MedCity

Planning for Growth – Demand for Healthcare R&D Space in London

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CreativePlaces

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Brief

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MedCity have commissioned this study to scrutinise the issue. The aspiration is to deliver an objective analysis that provides a platform from which more informed infrastructure investment decisions can be made into the future – by both public and private sector organisations.

Methodology

In addition to researching existing data we have undertaken extensive primary research that includes engagement with industry, academics, hospitals, charities, trade organisations and formal network groups.

Factors Influencing demand for London

Global and UK growth is reasonably strong although forecasts are being revised downwards. The OECD forecasts Britain to be the fastest growing major advanced economy in 2016.

Set against this background there is increased corporate R&D spend globally and the UK fares well in terms of spending on sectors relevant to healthcare R&D. It attracts strong levels of investment from global corporates and Venture Capitalists.

The way businesses undertake their R&D is changing. Open Innovation is coming to the fore and those locations that can offer best opportunity for businesses both large and small to work with a strong research base and each other are expected to see the greatest demand for floor space into the future. London forms part of the 'Golden Triangle' of Oxford, Cambridge and London, the strongest biosciences cluster in Europe, and is thus very well placed to exploit this trend. The Southeast, London and East of England collectively contain 60% of pharmaceutical employment in the UK, and 50% of medical biotechnology employment.

Although the cost of staff and property is high in London there is a strong presence of Life Sciences businesses in London. There are significant investments being made in projects such as the Francis Crick Institute and the Alan Turing Institute. Growing ambition for enhanced collaboration, particularly by strong universities in London and the growing AHSN initiative means that there is very considerable potential for enhanced commercial R&D activity in the healthcare sector in the capital.

Demand

In assessing the level of demand for healthcare R&D real estate in London we have triangulated information from a number of sources: secondary research data from London & Partners, MedCity, the existing innovation centres and UK spin-outs; interviews with a number of academic and industry partners; and primary research from our demand study.

All of the information collected points to a strong pipeline of demand in London:

- London and Partners have 37 current enquiries for accommodation in London
- MedCity have been receiving approximately 6-8 enquiries per month
- All existing innovation centres have waiting lists
- Of our 81 surveyed responses, 39 stated that they would want to take space in London, 20 of whom state this requirement is in the next 2 years, with their total requirements adding up to approximately 67,000 sq. ft.

It is unlikely that we have captured all the demand and indeed it will be possible to create demand that isn't evident today through industry engagement that shows businesses an added value proposition. We believe there is good scope for that and particularly if further investment is made in hard and soft infrastructure to serve the sector.

From our survey, the most popular location is the area around the Euston Road.

Most companies expressing a need for alternative or additional accommodation are looking for a mix of office and biology laboratory space. Some require chemistry laboratory specification, involving the need for more sophisticated buildings.

Proximity to transport hubs is identified as the most important criteria when choosing location. Being in an R&D intensive city district is also seen as important to many of these occupiers, as was being close to a university or hospital. Being located on a hospital site is a polarised demand factor. For some it is seen as fundamental whereas for others it is ranked low, with few in-between.

Important amenities for these businesses are cafes, sports facilities and hotels and pubs but the fundamentals around overall accessibility are more important.

Our interviews identified a number of recurring themes:

- London has not yet reached its full potential to attract and accommodate this type of activity
- As part of the golden triangle, London is within the best R&D cluster in Europe. This is likely to drive strong demand into the future
- Proximity to the academic base is crucial to spin-outs. Academics have multifaceted roles and available travel time in the working day is very limited

- Large businesses see London as a gateway to Europe and a very important nodal hub
- Closer proximity to patients and healthcare delivery is important to a good number of businesses
- Current innovation centres have insufficient space to attend to need
- Businesses of all sizes would like to see more facilities that the healthcare research and healthcare R&D communities can use on a day-to-day basis without having to lease space

Supply

Supply of property for the sector is modest today. Further space that may be available to the sector is coming through.

