pharma incubator. Based within the Boots UK's headquarters, companies based at MediCity can showcase their products and services to leaders and decision makers within Boots.
T: 0115 784 0000 | E: enquiries.nottingham@biocity.co.uk
W: www.biocity.co.uk/medicity/nottingham



Based in the Creative Quarter, BioCity, Nottingham is the first BioCity site and is now home to over 70 companies. The recently opened Discovery Building's 50,000ft² high-tech biology and chemistry laboratories and office space supports more than 700 new bioscience roles in Nottingham over the next 30 years. T: 0115 828 3734 | E: enquiries.nottingham@biocity.co.uk
W: www.biocity.co.uk/discovery



LSIP provides world-class facilities centred around the University of Lincoln's main research laboratories. Offices, laboratories and technical workshops from 400sqft to 25,000sqft are available to innovation led firms. Space can be rapidly reconfigured to grow with your business or built to bespoke specification.
T: 01522 437100 | E: enquiry@lincolnsiencepark.co.uk
W: www.lincolnsiencepark.co.uk



Hagley Road offers a range of landmark office and medical space, it includes the new major 11 acre mixed-use development named New Garden Square. Connectivity of this gateway location will be enhanced with the arrival of the Midland Metro extension and SPRINT in 2021.
T: 0121 248 7676 | E: mlong@calthorpe.co.uk | W: www.calthorpe.co.uk



A world-class medical and healthcare location within EMQ, Pebble Mill is home to the Dental Hospital & School of Dentistry, it will soon be joined by a Bupa care home and Circle Health private hospital. The remaining plot has approval for a 53,800 sq ft prestigious medical hub.
T: 0121 248 7676 | E: rminott@calthorpe.co.uk | W: www.pebblemillbirmingham.co.uk



BioHub Birmingham® is a fully serviced biomedical incubator and accelerator designed to house life science companies from proof of concept through to expansion. The BioHub provides both shared laboratory and single-occupancy mixed office / laboratory suites. Shared laboratory space tenants join a vibrant community of early stage biomedical companies, on bespoke, flexible terms with flat monthly rents.
T: 0121 414 9252 | E: thebiohub@contacts.bham.ac.uk | W: www.thebiohub.co.uk



The Institute of Translational Medicine (ITM) is a place where scientists, researchers, clinicians and industry partners can come together to turn medical science into innovative patient and healthcare system applications, rapidly, rigorously and seamlessly.
T: 0121 371 8004 | E: K.Fletcher@bham.ac.uk | W: www.itmbirmingham.co.uk



The Charnwood Campus is situated in the heart of the UK. This Loughborough based science, technology and enterprise park offers world-class flexible laboratories, specialist manufacturing facilities and small and large office space with a wide range of amenities, technical and clinical resources that meet the diverse needs of businesses from a variety of sectors.
T: 0116 402 7541 | E: info@charnwoodcampus.com | W: www.charnwoodcampus.com



The NRC is part of the overall Defence and National Rehabilitation Centre (or DNRC) Programme. This seeks to do 2 things. First, to deliver a 21st century successor to the MoD's former Headley Court facility in Surrey. This new Defence facility opened in 2018 and is now treating members of the armed forces. Second, to create a National Rehabilitation Centre to provide clinical rehabilitation for NHS patients as well as providing a national hub for innovation, cutting edge R&D and training and education.

W: www.thednrc.org.uk

The future & in progress

Science and Business space opportunities

The Midlands is the place to do business. It has a proud legacy at the heart of global manufacturing and supply chain excellence across many industry sectors such as automotive, aerospace and medical technologies, and is renowned as an international centre of finance and business excellence.

The region has an established research & development and supply chain infrastructure, ready to lend its skills and experience to creative life sciences ventures.

The region boasts cutting edge high technology research facilities and technology parks not only in life sciences and medical research, but also in pharmaceuticals, digital, creative, aerospace, automotive and military sectors, to name but a few.

