CUSHMAN & WAKEFIELD

LOCATING SCIENCE

THE LIFE SCIENCES LANDSCAPE ACROSS THE UK

CONTENTS

INTERACTIVE CONTENTS

I
INTRODUCTION

A METHODOLOGY FOR SELECTING THE OPTIMUM AREAS IN THE UK FOR RESEARCH & DEVELOPMENT (R&D) AND MANUFACTURING & R&D SUPPLY CHAIN FACILITIES.

THE LIFE SCIENCES SECTOR IS RAPIDLY GROWING, WITH A SIGNIFICANT VOLUME OF INVESTMENT ENTERING THE MARKET EACH YEAR SEEKING TO CAPITALISE UPON UNDERLYING DEMAND FROM PROSPECTIVE AND EXPANDING OCCUPIERS.

The primary barrier to growth at present is affordable space. In the Golden Triangle, supply is significantly constrained with vacancy consistently constraining take-up. The same is true across the wider UK. Additionally, requirements can often be highly specialised and operations at the facility can be sensitive.

Short supply and specific needs lead to occupiers choosing to take matters into their own hands, working to deliver their own tailored facility. While this presents a significant opportunity to maximise the locational and operational efficiency of the building, it also comes with an equal amount of risk. The hugely intensive nature of the task – in terms of both time and capital – means that deciding what to build and where to build it can be a daunting undertaking.

On the specification side, Cushman & Wakefield, as part of an initiative with other market leaders in the sector, have produced the **Constructing Science** building standard. This provides a common language and clear direction, offering an overview of key variables, fast-tracking professionals to crucial design and specification issues, and fostering the adoption of common standards and language to demystify the world of life sciences real estate.

The bespoke Locating Science model can provide a valuable first step for prospective occupiers of all scales who are looking to make an informed decision about where they should locate.

While **Constructing Science** can help steer what to build, it doesn't answer where to build. From our detailed knowledge of the industry, borne through working with occupiers of all scales and sectors, we have produced a model to identify the most suitable locations for developing and operating life sciences facilities across the UK.

Locating Science presents a methodology for selecting the optimum area for a manufacturing and R&D supply chain or research & development (R&D) facility. This is achieved through examining a set of 24 criteria that respond to the stated needs of prospective occupiers and inform the potential prosperity of a new life sciences facility. These metrics are mapped across the UK, with a weighted scoring system then applied to assess the relative suitability of locations.

II
WHAT SCIENCE NEEDS

LOCATIONAL REQUIREMENTS FOR LIFE SCIENCES COMPANIES ARE HIGHLY SPECIALISED AND ARE CRITICAL TO THEIR SUCCESS.

LOCATIONAL REQUIREMENTS FOR LIFE SCIENCES COMPANIES ARE CRITICAL TO THEIR SUCCESS AND CAN BE HIGHLY SPECIALISED. AS A RESULT, LOCATIONS THAT ARE ABLE TO CATER FOR THESE NEEDS CAN BE HARD TO FIND. TO IDENTIFY THEM, IT IS FIRST IMPORTANT TO UNDERSTAND WHAT LIFE SCIENCES OCCUPIERS NEED.

RESEARCH & DEVELOPMENT

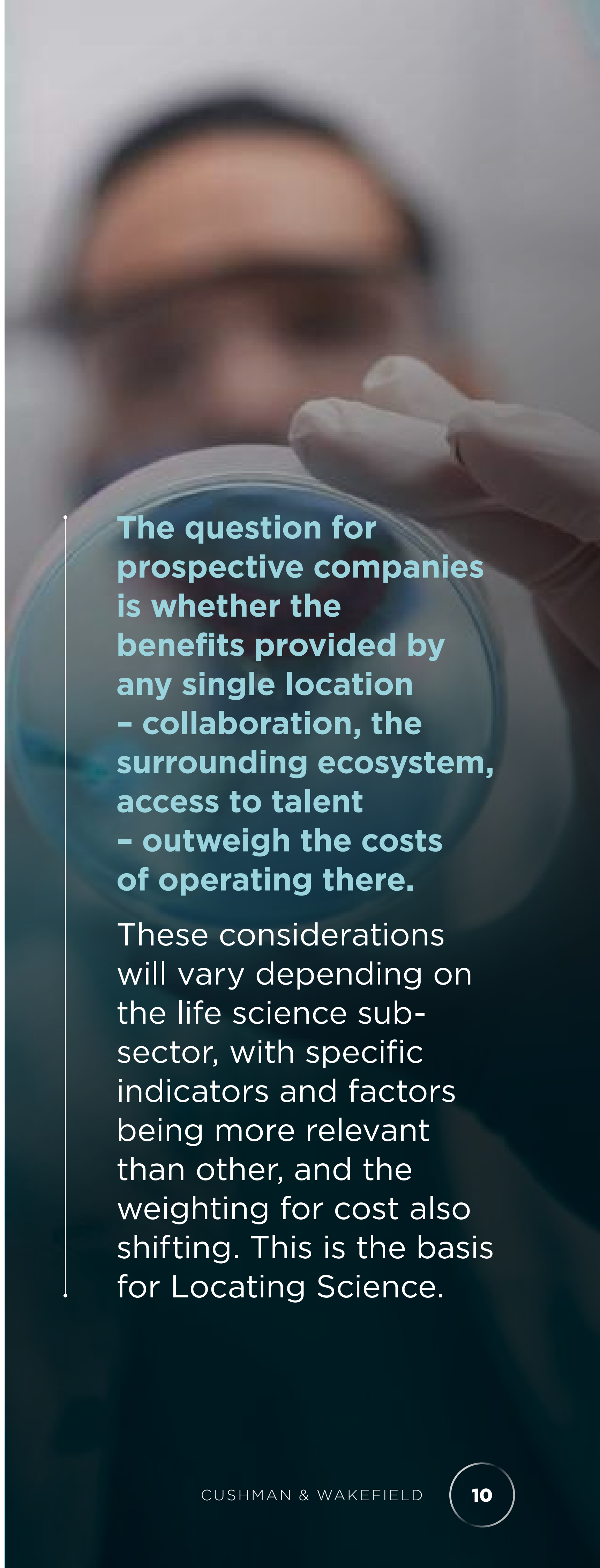
Life science R&D companies in the UK operate in a relatively unique way compared to other sectors in the economy. They are entirely focused on innovation, with the majority of companies being small start-ups trying to develop an idea into a verified product, primarily but not exclusively pharmaceutical drugs. As they are typically non-revenue generating during the development phase, this means that there is a significant and consistent requirement to raise external funding. If and when the companies achieve a viable product, many are purchased by larger pharmaceutical companies who either support its production or take on the intellectual property for themselves.

These factors – the requirement for innovation, the ongoing need for funding during early stages and a common goal of being acquired by a larger firm – mean that collaboration is fundamental to the sector. Being part of a cluster allows small life sciences R&D companies to share ideas, networks and use their combined weight to attract interest from venture capital (VC) and larger companies. Similarly, the anchoring of ‘Big Pharma’ operators and strong institutions within the sector can also drive the development of a wider ecosystem.

Clustering also makes accessing specialised staff easier, with deeper labour markets provided by strong universities along with the opportunities to poach staff from nearby competitors. The supply of PhD-level talent is often pivotal in the formation of a life sciences R&D cluster, with the sector relying on top quality recruitment to help drive innovation. Clusters are also more appealing for immigrating employees, offering security through alternative employment opportunities in case the original position sours.

For these reasons, life science R&D industries tend to agglomerate within a single ecosystem, rather than spreading out across an economy. This can be seen in the Golden Triangle in the UK, as evidenced in the funding raised, with Cambridge, Oxford and London accounting for 82% of VC funding into the life sciences sector between 2018 and 2023.

However, the strengths of clustering come at a financial cost. As demand concentrates within a location, the commensurate supply of space can be eroded leading to rental and capital value growth. Additionally, the factors that support strong life science ecosystems often also benefit other competing sectors, meaning that land availability is further constrained and compounding upward pressure on values. Similar demand dynamics exists around staff, with tight labour markets from strong competition leading to high wages.



The question for prospective companies is whether the benefits provided by any single location – collaboration, the surrounding ecosystem, access to talent – outweigh the costs of operating there.

These considerations will vary depending on the life science sub-sector, with specific indicators and factors being more relevant than other, and the weighting for cost also shifting. This is the basis for Locating Science.

MANUFACTURING & R&D SUPPLY CHAIN

For manufacturing and R&D supply chain facilities, such as those involved in precision medicine or Contract Research or Manufacturing Organisations (CROs and CMOs), locational decisions are typically more operation-orientated. On the cost side, labour market factors including wages and access to talent, as well as real estate costs are often weighted heavily.

Being focused on the delivery of products, access to potential consumers is also very relevant which, for many manufactures and operators along the R&D supply chain means being near a teaching hospital with whom they can work to deliver innovative drugs and treatments.

Ecosystem factors are also generally prominent, with the supply of materials, the delivery of products and in the depth of the local labour pool all benefiting from agglomeration and clustering benefits.

III
METHODOLOGY

LOCATING SCIENCE HAS ESTABLISHED A DIVERSE RANGE OF INDICATORS THAT MEASURE LOCAL PERFORMANCE IN A RANGE OF AREAS.

LOCATING SCIENCE HAS ESTABLISHED A DIVERSE RANGE OF INDICATORS THAT MEASURE LOCAL PERFORMANCE IN A RANGE OF AREAS THAT ARE COMMONLY OF INTEREST TO PROSPECTIVE LIFE SCIENCES OPERATORS.

These criteria have been developed through extensive research into what companies look for and need when undertaking locational decisions, as well as other lesser considered factors that contribute to the ultimate success of facilities.