There are a number of key stakeholders working hard to create more opportunities to attend to the evident demand. Each of the promoters have their own motivations. Their projects typically have their own unique selling points. However, there are potentially significant barriers to delivery in every instance. Where stakeholders are willing to invest time and resource to turn aspiration into reality, then with concerted effort, typically involving a wider stakeholder group, and with some stakeholders making investment for the good of the sector, actual delivery may be realised.

Comparator Cities

Clearly, due to historical and geographical variances it is challenging to draw like for like comparisons between London and the other comparator cities. The value of analysing these cities is more in identifying the key trends which are evident from each. The key lessons we identified are:

1. Open Innovation is driving demand levels at city level
2. Accessibility/co-location at local level is important
3. It is crucial to provide a range of property
4. Re-purposed space must play a role as well as new
5. Multi-stakeholder delivery is required to facilitate these projects
6. Cost is a limiting factor in expensive markets

London, for a number of reasons, should have significantly more potential for development of healthcare related R&D than the comparator cities (with the exception of Boston) studied for this report for a number of reasons. This is supported by interviews held with leading researchers, SMEs and large-scale multi-nationals – a number of which guide that London can and indeed ought to/should do a lot better than it does today.

The distinct advantages that London enjoys by comparison to New York, Paris and Berlin are as follows:

1. London has a far stronger research base. Five of the world's top 25 universities/research institutes in the fields of Life Sciences and Medicine are located within approximately 50 miles of London – not even Boston or San Francisco in the US can match this
2. The unique nature of the NHS in terms of healthcare provision and patient records presents opportunities in the UK and London for identifying and delivering healthcare innovation that international comparators struggle to offer
3. London sits within the leading cluster for commercial R&D activity in Europe - if a 60-mile diameter is taken for what may reasonably be considered to be a functional cluster – it being located within the UK's Golden Triangle. Within the UK's Golden Triangle the transportation links between Cambridge and Oxford are so poor, by either private car or public transport, that London effectively sits at its centre in terms of accessibility around the Triangle
4. The UK is Europe's number 1 location for Foreign Direct Investment[1] and within the UK London is the only location served by four international airports, including those offering long haul flights around the whole of Europe/the world. American businesses are the strongest investors in healthcare related R&D in the world. They generally fly into Heathrow when they come to the UK and typically like to stay in world-class accommodation with world class amenities relatively close to the airport

What is needed?

Our assessment is that in addition to the projects currently being delivered, there is a need to deliver modest amounts of floor space across each of the following:

Relatively small suites of accommodation close to the research base

Spin-outs emerging from the research space typically want to remain close to their originating faculty and at times are not finding this space readily available. There is also evidence of multi-national companies wanting to work closely with the research base who would find this type of space appealing.

Innovation Centre space

Demand is clearly exceeding supply for current space. There is additional Innovation Centre delivery in the pipeline at White City and if Imperial Innovations retain control over a reasonable amount of floor space at South Kensington then this will help ease the demand/supply mismatch, but will not be sufficient alone.

[1] FT fDi Report 2015

Grow on Space

As businesses scale up in London, some appear willing to leave London but others are telling us they would prefer to stay. The additional capacity being provided at White City and Dagenham will suit some, but we would expect there to be a number of businesses who would want to remain in London in other locations, or where the type of property being currently delivered doesn't suit their needs.

Space within/very close to hospitals

We identified a clear need from some respondents that is currently unattended to and for which provision is required.

Lounge/community space with meeting rooms

Businesses that are not represented in London have identified a desire to get closer to the London healthcare R&D community and indeed we believe that there will be organisations already in London that would find these facilities beneficial.

Financial Aspects of Delivery

A combination of relatively high cost and relatively low capital values mean that the commercial property market alone will not provide the type of accommodation required by the sector. Delivery of the space therefore involves one or more stakeholders providing either a secure income stream for an investor/developer and/or an injection of capital where financial return is not the key driver. There are a number of structures and funding sources that could be used to remedy this. There is also the potential to leverage the planning system to facilitate development of space for this sector.