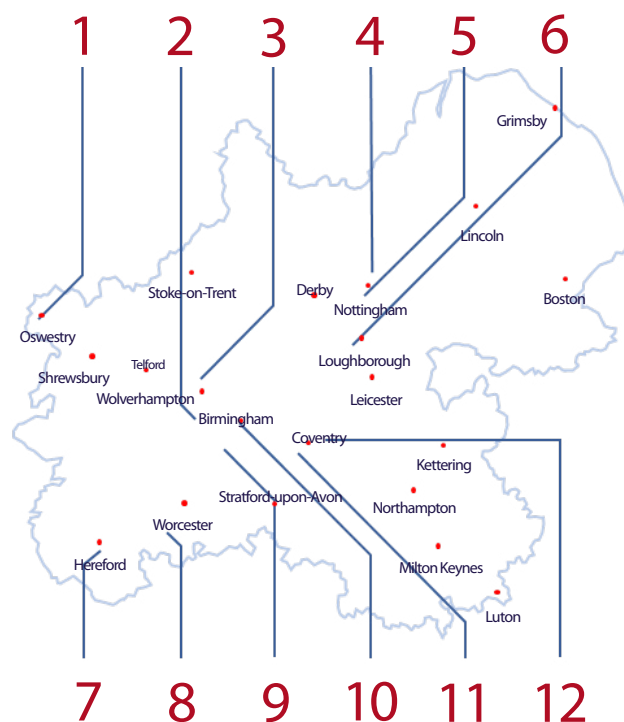
Hosting many of the UK's leading research and technology facilities, these established networks of science parks, incubators and growth accelerators offer unbeatable access to high tech facilities and skills coupled with a strong business support infrastructure.

These existing facilities alongside the availability of 'grow on' space and a large, flexible skilled workforce, makes the Midlands the ideal choice for business growth.

£200 bn +

Midlands Engine economy

£200+ billion economy of the Midlands Engine is larger than countries such as Ecuador, New Zealand and Croatia



Oswestry Innovation Park - a Greenfield Site

This Oswestry Greenfield site opportunity has huge potential as a major new landscaped business park (up to 7ha) for offices, laboratories or light industry, and is in close proximity to the Robert Jones & Agnes Hunt Hospital a major Orthopaedic and Regenerative Medicine centre.

T: +44 (0)1743 257777 | E: invest@shropshire.gov.uk



Pensnett Estate, Kingswinford

The Pensnett Estate is one of the largest secure industrial estates in Europe, comprising of 185 acres and is home to almost 200 companies. The estate provides a secure, attractive working environment in the Dudley Borough including 24hr estate CCTV and Change to: communal area maintenance. T: 01384 400123 | E: apreston@lcpproperties.co.uk | W: www.lcpgroup.co.uk/estate/3/pensnett-estate



Science, Technology & Prototyping Centre

The new £10.1m centre at the University of Wolverhampton Science Park provides 4,000 square metres of space with Category 1 & 2 laboratories, workshop space, and configurable offices. These facilities are ideal for life science businesses to enhance their R&D activities.

T: 01902 321914 | E: joinus@sciencetechcentre.co.uk | W: www.sciencetechcentre.co.uk



Medical Technology Innovation Facility (MTIF), Nottingham

Work is well underway on Nottingham Trent University's new Medical Technologies Innovation Facility (MTIF). MTIF will focus on the development of innovative products to meet future healthcare needs. A key aim is to improve patient care by getting innovations to market as quickly as possible.

T: 01158 483463 | E: john.hunt@ntu.ac.uk | W: www.ntu.ac.uk



Nottingham Science Park - Enterprise Zone

Nottingham Science Park (NSP) is situated on a site of some 27 acres and comprises a long established science park specialising in research and technology, providing a diverse range of accommodation from good quality office / workspace to award winning Grade A offices set within a landscaped campus style environment. T: 0115 9229 763 | E: Edwoods@innes-england.com W: www.nottinghamsciencepark.co.uk



Loughborough University Science & Enterprise Park (LUSEP)

Home to over 75 organisations and a workforce over 2,200 people, LUSEP offers start ups to global organisations an unrivalled opportunity to join a dynamic innovation community with a world-class research base and graduate supply.