Each indicator is scored on a relative basis, measuring its performance against that of the other locations within the study. Weightings are also applied to adjust the impact of each indicator on the overall scoring.

Through adjusting the basket of indicators and the weightings applied, the Locating Science model has been tailored toward two specific life sciences sectors: R&D and manufacturing and R&D supply chain.

It is also worth noting that within these sectors there are further sub-groups that will in turn have even more specialised locational requirements.

In line with the analysis of what each sector typically looks for in the previous section, the R&D model has a greater allocation of innovation-focused indicators, such as patent registrations, the prestige of life sciences related faculties at local universities and graduate retention rates.

The manufacturing and R&D supply chain model concentrates more on operational factors, including the distribution potential of an area through examining the population within two-hour drive time, as well as looking at labour costs and real estate values.

Both the R&D and manufacturing and R&D supply chain models also apply a set of baseline variables which include local employment, the existing cluster of related activity within each area, the educational attainment of the workforce and the Times Higher Education (THE) ranking of local universities.

Indicators are mapped across the Travel to Work Areas (TTWAs) of the UK. TTWAs are 218 statistically defined commuter zones, where at least 75% of the resident economically active population work in the area and, of the working population, 75% work in the area. Additionally, London has been divided into Inner London (the 13 central boroughs including the City of London) and Outer London, made up of the remaining London TTWA beyond the central boroughs.

Taking the wider boundaries of these TTWAs provides a greater variety of options for a locational decision, with more central but expensive sites as well as cheaper but less accessible plots available within one single area. Once the optimum TTWA has been identified, the specific budget and commute requirements can then be used to further dissect the area to find the ideal location.

The models presented in Locating Science are based on our estimations of what a typical occupier in each sector would seek out.

However, the requirements of each individual occupier will be different from the next, hence we have retained a customisable model that enables specific indicators and weightings to be adjusted in order to tailor the search to meet particular search parameters.

IV
MANUFACTURING & R&D SUPPLY CHAIN

INDICATORS	DESCRIPTION
DRIVETIME POPULATION	Population within a two-hour drive of the TTWA centroid; upweighted as distribution is of considerable significance for manufacturing facilities.
PHARMACEUTICAL MANUFACTURING PREMISES	Count of premises involved in pharmaceutical manufacturing; upweighted as higher values indicate local specialisation, which can in turn bring agglomeration and clustering benefits as well as suggesting a favourable local government and planning environment.
PHARMACEUTICAL MANUFACTURING PREMISES 5YR GROWTH	Growth in the count of local units involved in pharmaceutical manufacturing over the past 5 years (2018-23); positive growth indicates strong local industry and favourable government and planning support.
INDUSTRIAL LAND VALUES	Industrial land values per sq ft from MSCI RCA transactions data (2018-23); upweighted due to the cost of land and development being a major consideration for speculative schemes.
AVERAGE WAGES	Average wages at the 75th percentile as this most typically reflects those working within the life sciences sector; upweighted as this will feed heavily into operational costs for future facilities.
PHARMACEUTICAL MANUFACTURING EMPLOYMENT SHARE	Pharmaceutical manufacturing employments per 100,000 people; provides an indication of local specialisation that indicates local expertise, a sufficient labour pool as well as agglomeration and clustering benefits.
GMP FACILITIES	Count of Good Manufacturing Practice (GMP) certified manufacturers; benchmark standard for pharmaceutical manufacturers, enabling clusters to be identified.
TEACHING HOSPITALS COUNT	Count of teaching hospitals within the TTWA; these can be vital for conducting medical trials as well as indicating a strong labour market pool.
LABOUR MARKET NVQ4 SHARE	Proportion of local population who hold NVQ4 or above qualifications; indicates the educational attainment of the local labour force, indicative of local talent; downweighted as manufacturing facilities have a range of roles.
CLINICAL & HEATH UNIVERSITY RANK	Clinical & health THE university rankings; highest scoring institution within the TTWA; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
ENGINEERING UNIVERSITY RANK	Engineering THE university rankings; highest scoring institution within the TTWA; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
LIFE SCIENCE UNIVERSITY RANK	Life science THE university rankings; highest scoring institution within the TTWA; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
GRADUATE RETENTION	Universities retaining students from outside of the region; provides an indication of perceived quality of life in the local area, local employment opportunities, housing and the strength of local institutions, downweighted as it is of indirect relevance to manufacturing facilities.

CAMBRIDGE

Cambridge has a sizeable established precision medicine manufacturing industry which is regularly at the forefront of developing new processes and therapies. The sector also benefits from the wider cluster of innovative enterprises, within the life sciences industry and beyond.

Cambridge also holds a relatively well-connected location which provides access to a considerable population within a two-hour drivetime, meaning that it could reach a sizeable customer base for the distribution of pharmaceutical products.

The local ecosystem also includes the University of Cambridge, which consistently scores very highly across the clinical & health, engineering and life sciences subjects, and provides a flow of highly talented potential employees and spinout companies.

However, the growth of the sector locally may be hindered by higher industrial land and wages costs, which will push up development and operational expenditure. These costs generally prohibit anything beyond small scale manufacturing operations in Cambridge, meaning that CROs and CMOs are often priced out of the area.

OCCUPIERS:

Cambridge Pharma
CMR Surgical
Domainex
Sano Genetics
Precision for Medicine

GOLDEN TRIANGLE
CAMBRIDGE
OUTER LONDON
OXFORD
EMERGING MARKETS
BIRMINGHAM
LEICESTER
LIVERPOOL
MANCHESTER
NOTTINGHAM
SHEFFIELD
SLOUGH & HEATHROW

OUTER LONDON

Outer London has already proved a popular location for life sciences activity. The London Cancer Hub, Sutton is the exemplar of this, aiming to create the world's leading location for the treatment and research of cancer. Alongside The Institute of Cancer Research's Centre for Cancer Drug Development, a new 12-acre development is also planned, which is being brought forward by Aviva, Socius and the London Borough of Sutton. These schemes evidence the strength of local expertise on a global level, as well as demonstrating the commitment to continuing to build the R&D centre of excellence in the area.

There are also clusters of activity in North West London and Dartford as well as sporadically located facilities that span life science related functions across the wider Outer London area.

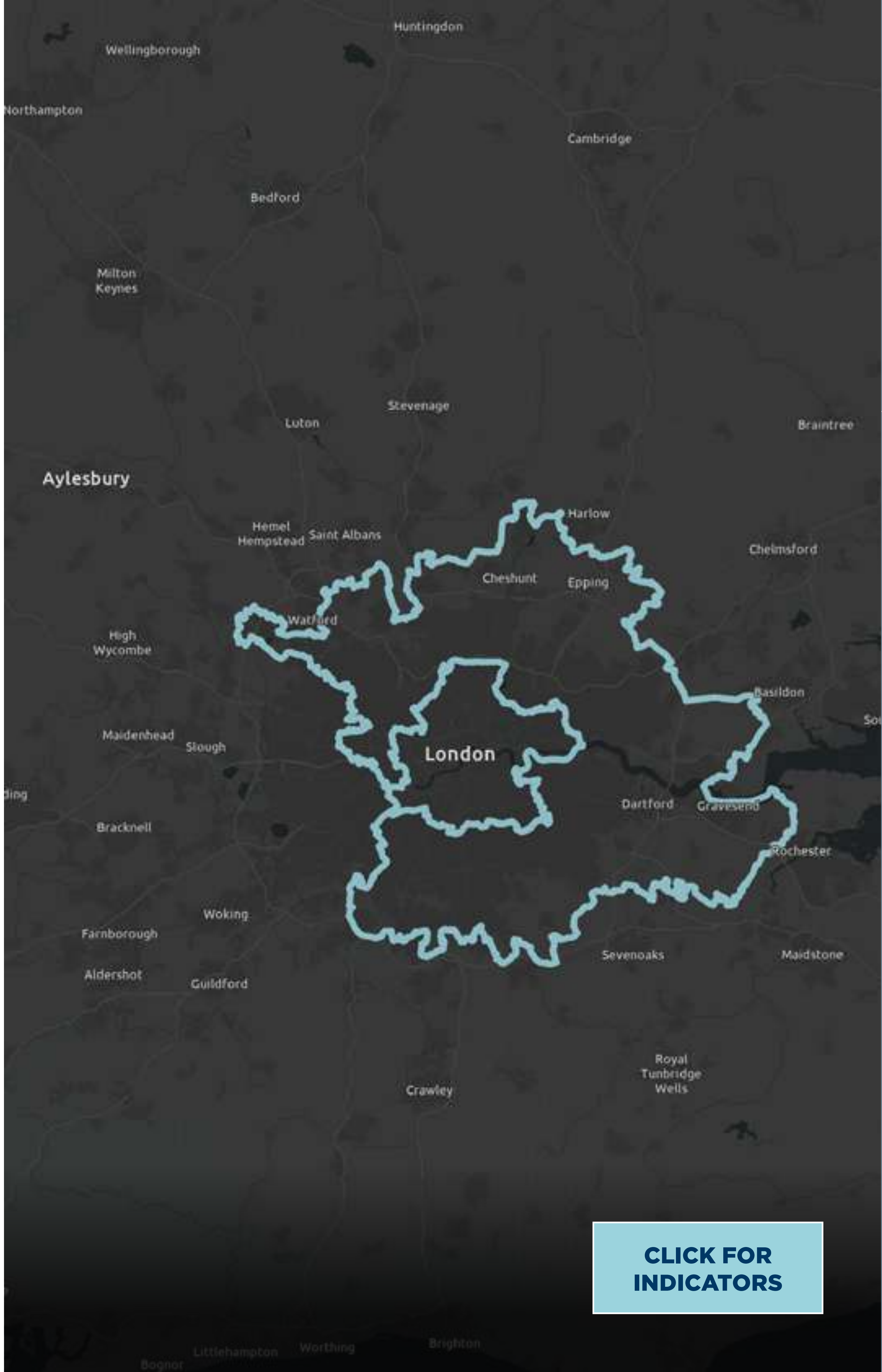
Outer London benefits from the scale of the wider city, contributing significantly to the strength of it as a location for manufacturing and R&D supply chain facilities.