Recommendations

- Support to ICL at White City
- Support an agenda that includes Life Sciences for the British Library Site at King's Cross
- Seek to utilise existing research and hospital space more fully for R&D activity
- Build a team to keep sector needs articulated and to the fore
- Ensure that funding and planning matters are progressed in a more strategic fashion
- Position London's offer far more strongly in a context of the Golden Triangle, the Greater South East and the UK

1 Introduction

In recent years the supply of property serving the Life Sciences sector in London is believed to have been inadequate.

MedCity have commissioned this study to scrutinise the issue. The aspiration is to deliver an objective analysis that provides a platform from which more informed infrastructure investment decisions can be made into the future – by both public and private sector organisations.

This study therefore seeks to provide a robust understanding of R&D intensive healthcare related business floor space demand for property inside the M25. It seeks to identify segmentation as to type of business activity; scale of business; domestic/overseas origination; type, scale and timing of requirements for floor space; and trends that may point to requirements that may need to be attended to into the future. It is to consider the desirability of providing shared innovation/community space as well as space that businesses may acquire for their independent use. It is to analyse current and planned incubator/co-locational laboratory and innovation real estate capacity and consider how this may address the demand identified.

The study is also asked to highlight:

1. Factors contributing to the demand for floor space
2. Potential implications of not adding capacity beyond current planned projects
3. The nature of provision and capacity at other international comparators
4. Perceptions of the London bioscience real estate space and the extent to which perceptions of affordability and accessibility may or may not be impeding direct investment into London and its environs
5. Experiences of companies that have been unable to access incubator/co-locational laboratory and innovation space
6. Economically sustainable models for future incubator/co-locational laboratory and innovation space in London and guidance on possible options and approaches

On a confidential basis to parties sponsoring further advice, sub-study work is to cover defined geographical areas. This will assess in each case: locational issues affecting demand for the specific locations, potential property needs and added value propositions, options for mixed use space delivery, potential redevelopment sites and potential barriers to success. Consideration is to be given to space that it may be appropriate to seek to provide at these locations, and how.

2 Methodology and Key Caveats

In addition to researching existing data we have undertaken extensive primary research that includes engagement with industry, academics, hospitals, charities, trade organisations and sector network groups.

A formal demand study through use of a questionnaire has formed a key part of the process. One to one interviews were used to better understand research/hospital community aspiration and business interface experiences; and to better understand businesses' issues such as cost and access to staff, along with more general perceptions.

A table setting out our methodology appears at Appendix 1 and a list of those interviewed or engaged with through group discussions appears at Appendix 2.

Key caveats and context points for the study

Corporate Anonymity

In participating in the demand survey some businesses are likely to want to retain anonymity and indeed there are a number of businesses with potential demand (particularly the larger more established companies) that will not want to reveal requirements to third parties beyond those closest to the emerging requirement.

Sector Dynamism

It is for note that demand is very dynamic in this sector and there is opportunity to create demand through positive interactions of those involved with academic, clinical and business activity. Further, if appropriate property supply exists in a place like London then we would suggest that there is real opportunity to create greater levels of demand over time than may be apparent, or indeed exist, today.

Sub-categorisation within the Sector

Whilst some stakeholders in the sector are keen to understand whether businesses with requirements fall into categories of pharmaceuticals, biotechnology, medical technology, digital or indeed other sub-sectors, companies today develop products and services such that this categorisation is very difficult to effect. Accordingly we asked businesses that took part in this survey to advise of the sub-sectors they are in, or are interested in developing for the future of their business. The answers only confirm that sub-categorisation is becoming increasingly difficult and more fluid.

Property under consideration

This study focuses on sites and buildings that are actively being promoted for commercial R&D activity, specifically where there is a likelihood of a range of healthcare related R&D activity within the premises. Reference is made to some of the other projects that may provide relevant property.

For note, there should also be recognition that businesses with commercial R&D requirements in the sector will often look at properties available for sale or to rent in the commercial market place. In practice our experience is that such properties are often of little or no interest to the sector, particularly if they need wet laboratory space that typically requires development to a higher specification and cost. Whilst R&D intensive businesses may go to such locations through necessity, some have property needs that are very expensive or indeed impossible to accommodate in such stock. Most R&D intensive occupiers believe they can grow their businesses better in projects co-located with a good level of R&D intensive businesses.