T: 01509 223178 | E: LUSEP@lboro.ac.uk | w: www.lusep.co.uk



Skylon Park

Skylon Park, is a business park that is designed to inspire and enable future growth and success.. The 110 acre site offers flexible plots for sale allowing accommodation to be developed which best suits individual business requirements.

T: 01432 383616 | E: info@skylonpark.co.uk | W: www.skylonpark.co.uk



Malvern Hills Science Park - Phase 5

A community of some 400 people exploiting science and technology so their businesses will grow and prosper. In premises that are unmatched in the county and state of the art for the region. Where there is access to investment funding and all located in an area of outstanding natural beauty.

T: 01684 585 200 | E: alanwhite@mhsp.co.uk | W: www.mhsp.co.uk



Longbridge Technology Park

The £100 million Technology Park comprises of the 45,000 sq ft Innovation Centre and 31,200 sq ft Two Devon Way. It is now recognised as one of the leading tech hubs in the West Midlands, home to nearly 60 tech start-up businesses.

T: 0121 222 5555 | E: technology@longbridgebirmingham.co.uk W: www.longbridgebirmingham.co.uk/business/technology-park



Innovation Birmingham Campus

Innovation Birmingham Campus is the leading location for Birmingham's digital and tech community; providing office suites, conference facilities and co-working opportunities for innovators, entrepreneurs and investors looking to develop or fund innovative digital start-ups with high growth potential.

T: 0121 260 6000 | E: info@innovationbham.com | W: www.innovationbham.com



University of Warwick Science Park

The University of Warwick Science Park offers a unique package of property and business services to provide an environment in which innovative and knowledge based companies can grow. It is 15 minutes from Birmingham International Airport and less than an hour from the centre of London by train.

T: 024 7632 3000 | E: more-info@uwsp.co.uk | W: www.warwicksciencepark.co.uk



Ansty Park Coventry

Ansty Park will provide 1.5 million sq ft of space set in 100 acres of beautiful landscaped parkland and has been designed to ensure that the creation and sharing of knowledge is at the heart of the park's future development.