The population accessible within a two-hour drivetime is also high, providing a high distribution potential. Outer London's labour market is also highly-skilled, while the draw of the city and the opportunities within it meant that graduate retention is also very strong.

Pricing is the primary barrier to the Outer London market. Industrial land values and average wages are both amongst the highest in the UK, meaning that development and operational costs would be exceptionally high. Additionally, competition for land and labour is also acute meaning suitable sites may be limited.

It should be noted that the Outer London area is broad with considerable variation within it, arguably more so than the other localities. As such, the suitability of individual sites within the Outer London area will also vary considerably.

OCCUPIERS:



CLICK FOR INDICATORS

GOLDEN TRIANGLE
CAMBRIDGE
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MANCHESTER
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SHEFFIELD
SLOUGH & HEATHROW

OXFORD

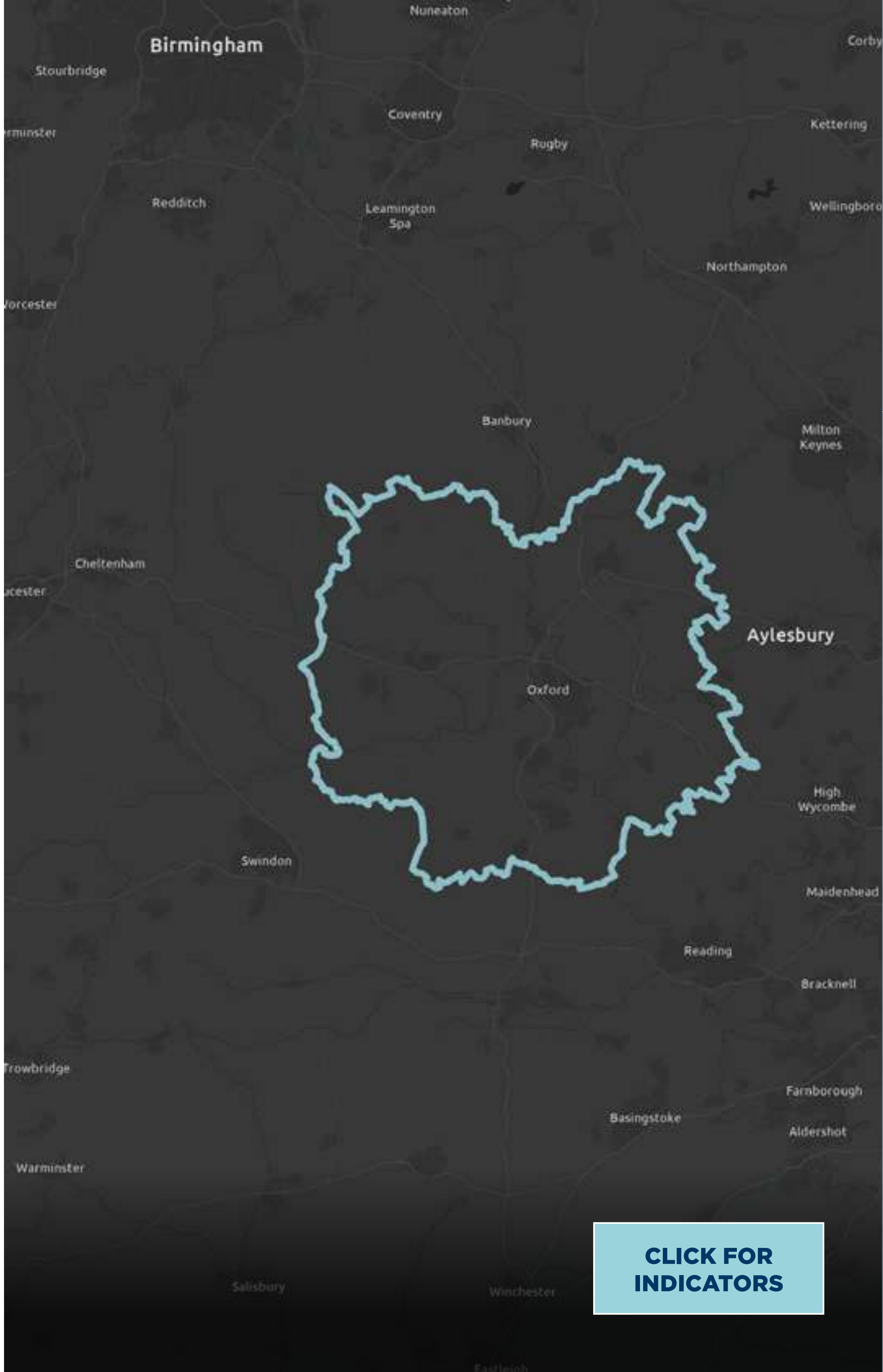
Residing within the life sciences Golden Triangle, Oxford has a strong heritage of science and innovation. The scale of the existing precision medicine manufacturing, R&D supply chain and wider life sciences industries provide a significant advantage in terms of agglomeration and clustering benefits to be gained in Oxford.

The University of Oxford delivers world-leading innovation across fields, providing a considerable benefit to the local entrepreneurial ecosystem as well as a strong supply of well-educated labour and global recognition. While these benefits are sizeable, they also come at a considerable cost with both land values and wages amongst the highest of anywhere in the UK.

Proximity to London, as well strong road links to the rest of the country, Oxford has a significant customer base accessible within a two-hour drivetime, providing considerable distribution potential across a broad range of consumers.

OCCUPIERS:

BRAINOMIX | moderna | Optellum | patheon by Thermo Fisher Scientific



CLICK FOR INDICATORS

BIRMINGHAM

Birmingham boasts an interconnected network of hospitals, clinical research centres, and innovators in the healthcare sector including Birmingham Health Partners. With a diverse population of 5 million, Birmingham is a popular location for clinical trials as well as hosting PIONEER and INSIGHT, two of the UK's Health Data Research Hubs.

Birmingham BioCity, located in Woodbourne Group's flagship mixed-use net zero scheme Curzon Wharf, as well as the University of Birmingham and Bruntwood SciTech's Birmingham Health Innovation Campus are set to attract significant inward investment, while plans are also underway for the £300 million Birmingham Life Sciences Park (BLSP), transforming a derelict site into an innovation hub.

Located in the Midlands and forming a point of the logistics Golden Triangle*, Birmingham offers excellent distribution potential across the Great Britain with approximately 90% of the population accessible within a four-hour drive.

Land is also relatively cheaper in comparison to other localities, while wages are also below that of other key locations, making Birmingham a good value option for prospective manufacturing and R&D supply chain operators.

*Not to be confused with the life sciences Golden Triangle of Cambridge, Oxford and London. The logistics Golden Triangle extends from Birmingham up to Nottingham and down to Northampton. From this locality, approximately 90% of the UK's population is within a four-hour drive as well as the majority of major international transport ports, meaning that it is a prime location for distribution hubs – and pharmaceutical manufacturing facilities.

OCCUPIERS:

CLICK FOR INDICATORS

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SLOUGH & HEATHROW

LEICESTER

While Leicester has a limited existing life sciences industry, the University and University Hospitals of Leicester are aiming to establish the city as a globally-recognised location within the sector through their joint venture, the Institute for Precision Health, as well as the Biomedical Research Centre.

Alongside these centres of excellence, Leicester also provides a strong value proposition for manufacturing and R&D supply chain operators, with low industrial land values and wages meaning that both set up and operational costs would likely be kept relatively low.

Additionally, being located within the logistics Golden Triangle, Leicester also offers the ability to distribute products across Great Britain with relative ease. While the national reach is high, the population accessible within a two-hour drive is lower, meaning more localised distribution would be more limited.

OCCUPIERS:

Kindeva

Morningside Pharmaceuticals Ltd

Nova Laboratories Ltd

CLICK FOR INDICATORS

LIVERPOOL

Liverpool hosts Europe's largest biomanufacturing and pharma clusters, driving breakthrough research and large-scale manufacturing of pharmaceuticals, vaccines, and biologics. Expertise in precision medicine, tropical medicine and children's health provide a rich environment for the development of new products and advances global healthcare.

Liverpool Knowledge Quarter is at the centre of this, hosting the Liverpool School of Tropical Medicine, the New Royal Liverpool Hospital, the University of Liverpool, Liverpool Science Park and The Spine which is home to The Royal College of Physicians.

Expanding through Liverpool2 in 2016, the Port of Liverpool provides international shipping capabilities that can be invaluable to advanced manufacturing facilities looking to import materials, export products to the global market, or both. In addition, Liverpool Freeport offers a considerable advantage for facilities located within this area in terms of reducing operational costs through tax incentives.

Combined with the possible operational savings presented by Liverpool Freeport and the proximity to international shipping, Liverpool's low wages and land values provide considerable value for money in terms of up-front development and running costs. For domestic-orientated manufacturers, however, the relatively low distribution potential of the area is less attractive, with the a limited population reachable within a two-hour drivetime.