Reliability of Demand Data

Businesses can say that they aspire to grow and move but do not always find the need to do so in practice and so requirements registered in a survey such as this can only be seen as statements of intent by participants, no more.

Life Sciences and Healthcare R&D Terminology

In this report we often refer to the Life Sciences sector, the Life Sciences R&D and the healthcare R&D sector. These are all different and care is required in interpretation. It is necessary to refer to all three terms because data is often unavailable for healthcare related R&D and so wider data sets need to be drawn upon.

Innovation Centre and Incubator Terminology

We define incubation as the service of supporting pre-formed or very early stage businesses. An incubator is a space providing this service.

In the context of this report we describe an innovation centre as a singular or combined part of a larger property, with such centre including wet laboratory facilities and divided into at least ten suites of space - potentially offering suites that singularly or combined can accommodate anything from 1 to 100 people whilst always having a number of suites occupied by a number of businesses. It would typically be designed for use by a range of scientific R&D intensive businesses where a good proportion of the occupiers are, or are at least intended to be, operating in the Life Sciences sector, and where there is some element of business support. Facilities would have the ability to be used, at least in part, for laboratory activity requiring benching, sinks, gases and safety cabinets. It would typically offer flexible leasing terms, including easy-in, easy-out arrangements.

Innovation centres are not precluded from providing incubation services. However, we do not define the following as innovation centres for the purposes of this study, regardless of nomenclature:

- Property focussed solely on incubation
- Centres that do not focus on R&D intensive businesses and provide wet laboratory space
- Property offerings that do not provide small scale suites of space
- Centres which do not provide business support.

Very small scale incubators

We have not identified any outright standalone incubators focussed on bio/Life Sciences in London of scale. There will be a number of small scale facilities/initiatives within buildings and various organisations, dispersed about London. These are not covered by this study.

3 Factors influencing demand for London

Summary

Global and UK growth is reasonably strong although forecasts are being revised downwards. The OECD forecasts Britain to be the fastest growing major advanced economy in 2016.

Set against this background there is increased corporate R&D investment globally and the UK fares well in terms of spending on sectors relevant to healthcare R&D. It attracts strong levels of investment from global corporates and Venture Capitalists.

The way businesses undertake their R&D is changing. Open Innovation is coming to the fore and those locations that can offer best opportunity for businesses (both large and small) to work close to a strong research base and each other are expected to see the greatest demand for floor space into the future. London forms part of the 'Golden Triangle' of Oxford, Cambridge and London, the strongest biosciences cluster in Europe, and is thus very well placed to exploit this trend. The Southeast, London and East of England collectively contain 48% of the Life Sciences employment in the UK, with London employing approximately 18,000 people. Where data is available on levels of R&D activity within biopharma business in the Golden Triangle (Cambridge and Oxford) circa 40% of facilities occupied by Life Sciences businesses undertake R&D activity.

Although the cost of staff and property is high in London there is a strong presence of Life Sciences businesses in London. There are significant investments being made in projects such as the Francis Crick Institute and the Alan Turing Institute. Growing ambition for enhanced collaboration, particularly by strong universities in London and the presence of Academic Health Science Centres and Networks means that there is considerable potential for enhancing and increasing the commercial R&D activity in the healthcare sector in the capital.

Macro factors

Economic and political outlook

Global growth slowed to 2.4% in 2015 and is expected to recover at a slower pace than previously envisaged. Forecasts for 2016 now expect expansion to be at 2.9% this year, down from an expectation of 3.3% a year ago.[2] A more protracted slowdown across large emerging markets could have substantial spill overs to other developing economies and eventually hold back the recovery in advanced economies. Forecasts are being qualified that they are subject

[2] World Bank, 1.16

to substantial downside risks. The Organisation for Economic Co-operation and Development (OECD) is still, however, forecasting Britain to be the fastest growing major advanced economy in 2016.

The March 2016 report from the Office for Budget Responsibility (OBR) forecasts UK GDP growth of 2% in 2016, 2.2% in 2017 and 2.1% in 2018. The OBR continues to predict UK employment level rises each year through to 2020.