T: 0121 234 9971 | E: Steve.holland@hca.gsi.gov.uk | W: www.anstypark.co.uk

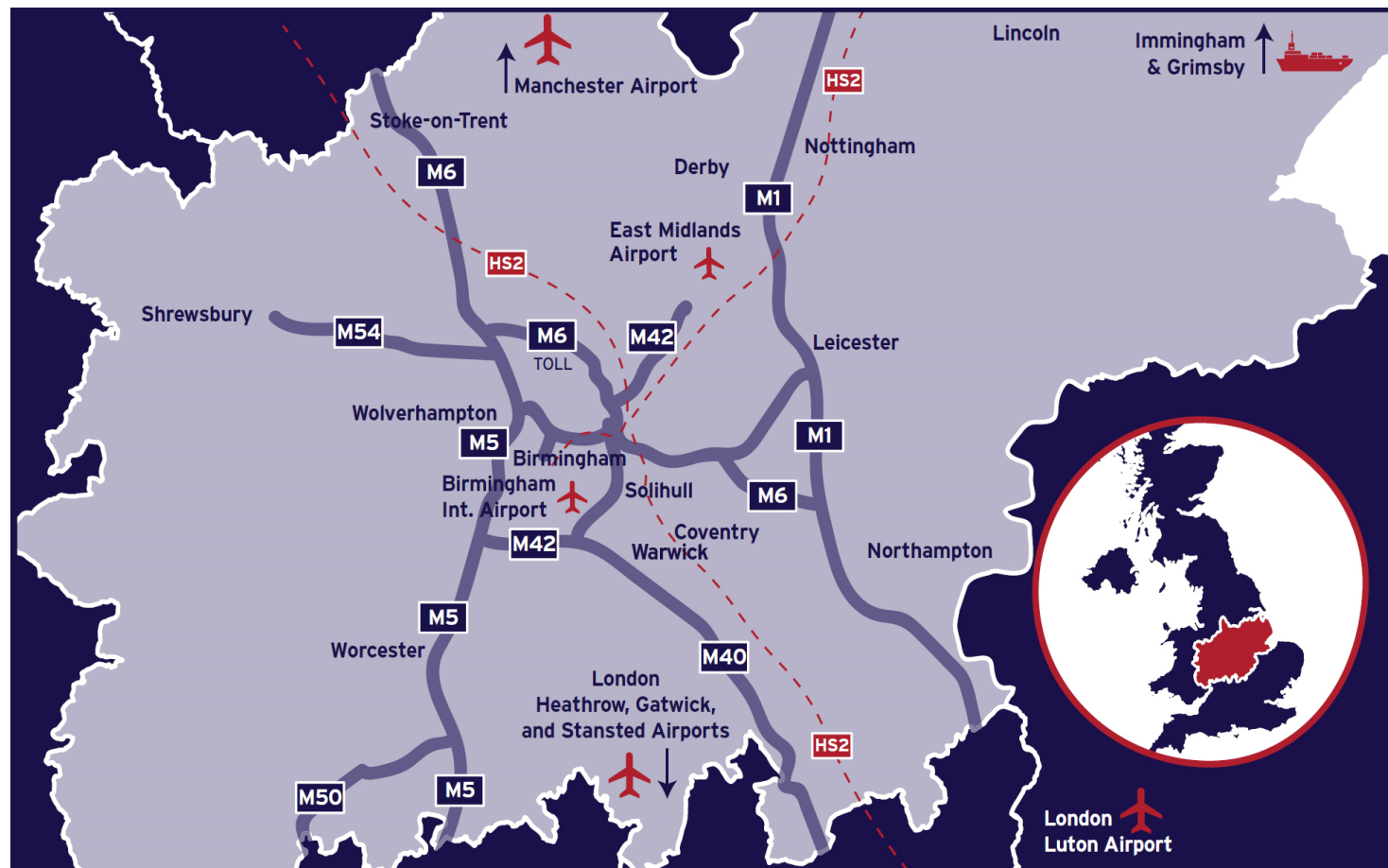
Travel & Location

The Region is located at the heart of a well connected transport network, with close proximity and access to 90% of the UK within four hours. It is an enviable business location which is home to over 800,000 businesses.

Location Benefits

The region is well linked, with Birmingham in the west of the region being only 1hr 22min to London and 4 hr 7min to Edinburgh via rail. While Nottingham in the East of the region is 1hr 50 min to London and 4hr 24min to Edinburgh via rail. The region has started on HS2 of which Birmingham will be the hub of the country's new high-speed rail network, expanding capacity and connecting to London in less than 50 minutes.

The region is home to two international airports Birmingham and East Midlands with direct flights to most major European cities as well as Asia and USA. Birmingham Airport alone handles over 13 million passengers across 140 routes annually, while East Midlands Airport is the UK's largest cargo handler outside London. Over 45% of British rail freight and 33% of heavy road freight goes to, from or through the Midlands. The Port of Immingham off the coast of Lincolnshire is the UK's largest port by tonnage.



Support for Investors

The Department for International Trade (DIT) helps businesses export and grow into global markets. We also help overseas companies locate to and grow in the UK.

We can help with information on how to set up in the UK, provide sector specific information about the medical and healthcare industry in the UK, and support you to identify the right location here for you and introduce you to local partners and supply chains.

Our network of UK specialists includes a team who are based in the Midlands, providing expert local knowledge of projects, potential public and private sector partners and other local business support.

For more information on Life Science opportunities in the Midlands Engine region, please visit www.midlandsengine.org



Department for
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Department for International Trade

The UK's Department for International Trade (DIT) has overall responsibility for promoting UK trade across the world and attracting foreign investment to our economy. We are a specialised government body with responsibility for negotiating international trade policy, supporting business, as well as delivering an outward-looking trade diplomacy strategy.

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