OCCUPIERS:

AstraZeneca

Bristol Myers Squibb

CSL Seqirus

康龙化成 PHARMARON

CLICK FOR INDICATORS

GOLDEN TRIANGLE
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SHEFFIELD
SLOUGH & HEATHROW

MANCHESTER

Manchester boasts the largest clinical academic campus in Europe, which supports academia and industry to deliver a thriving life sciences and precision medicine sector. Health Innovation Manchester, an academic research organisation, helps to drive innovation across the healthcare sector in the city, as well as other leading institutions locally including the Manchester Biomedical Research Centre.

Amongst other lab spaces across Manchester, Citylabs provides a hub for health innovation and precision medicine for leading occupiers. The life sciences cluster in Manchester is expected to continue growing in strength as agglomeration benefits and the reputation of the city grows as a centre of excellence.

Outside of London, Manchester reports the highest count of local units involved in pharmaceutical manufacture across the UK. Although there has been limited growth in past years, industrial land values remain relatively cheap meaning there is a strong potential for expansion.

Additionally, labour costs are also lower than other locations meaning the operational component of an advanced manufacturing facility would be reduced. The city of Manchester also provides a diverse labour pool and a number of leading education institutions, providing a strong source of talent.

Along with the international Manchester Airport as well as proximity to nearby Liverpool with its international port, the Manchester area boasts strong supply chain capabilities for both importing materials and exporting products.

OCCUPIERS:

APIS · Chiesi · QIAGEN · Yourgene Health

CLICK FOR INDICATORS

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OUTER LONDON
OXFORD
EMERGING MARKETS
BIRMINGHAM
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MANCHESTER
NOTTINGHAM
SHEFFIELD
SLOUGH & HEATHROW

NOTTINGHAM

Nottingham hosts a productive life sciences ecosystem that has a track record of innovation, including the development of Ibubrofen and the MRI scanner. Research centres across the city, Nottingham Science Park, the BioCity and MediCity incubator locations, host a diverse range of leading life sciences companies.

These are able to benefit from the local NHS links as well as the tactical logistics position of Nottingham in terms of access to the UK-wide market. There is a strong base of contract research and manufacturing organisations in the area which, combined with Nottingham University Hospitals Trust, present a strong location for conducting clinical trials.

Low wages and industrial land values in Nottingham suggest that it could provide a good value option for prospective manufacturing and R&D supply chain operators in the future, providing low cost production. Additionally, with the University of Nottingham being a top 10 academic institution for engineering in the UK, the supply of talented labour in the area is also likely to benefit prospective operators.

OCCUPIERS:

Albumedix. Catalent SYGNATURE DISCOVERY

GOLDEN TRIANGLE
CAMBRIDGE
OUTER LONDON
OXFORD
EMERGING MARKETS
BIRMINGHAM
LEICESTER
LIVERPOOL
MANCHESTER
NOTTINGHAM
SHEFFIELD
SLOUGH & HEATHROW

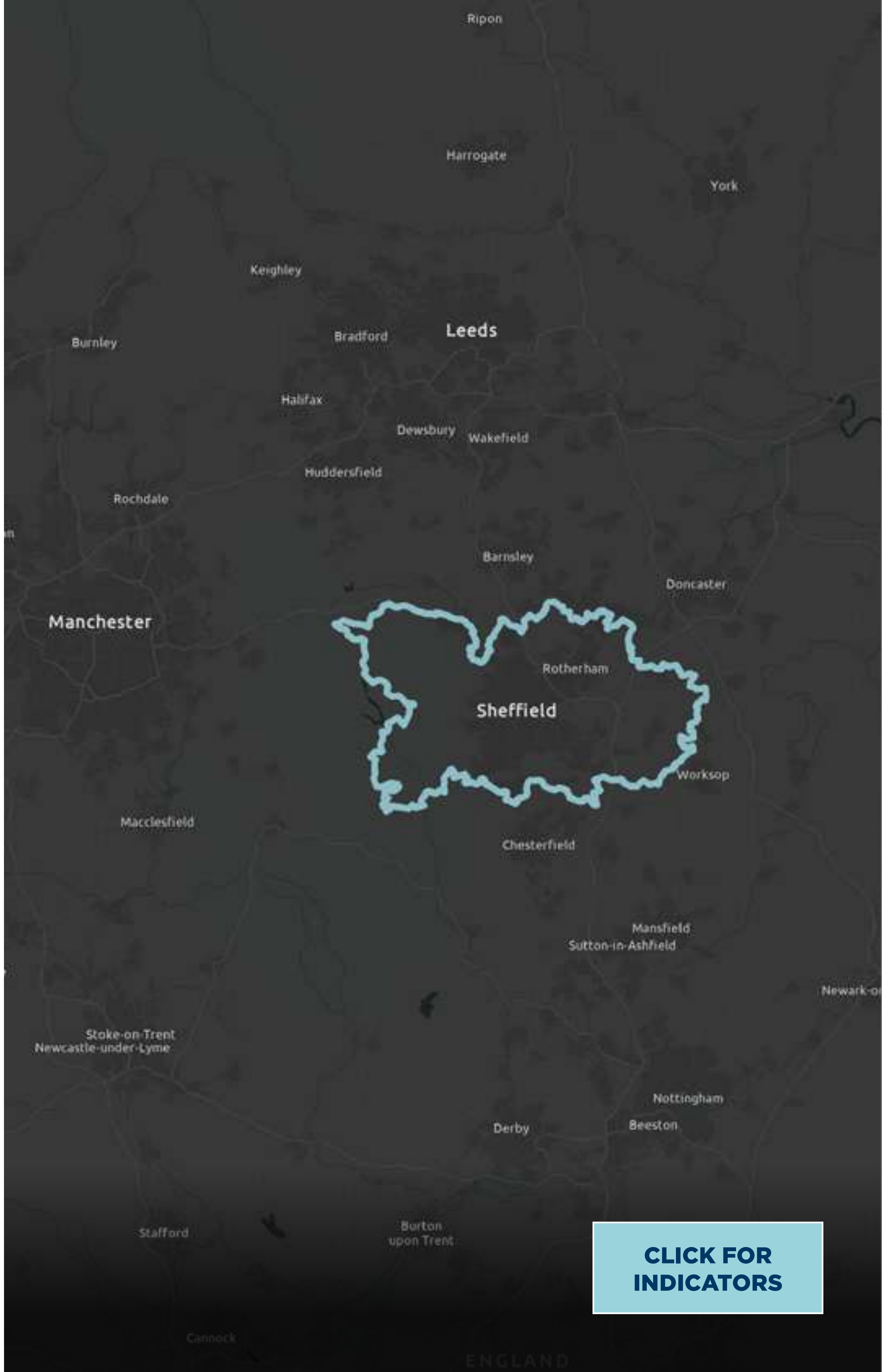
SHEFFIELD

Sheffield's existing sector is small, with the fewest GMP facilities compared to the other top locations and a low count of local units related to pharmaceutical manufacturing.

However, the strength of the University of Sheffield in engineering and life sciences in particular suggests that there could be significant potential in manufacturing and R&D supply chain operations going forward. The Gene Therapy Innovation and Manufacturing Centre at the University is one of three national innovation hubs for gene therapies and works in partnership with the Cell and Gene Therapy Catapult. Combined with Sheffield Teaching Hospitals NHS Trust and the National Institute for Health Research Sheffield Biomedical Research Centre, these institutions could pave the way for a budding life sciences sector in Sheffield.

OCCUPIERS:

faradion | Innovation Hub for Gene Therapies Sheffield | Keapstone Therapeutics



SLOUGH & HEATHROW

The Slough and Heathrow TTWA is located adjacent to London with good access to Oxford and the rest of the UK, as well global markets through Heathrow Airport. These factors mean that it is easily accessible for R&D companies based in the Golden Triangle (particularly those in London or Oxford) as well as for international stakeholders, and provides excellent distribution potential to much of the UK market.

Land values used to be lower in the Slough & Heathrow area which aided growth in the sector, however competition for space has started to increase - bringing with it rising prices. Data centres in particular are becoming a significant presence, bringing significant implications for local power availability which may restrict future expansion in the manufacturing and R&D supply chain sector.

Slough and Heathrow also has a notable absence of universities leading in relevant subjects as well as teaching hospitals located within the TTWA, although there are many within the wider surrounding area given the proximity to London.

OCCUPIERS:

Lonza

ucb

CLICK FOR INDICATORS

V
RESEARCH & DEVELOPMENT

INDICATORS	DESCRIPTION
LIFE SCIENCES R&D EMPLOYMENTS	Count of R&D employees; upweighted as higher values indicate local specialisation, which can in turn bring agglomeration and clustering benefits as well as suggesting a favourable local government and planning environment.
LIFE SCIENCES R&D EMPLOYMENTS 5YR GROWTH	Growth in the count of R&D employments over the past 5 years (2018-23); positive growth indicates strong local industry, a suitable labour pool and favourable government and planning support.
LABOUR MARKET NVQ4 SHARE	Proportion of local population who hold NVQ4 or above qualifications; indicates the educational attainment of the local labour force, indicative of local talent; downweighted as there are multiple labour force quality measures included and NVQ4 would fall short of some R&D job requirements.
LABOUR MARKET GRADUATE SHARE	% of adults with a degree; indicates the suitability of the labour market for R&D occupations.
LIFE SCIENCES R&D PREMISES PROPORTION	Local R&D units per 100,000 people; provides an indication of local specialisation that indicates local expertise, favourable government and planning conditions as well as agglomeration and clustering benefits.
TEACHING HOSPITALS COUNT	Count of teaching hospitals within the TTWA; these can be vital for conducting medical trials as well as indicating a strong labour market pool.
LIFE SCIENCES CAPITAL RAISED	Life sciences companies raising capital (Pitcbook; 2018-23); a measure of success of local innovation and entrepreneurship within the sector, bringing with it possible clustering and ecosystem benefits.
CLINICAL & HEATH UNIVERSITY RANK	Clinical & health THE university rankings; highest scoring institution within the TTWA; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
COMPUTER SCIENCE UNIVERSITY RANK	Computer science THE university rankings; highest scoring institution within the TTWA; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
ENGINEERING UNIVERSITY RANK	Engineering THE university rankings; highest scoring institution within the TTWA; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
LIFE SCIENCE UNIVERSITY RANK	Life science THE university rankings; highest scoring institution within the TTWA; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
LIFE SCIENCE UNIVERSITY COUNT	Count of THE-ranked life sciences universities; high quality institutions can provide a strong talent pool as well as harbouring innovation clusters.
PATENTS PER R&D EMPLOYEE	Life science-related companies lodging patents between 2018-23 per 1000 R&D employees; indicates local innovation and talent relative to the size of local industry.
ACTIVE SPINOUTS COUNT	Count of active spinout companies that leverage some form of IP produced within the university; spinouts are a key measure of the innovation and entrepreneurship within an institution as well as the quality of the wider business ecosystem that they sit within.
ACTIVE SPINOUTS TURNOVER	Estimated average turnover of active spinout companies that leverage some form of IP produced within the university; spinouts are a key measure of the innovation and entrepeneurship within an institution as well as the quality of the wider business ecosystem that they sit within.
GRADUATE ATTRACTION	Universities attracting students from outside of the region; provides an indication of perceived quality of life in the local area and the strength of local institutions as well as new talent availability.
GRADUATE RETENTION	Universities retaining students from outside of the region; provides an indication of perceived quality of life in the local area, local employment opportunities, housing and the strength of local institutions as well as new talent availability.

CAMBRIDGE

Cambridge is one of the world's leading life sciences clusters, and another of the principal markets of the Golden Triangle. The University of Cambridge has been pivotal to developing the heritage of excellence in the sector and continues to produce and attract top talent as well as delivering innovation that propagates spinouts. There are multiple science parks and life science schemes across the city centre, North Cambridge and the South Cambridge clusters including Cambridge Science Park, The Cambridge Biomedical Campus and Babraham Research Campus, amongst a range of others.

The considerable strengths of the local market come at a cost, however. Land availability is low and significant unsatisfied active demand from within the life sciences sector means that competition for space is very high.

Consequentially, the market has experienced a historic shortfall in supply, with development failing to keep up with demand levels. The considerable development pipeline is expected to ease this imbalance over the medium-term, supporting further growth within the sector locally.

OCCUPIERS:

abcam
ALTOS
astex pharmaceuticals
AstraZeneca
bicycle therapeutics
illumina
Pfizer
T-Therapeutics

CLICK FOR INDICATORS

GOLDEN TRIANGLE
CAMBRIDGE
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EDINBURGH
GLASGOW
LEEDS
MANCHESTER
STEVENAGE

INNER LONDON

One of the three points of the Golden Triangle, the Inner London life sciences market has a handful of established and growing clusters including the Knowledge Quarter centred around King's Cross. This hosts a number of leading institutions and universities which attract global interest and talent with over 100 organisations and 70,000 employees within a one-mile radius.

Inner London's scale is a major asset in terms of its attractiveness as a potential location for R&D operations. As R&D facilities generally benefit from clustering and agglomeration benefits, bringing together innovative ideas and practices, the size of the existing industry within Inner London provides a considerable advantage with the most employees within the life sciences R&D sector, primarily working within academic institutions. Teaching hospitals – which are the most common hosts for clinical trials – are also the most numerous in Inner London compared to elsewhere in the UK.

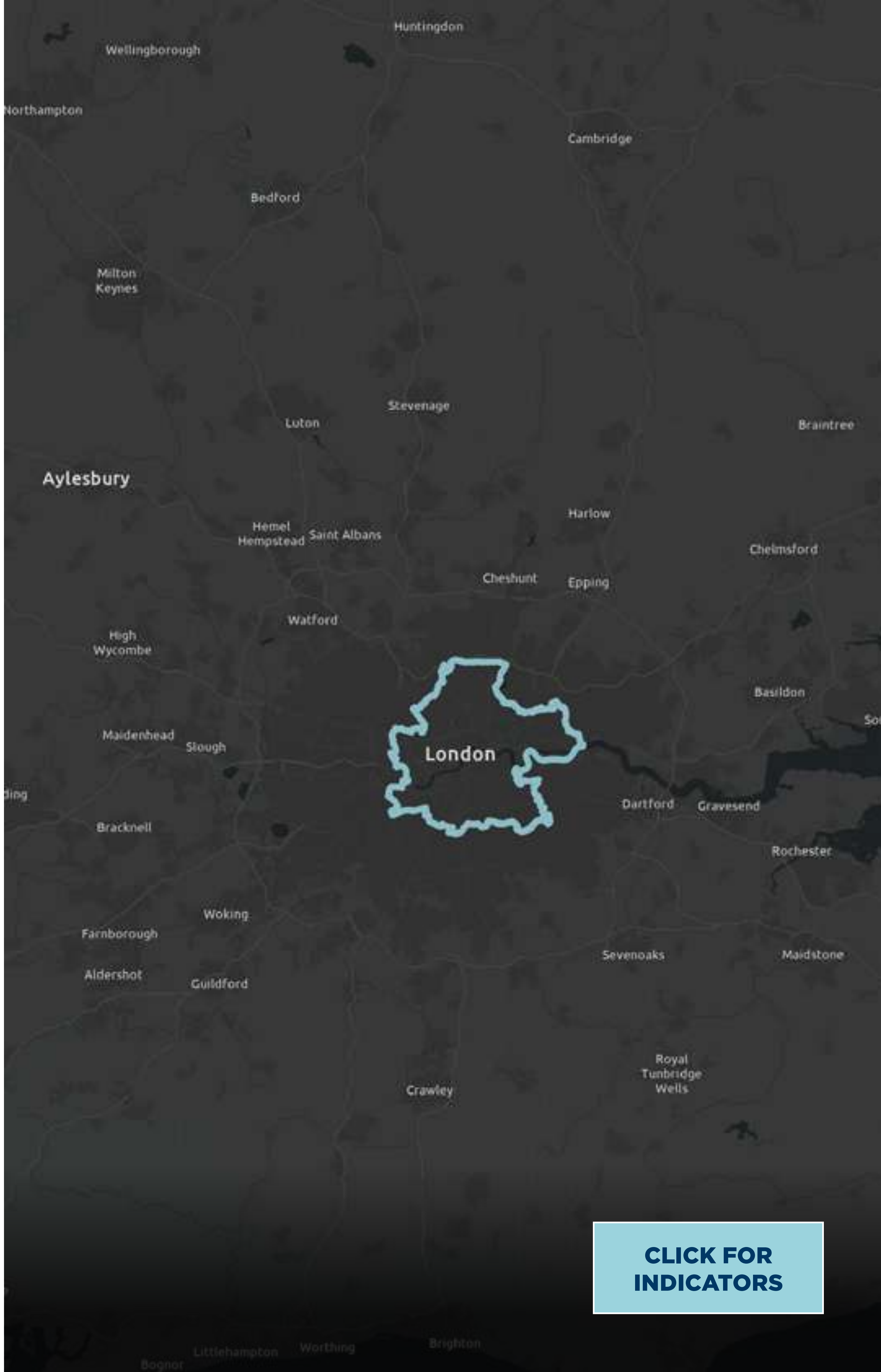
Additionally, Inner London also boasts the highest number of universities featuring on the THE 2024 life sciences rankings, as well as academic institutions ranked amongst the top 10 for clinical & health, computer science and engineering in the UK and globally. Graduate retention is also the highest amongst the UK TTWAs in London, meaning that new facilities would be able to access a very strong and talented workforce. These factors all contributed toward Inner London achieving the highest count of life science patents being lodged since 2018 across UK TTWAs.

While there are a number of benefits to the density of Inner London, it also brings with it challenges – namely in costs and supply particularly in the centre. Acute demand for both talent and land, as well as competition from other sectors and uses, delivers a considerable pricing premium versus other locations.

The strength of demand has encouraged new development and conversion of traditional office space to lab space, with major clusters emerging beyond the traditional Knowledge Quarter including Canary Wharf.

OCCUPIERS:

Achilles Therapeutics, Autolus, hVIVO, MSD, PacBio, Quell



OUTER LONDON

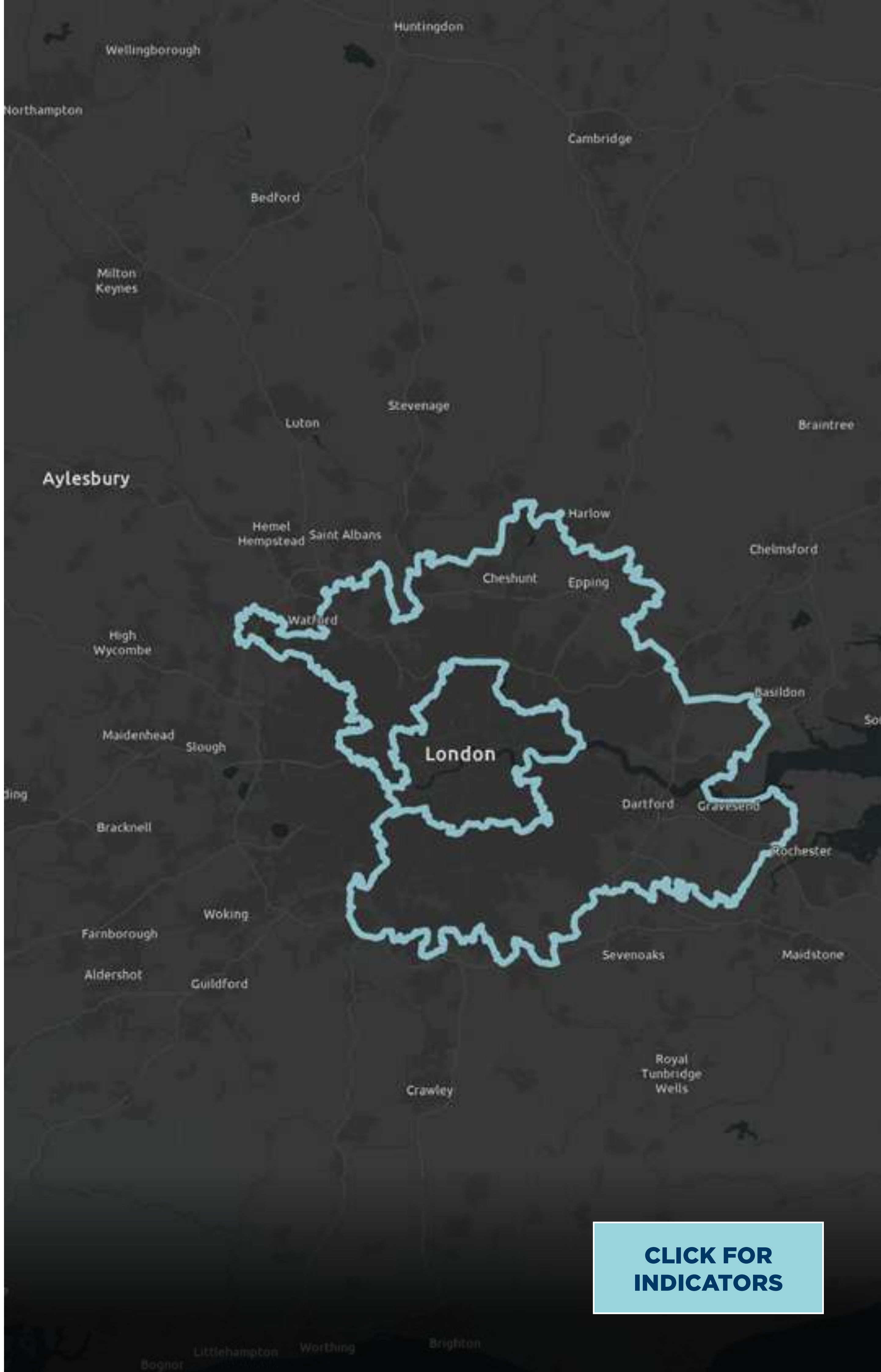
The existing R&D sector in Outer London is moderately well-established when compared to other areas across the UK, although it remains a step down from the scale seen within Inner London, Cambridge and Oxford. Its connectivity to Inner London, the rest of the Golden Triangle and the host of world-renowned institutions there mean that access to innovation ecosystems and top talent is still high, while also benefitting from the comparably more affordable house prices of Outer London.

The value proposition of the Outer London is typically what attracts life sciences companies to the area, with companies who are priced out of Inner London or those who are seeking more industrial, larger-scale options being common.

Aiming to become the world-leading treatment and research centre for cancer, the London Cancer Hub in Sutton is a clear example of how the strengths of Outer London can be leveraged to facilitate excellence in life sciences R&D. Largely occupiers in these locations are there partially as a result of being priced out of London or finding more industrial options.

OCCUPIERS:

CURESPONSE
Vesynta
Vortex BIOSCIENCES



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OXFORD

Oxford is one of the most mature life science markets in the UK, being another key component of the Golden Triangle. The existing local industry is already well-established and growing, claiming the third largest life sciences R&D employee count across the UK TTWAs and reporting 57% growth over the past five years. The existing scale and considerable increase evidence the positive environment that Oxford provides for life sciences R&D activity.

Central to the local ecosystem is the University of Oxford, ranked number one for clinical & health, computer science and engineering and second for life sciences in the UK by THE in 2024. Oxford also has multiple dedicated science parks including the Oxford Science Park, Milton Park and Harwell Campus, all of which attract a range of leading life science and healthcare businesses of all sizes and scales.

Alongside the city's educated and talented workforce and the world-leading innovation delivered by the University, these facilities garner considerable agglomeration and clustering benefits as evidenced by the high number of successful spin-outs. The benefits of the area do however come at a significant cost, with land and wages both amongst the highest across the UK.

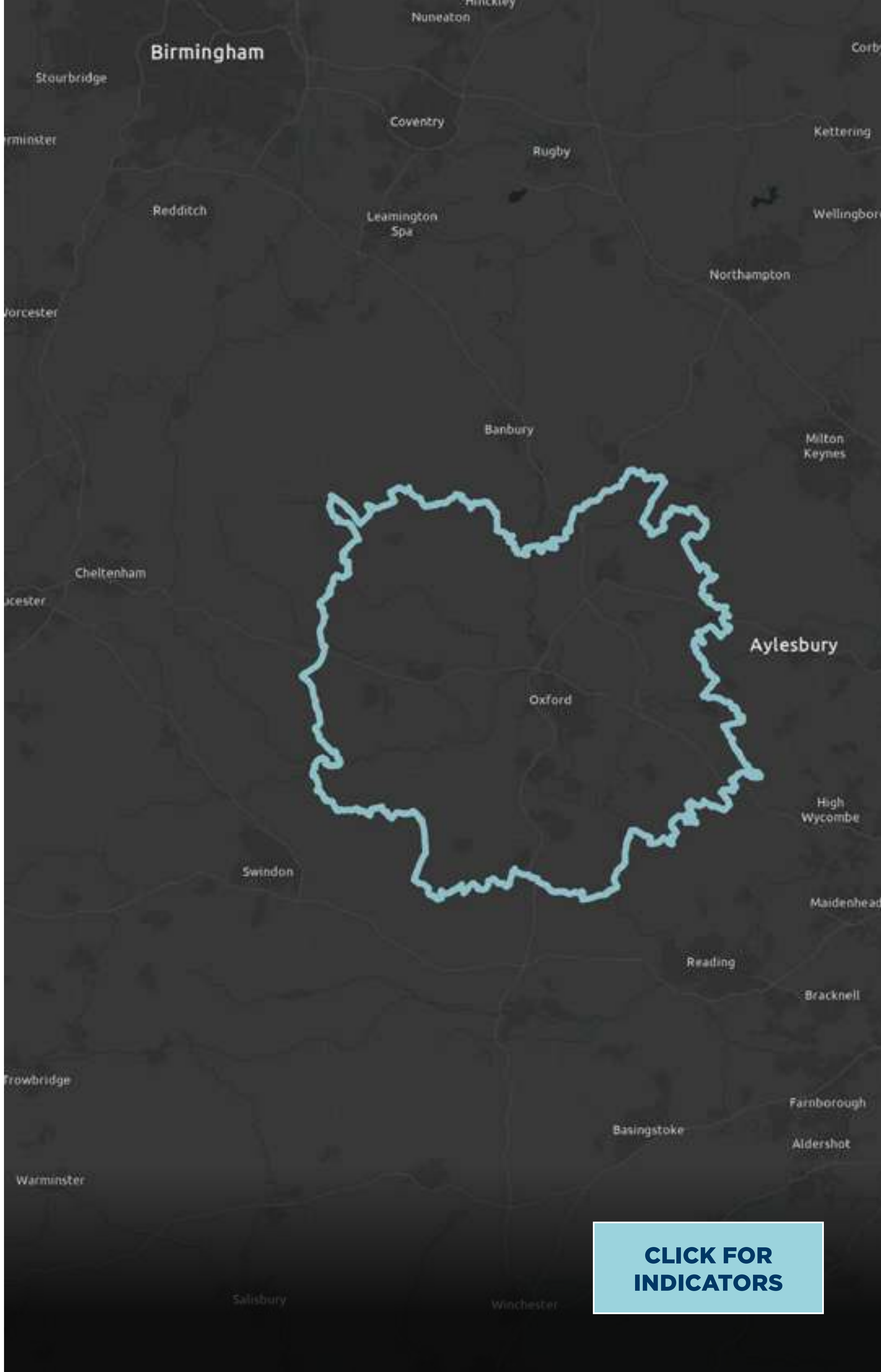
Many leading occupiers are already located within the cluster and, due to the strong positive growth in the sector, further schemes are planned to bring forward additional space such as the Oxford North development.

OCCUPIERS:

Adaptimmune | evox | Exscientia | IMMUNOCORE

moderna | novo nordisk | NANOPORE | VERTEX

WuXi Biologics



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BIRMINGHAM

Birmingham has a history of manufacturing and innovation, and is growing as a life sciences location. Across the Birmingham and West Midlands there are 80 hospitals and clinics, 35 research centres and over 550 companies specialising in life sciences.

From a talent perspective, Birmingham has a young and growing population with a significant student population and several leading academic institutions. Included in this is the University of Birmingham which ranks 11th on the THE UK listings for 2024 in both clinical & health and engineering. The University is also affiliated with Queen Elizabeth Hospital Birmingham, which is one of four within the University Hospitals Birmingham NHS Foundation Trust.

The life sciences landscape in the city is already expanding. Birmingham BioCity, located within the major mixed-use net zero carbon Curzon Wharf scheme being delivered by Woodbourne Group, will provide 130,000 sq ft of R&D and life sciences space. The development is due to start on site in 2025 and will enable the future growth of the sector, supporting high value employment opportunities for Birmingham through providing Birmingham's first investment zone and by capitalising on its location – a nine-minute walk from the forthcoming HS2 Curzon Street Station.