The UK votes on continued EU membership in June 2016.

For the purpose of this report we assume that the OBR predictions laid out above are broadly realised and that there are no economic shocks to destabilise what otherwise appears to be a reasonably positive economic outlook.

EU and UK Government initiatives to support research and R&D investment

In January 2014 the EU launched its latest Research Programme, Horizon 2020, making almost 80 billion euros of funding available to help implement its Innovation Union initiative. This couples research and innovation and aims to ensure that Europe produces world-class science with fewer barriers to innovation. UK companies were the biggest beneficiaries of EU funding for demonstrator projects according to European Commission Press Room (27.03.15).

The UK Government continues to seek ways to support the research/R&D sectors. The 2015 Autumn Statement confirmed that it continues to prioritise investment in science to ensure that the UK remains a world-class centre of research – with science funding protected in real terms. Furthermore, following apparent success with initiatives such as Patent Box tax legislation that helps business invest in R&D in the UK, work is underway to tackle business issues such as the need for accelerated access to transformative health technology by the NHS.

The EU encourages countries to work towards investing 3% of their GDP in R&D by 2020 (1% public funding and 2% private sector investment). The 2015 Office for National Statistics data review shows that whilst in 2013 there was an increase from 2012, the total percentage for the UK is still only 1.67%, making it 12th in the league of member countries. On the face of it the UK performance appears poor. For note, however, the increase that was experienced in 2013 came mainly from a £1.3 billion increase in R&D performed by the business sector - and when one looks at business investment in R&D across the EU the UK comes out relatively strongly, and very strongly indeed for key areas relevant to healthcare enhancement.

Commercial R&D spend and employment trends

Large Scale Businesses

The EU R&D Investment Scoreboard 2015 confirms that global Commercial R&D spending increased by 6.8% in 2014, with high technology sectors of health and ICT showing robust growth - software up 12.8%, hardware up 6.7% and pharmaceuticals/biotechnology up 7.2%.

The number of employees involved with commercial R&D within the world's top 2,500 spenders also increased, by 1.5%.

The top 1,000 biggest R&D spenders in the EU increased R&D spend by 1% in 2014. The largest R&D investing sectors within the group were Pharmaceuticals & Biotechnology (2.3% up in R&D whilst down 4.1% in net sales). Out of these 1,000 companies, 268 are from the UK.

As Figure 1 shows, the UK is strongest in Europe in terms of the number of companies involved in sectors key to healthcare product and service advancement – pharmaceuticals and biotechnology, software and computer services, electronic and electrical equipment and technology hardware and equipment.