Going forward, the delivery of the HS2 railway will help to strengthen the connection between Birmingham and London, improving the attractiveness of Birmingham as a hub for business and with comparatively lower costs versus the capital. This will act as a further fillip to investment in the area and help to add impetus to the growth of the local life science R&D sector.

The development of the Birmingham Health Innovation Campus (BHIC), a collaboration with Birmingham University and Bruntwood SciTech, will deliver 657,000 sq ft by 2031 with the first phase of 133,000 sq ft being delivered in 2024. The Precision Health Technologies Accelerator (PHTA) will be the first occupier of BHIC providing incubation space. The BHIC has been designated as a 'Life Sciences Opportunity Zone' by the UK Government, helping to attract investment and raise the profile of the development.

OCCUPIERS:

adapttech

adthera

OrbsenTherapeutics

Plasgene

CLICK FOR INDICATORS

GOLDEN TRIANGLE
CAMBRIDGE
INNER LONDON
OUTER LONDON
OXFORD
EMERGING MARKETS
BIRMINGHAM
BRISTOL
EDINBURGH
GLASGOW
LEEDS
MANCHESTER
STEVENAGE

BRISTOL

The Bristol market developing as an emerging cluster within the wider UK life sciences landscape. The area has a strong talent pool with the University of Bristol and University of West England, and has some existing life science infrastructure including the Bristol and Bath Science Park and Science Creates, a local Bristol based deep tech ecosystem with a dedicated venture capital fund and two start up incubators.

As testament to the strength of local innovation, the government has agreed to a £300 million investment with the University of Bristol to create a new national Artificial Intelligence Research Resource (AIRR). This will include the development of the UK's most powerful supercomputer, to be delivered by Hewlett Packard Enterprise. The increasing role that AI plays within the life sciences R&D sector means that this is highly significant for defining Bristol's place in the future development of the industry.

The considerable strengths of the local market come at a cost, however. Land availability is low and significant unsatisfied active demand from within the life sciences sector means that competition for space is very high.

Consequentially, the market has experienced a historic shortfall in supply, with development failing to keep up with demand levels. The considerable development pipeline is expected to ease this imbalance over the medium-term, supporting further growth within the sector locally.

OCCUPIERS:

CYTOSEEK

eXmoor

Scarlet Therapeutics

CLICK FOR INDICATORS

EDINBURGH

Edinburgh is a key part of Scotland's life sciences ecosystem – one of the most connected and collaborative clusters in Europe. The strong relationship between the NHS, universities and local government has enabled growth and development of the local life sciences industry.

A prime example of this is the Edinburgh BioQuarter which partners with City of Edinburgh Council, NHS Lothian, Scottish Enterprise, and the University of Edinburgh, and saw the co-location of the Royal Infirmary of Edinburgh teaching hospital. This has catalysed capabilities in R&D, trials and expertise within and beyond the life sciences sector.

Edinburgh's well-educated workforce means the city is well positioned for innovation, with further support from the strength of the life sciences offer amongst local universities. In 2024, the University of Edinburgh ranked fifth in the UK for life sciences and 28th in the world overall as well as being highly ranked in other related subjects, according to THE.

OCCUPIERS:

NUCANA

ROSLIN Technologies

CLICK FOR INDICATORS

GLASGOW

Glasgow has a small but thriving life sciences sector which significantly contributes to the wider Scotland cluster, where government, academia and industry collaborate. Central to this are establishments including Glasgow's Clinical Innovation Zone specialising in precision medicine, and the Queen Elizabeth University Hospital, one of the largest critical care complexes in Europe.

There are also new developments coming forward in the sector, including the £90 million Living Laboratory for Precision Medicine and the £56 million Medicines Manufacturing Innovation Centre. The Living Laboratory and Clinical Innovation Zone will form part of the Glasgow Riverside Innovation District, brought forward by the University of Glasgow, Scottish Enterprise and Glasgow City Council.

As such, Glasgow's life sciences cluster is also growing rapidly with employments almost doubling in the five years to 2018. This growth has been supported by the University of Glasgow – which THE ranked eighth in the UK for life sciences in 2024 – as well as the significant number of teaching hospitals present in the area with only London reporting more.

While Glasgow is a popular location for students from across the UK, it reports a relatively low graduate retention rate. This may reflect fewer employment opportunities locally, meaning that there may be a gap for prospective occupiers to fill.

OCCUPIERS:

AURUM biosciences

Bio:Clavis

TC BIOPHARM

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LEEDS

Leeds is home to a large number of MedTech firms, as well as supporting 22% of the UK's digital health jobs. The life sciences market is set to expand, with recent government investment of £160 million in West Yorkshire's health, life sciences and digital technologies sector to become one of the new UK Investment Zones. This will help to create a thriving life sciences sector, create new jobs and unlock further investment.

The planned development of the Innovation Arc will link significant innovation assets, including the two Universities and Leeds NHS teaching hospital, within the city of Leeds in order to encourage collaboration and creativity.

In terms of talent, Leeds has a considerable student population as well as a moderate graduate retention rate, suggesting that the area provides a strong quality of life that would be attractive to employees of a prospective R&D facility.

Additionally, the strong count of life sciences related patents per 1,000 R&D employees indicates that there is an innovative community within the sector, delivering possible clustering effects as well as evidencing the strength of the area's capabilities.

OCCUPIERS:

Dr.Reddy's | Johnson&Johnson | PAXMAN

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GOLDEN TRIANGLE
CAMBRIDGE
INNER LONDON
OUTER LONDON
OXFORD

EMERGING MARKETS
BIRMINGHAM
BRISTOL
EDINBURGH
GLASGOW
LEEDS
MANCHESTER
STEVENAGE

MANCHESTER

Manchester is one of the leading life science locations in the UK, including the Oxford Road Corridor – a densely packed innovation district. Oxford Road is home to the University of Manchester, Manchester Metropolitan University, five hospitals as part of the Manchester University NHS Foundation Trust, CityLabs and Manchester Science Park.

Located outside of city centre, Manchester also boasts the UK's largest single site life sciences campus, Alderley Park. The Mereside Life Sciences Campus aims to provide a complete innovation ecosystem, with lab and office space alongside business support, and collaboration events.

Manchester reports the second highest graduate retention rate across the UK, behind only London. This is reflective of the high quality of life in the city, and can be a key factor in attracting and retaining talent. Combined with the 90,000-strong student population in the area, this suggests that there is a considerable graduate labour pool that could help to support the operation of prospective R&D facilities.

The strong count of life sciences related patents lodged per employee suggests that there is a considerable capacity for high quality R&D within Manchester, supported by the University of Manchester which scores consistently highly in THE rankings for clinical & health, computer science, engineering and life sciences.

The last two years have reported significant growth in R&D related employments, with a compound annual growth rate of 39%. This increase, along with the considerable development of lab space, suggests that Manchester's life sciences sector is on a strong upward trajectory.

A critical challenge for Manchester is accessing funding, which is typically concentrated within the Golden Triangle market. Developers, local government and industry bodies can all assist in coordinating efforts to bring in prospective investors into the area to help facilitate further local growth.

Critical challenge in this area is access to funding. being away from Golden triangle.

OCCUPIERS:

Abbott

Lonza

QIAGEN

CLICK FOR INDICATORS

GOLDEN TRIANGLE
CAMBRIDGE
INNER LONDON
OUTER LONDON
OXFORD
EMERGING MARKETS
BIRMINGHAM
BRISTOL
EDINBURGH
GLASGOW
LEEDS
MANCHESTER
STEVENAGE

STEVENAGE

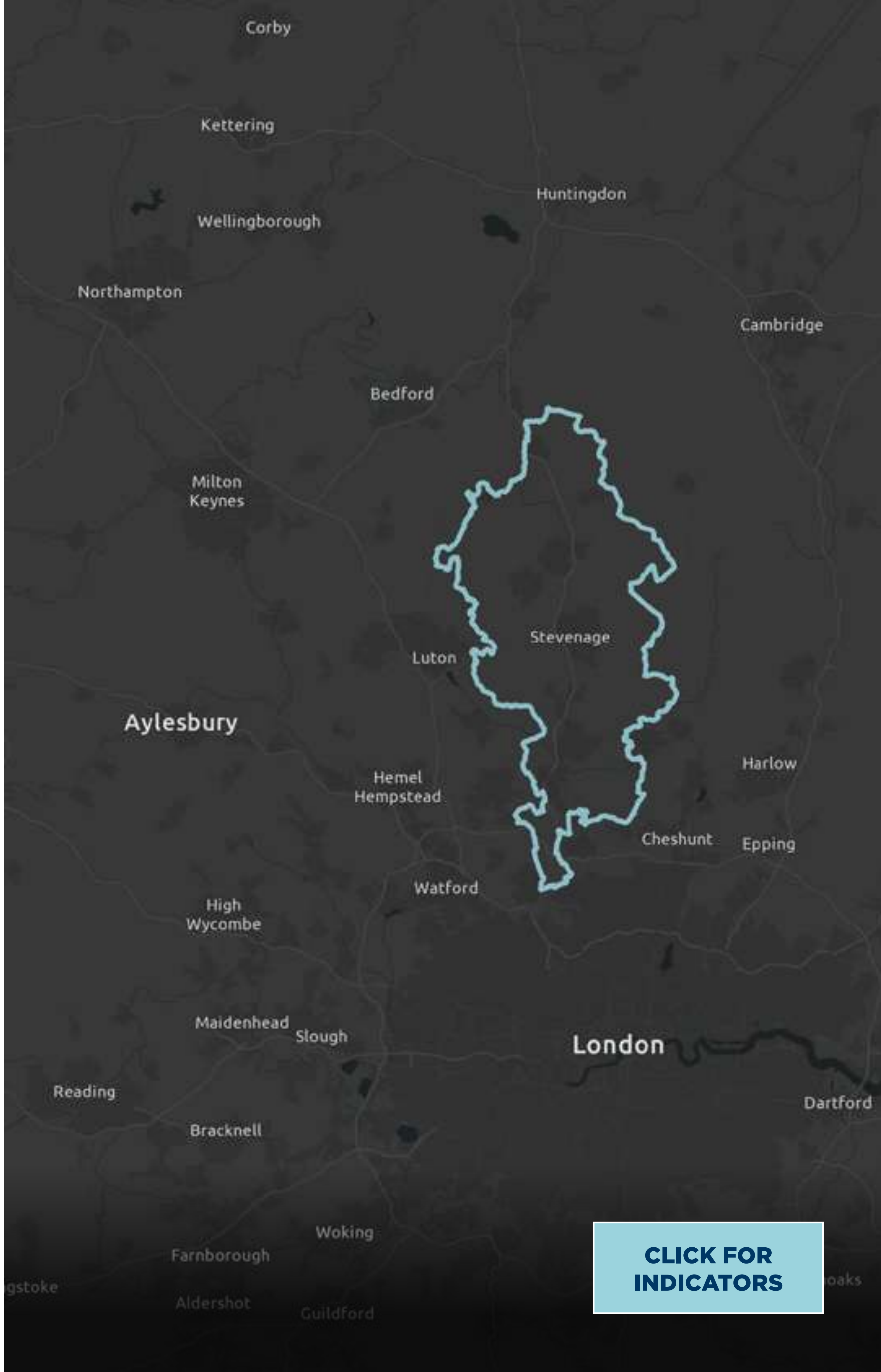
Stevenage falls out of the locations specifically highlighted through the Locating Science methodology primarily due to the absence of leading academic institutions which are often pivotal in stimulating the development of R&D clusters. However, the strength of the local industry warranted a notable mention.