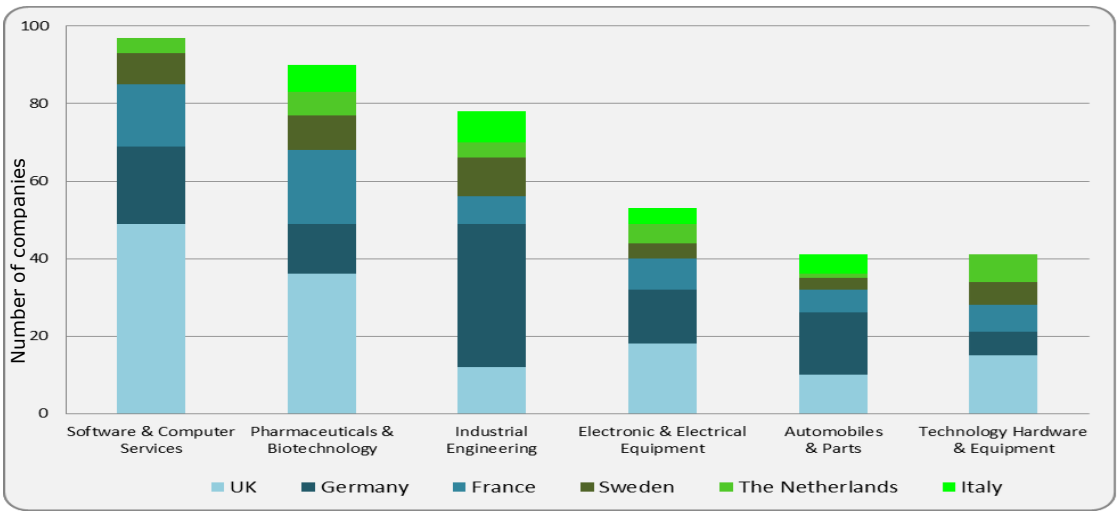


Figure 1 - Source: The 2015 EU Industrial R&D Investment Scoreboard

Furthermore, the Scoreboard data tells us the UK has the biggest commercial R&D expenditure for Pharmaceuticals and Biotechnology out of these top six countries.

The 2015 Scoreboard provided data on the changes in both investment in R&D and sales within different industrial sectors for the EU countries. Whilst strong growth was evident in Software & Computer Services and Healthcare Equipment and Services, the increase in Pharma & Biotech was more muted in the UK against its principal rival Germany.

Sector	EU 1,000 R&D, 2014 (€bn)	Germany - % change in R&D and Sales	France - % change in R&D and Sales	UK - % change in R&D and Sales
Pharma & Biotech	31.9	7.3/3	-0.3/2.2	2.3/-4.1
Software & Computer Services	7.2	1.9/2.5	-5.2/12.7	12.1/7.1
Healthcare Equipment & Services	3.9	6.1/9.2	11.7/11.9	18.5/8.7

In terms of inward investment for R&D activity the UK is performing strongly. The table below shows international versus national subsidiaries by country of destination. There is clearly a high ratio of international to national subsidiaries, suggesting that we are an attractive location for overseas investment in R&D activity.

Country (Ranking)	Number of international subsidiaries by country of destination	Number of national subsidiaries in the country	Ratio of international over national subsidiaries
US (1)	38,500	39,500	0.98
UK (2)	15,500	7,500	2.11
China (3)	10,500	6,500	1.58
Germany (4)	8,500	7,500	1.19
Japan (5)	2,000	11,500	0.17

Small to Medium Size Businesses

Data on SME R&D investment trends is more difficult to find within the SME community. However, some R&D intensive SMEs require injections of early stage and venture capital funding and levels of such funding taking place can guide as to the health of any sector. The 2015 CB Insights *Global Corporate Venture Capital Year in Review* showed that the healthcare sector enjoyed a strong year for investment into it. Global deals totalled $5.4bn in value in 2015, an increase of 90% from 2014.

A BioIndustry Association/Ernst & Young study of October 2015 showed that in 2014 Europe experienced its best financing year ever for Life Sciences, with total innovation capital raised of £3.9bn, up 77% on 2013. The UK also achieved its best ever financing year in 2014 - continuing to lead Europe in the total amount of innovation capital raised for Life Sciences, as well as the number of financing rounds (86). The UK now represents 31% of all innovation capital raised in Europe (up from 22% in 2013).

In 2014 UK biotech companies raised an impressive £360m in venture capital (VC). The gap between the UK and the rest of Europe is widening positively in this respect.[3]

[3] Building the third global cluster, BIA/EY, 10.15

Open Innovation

Since Henry Chesbrough termed the phrase "Open Innovation" in relation to business product and service development in 2003, it appears to have been growing as a phenomenon[4]. The model can be best described using the diagram at Figure 2, depicting how businesses bring in and spinout technologies as they seek to create products they can make a good return from.