GSK's massive-scale R&D facility established in Stevenage in 1995 firmly placed Stevenage on the UK life sciences landscape, with the sector subsequently developing locally with the help of government support. Now home to the Stevenage Bioscience Catalyst and Cell and Gene Therapy Catapult, the area is a key location on the UK life sciences landscape with plans to expand the industry further with 1.6 million sq ft of new office, lab and GMP space.

The development of the Stevenage cluster – a previously unknown location in terms of R&D activity – following the opening of GSK's demonstrates the potential for niche areas to prosper into flourishing ecosystems, if provided with sufficient support. It also evidences the difference in locational requirements that difference companies hold, and the long-term value in finding the optimal location.

OCCUPIERS:

Autolus
cytiva
FREELINE
GSK
Rentschler Biopharma



CLICK FOR INDICATORS

VI
THE LIFE SCIENCES LANDSCAPE

THE LOCATING SCIENCE MODEL CAN ALSO BE LEVERAGED TO EXAMINE THE MARKET SIZE OF UK LIFE SCIENCE LOCATIONS

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Using a regression model, the relationship between an area's Locating Science R&D performance and laboratory floorspace data from the VOA and SAA can be assessed across the UK. This provides an expected market size which can be compared with the actual laboratory floorspace can indicate which emerging markets are likely to be able to harbour future growth given their specific local strengths.

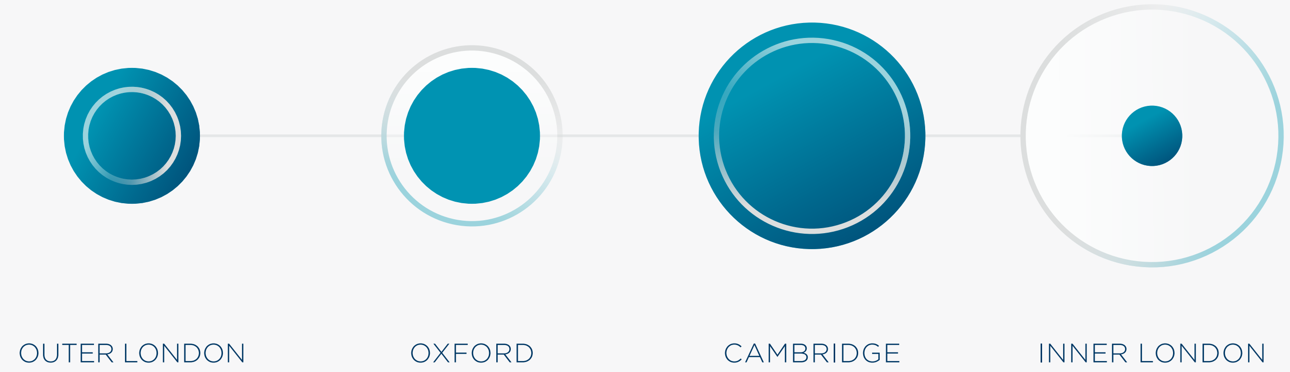
Looking first at the Golden Triangle markets, the existing lab inventories within Cambridge and Oxford are both within 250,000 sq ft of the expected market size relative to their Locating Science R&D performance. These mature locations set the benchmark for other life sciences markets across the UK in terms of the ecosystem factors provided and the subsequent growth of the sector. Conversely, the Inner London market is less mature with a significantly smaller scale of existing inventory despite a strong performance in the Locating Science R&D model. This suggests that there is significant headroom for growth within the Inner London life sciences market. In total, our analysis suggests that a further 1.6 million sq ft of laboratory space could be supported by the ecosystem infrastructure within the Inner London area – provided the right product is delivered at a sustainable rate with the necessary support in place to help encourage growth.

While the Outer London market appears to be relatively oversupplied relative to its Locating Science R&D performance, this is attributed to the benefits accrued through its proximity to the Inner London and wider Golden Triangle markets. These factors, along with relatively more affordable costs of Outer London and the persisting commitments of major companies and local councils to supporting the growth of the sector, are the primary drivers of the strong cluster that has developed in the area.

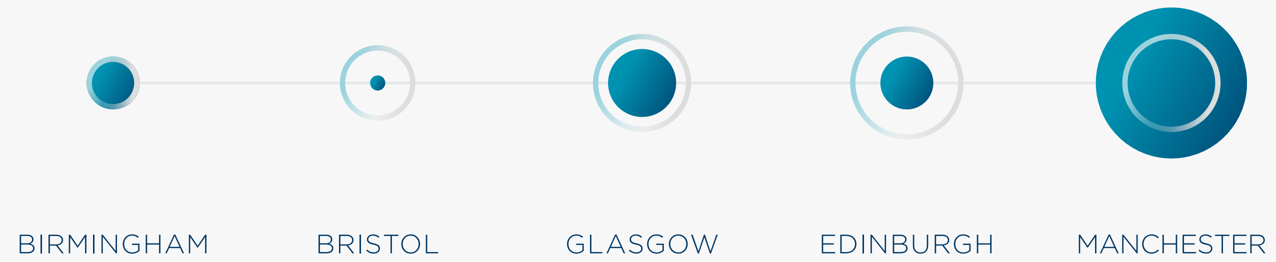
Manchester also outperforms in terms of its existing inventory versus its performance in the R&D model. This cluster has a high number of CMOs and CROs in particular which tend to be less sensitive toward wider ecosystem factors, with a greater focus on cost considerations instead. This analysis evidences the strength of the Manchester market, demonstrating that it is a well-established ecosystem that has the potential for further growth with the right support, particularly around access to funding opportunities.

LOCATING SCIENCE PERFORMANCE COMPARED TO MARKET SIZE

GOLDEN TRIANGE



EMERGING MARKETS



LEGEND:

Circles scaled to indicate existing and expected market size.

Birmingham's existing inventory is broadly aligned with its expected market size at present. The forthcoming developments in the city - including the BHIC and Birmingham BioCity - will enable the local ecosystem to scale up rapidly. With the Life Sciences Opportunity Zone status of the BHIC and the Investment Zone of Birmingham BioCity, these two schemes are expected to catalyse the growth of life sciences activity across the city.

The remaining locations studied – Bristol, Edinburgh and Glasgow – all fall significantly short of the expected market size in terms of their existing lab inventories. This suggests that there is a strong potential for the growth of the life sciences R&D sector locally with the current ecosystem infrastructure. Again, this is dependent on the correct space being delivered in response to the needs of local companies, as well as landlords, developers and institutions taking a proactive approach to ensuring that the networks which facilitate strong growth in life science companies are nurtured.

VII
CONCLUSION

THERE ARE A HOST OF PLACES ACROSS THE UK THAT WOULD BE WELL-SUITED TO HARBOURING NEW LIFE SCIENCES CLUSTERS

LOCATING SCIENCE DEMONSTRATES THAT, WHILE THE TRADITIONAL LIFE SCIENCES GOLDEN TRIANGLE REMAINS ATTRACTIVE, THERE ARE A HOST OF PLACES ACROSS THE UK THAT WOULD BE WELL-SUITED TO HARBOURING NEW LIFE SCIENCES MANUFACTURING, R&D SUPPLY CHAIN, OR R&D FACILITIES.

This is good news for the future growth of the sector across the whole of the UK, with alternative markets able to provide a pressure valve for the in-demand centres where the supply of space and talent are rarely able to keep pace with demand.

Locating Science outlines a standardised scoring system that could apply to many tenants. The model used is entirely customisable to different subsectors and companies, meaning that we are able to work with clients to define their specific needs around talent, existing industry, supply chain factors and other bespoke drivers to create a solution that is tailored to them.

The Cushman & Wakefield consulting team are working with numerous scientific businesses to aid their decision making around location, space planning as well as detailed negotiations to mold property deals to client needs.

PLEASE GET IN TOUCH

to discuss how the Cushman & Wakefield consulting team can apply the Locating Science tools for you.

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