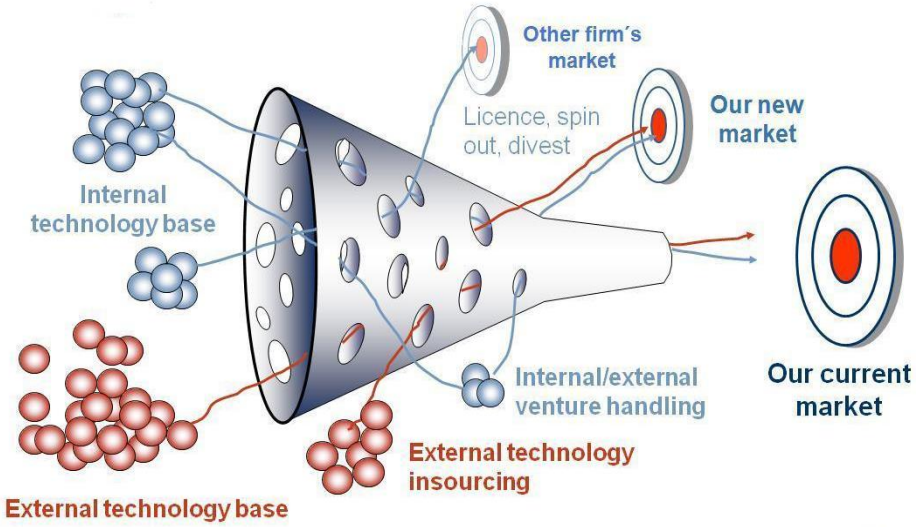


Figure 2

The uptake by business of an open innovation approach to technology intensive R&D activity is having profound effects on the industrial landscape. Those pursuing product and service development through Open Innovation typically want to work closely with other businesses, in a vibrant commercial R&D community. This influences the locational choices of large businesses wanting to accelerate technology development through acquisition or partnership with other businesses (particularly SMEs) and with SMEs. They are all attracted to open innovation hotspots for R&D activity, where productivity levels can be higher because of who you know, the levels of trust that develop within the community and the ease with which collaboration/transactions can be facilitated. For note however, as large corporates leave large complexes in more remote locations to pursue this agenda, they will typically seek smaller suites of space in the locations they move to.

[4] Managing Open Innovation in Large Firms, Henry Chesbrough, Haas School of Business, UC Berkeley Sabine Brunswicker, Fraunhoffer Institute for Industrial Engineering, Fraunhoffer Society, 2013

Micro factors

Issues affecting the nature and level of demand for property in London include:

Level of healthcare related R&D activity in London

It is not possible to find statistics to cover healthcare related R&D in London. There is analysis of the Life Sciences sector in London, however, which can provide some helpful pointers:

The Business Innovation and Skills 'Strength and Opportunity' Report of 2014 states that the greatest level of employment in the Life Sciences sector is in pharmaceuticals, at 12,000 (87 companies), with 4,000 employees in Medical Technology (200 companies) and 2,000 in Medical Biotechnology (112 companies). Others will be employed in activity that includes industrial biotechnology.

SQW and Trampoline's 'Mapping London's Science and Technology Sectors' report of October 2015 guides that the best estimate of the scale of the Life Sciences sector in London is that it includes 717 firms employing approximately 21,500 people (generating £4.7bn turnover per annum). The report guides that companies in London tend to be highly concentrated in Central and Inner London, particularly medical and industrial biotechnology firms. Although there is wide distribution across Central and Inner London, there is some concentration around main research facilities and bio-incubators. If located in Outer London, biotech and medtech firms are greater concentrated in the west than the east. Pharmaceutical companies have a much greater distribution across London.

Growing strength of the Golden Triangle for healthcare related R&D

A Sanofi sponsored report 'The Leading Life Sciences Clusters in Europe' of September 2015 highlights the Golden Triangle of Cambridge, London, Oxford as the strongest biosciences cluster in Europe. Research by Bidwells/Lets Cell It in 2016 shows approximately 350 BioPharma companies (as opposed to general Life Sciences) in Cambridge and approximately 250 in Oxford – on top of which there are, of course, many in the places in between. Analysis of the companies in the Bidwells/Lets Cell It study by Lets Cell It guides that approximately 42% undertake R&D at their locations (the percentage is not known for the SQW/Trampoline study).

Enhancing structures to support healthcare R&D

The Government's 2015 Spending Review confirmed investment of £5 billion in health research over the next 5 years, which will clearly help support the UK's healthcare R&D sector. In March of 2016 there was confirmation of funding for higher education to include £400 million to foster university collaboration with the private sector through the UK Research Partnership Investment Fund (UKRPIF) from 2018 through to 2021. This builds on the earlier success of the UKRPIF that provided £500 million to help higher education institutions across the UK secure over £1.4 billion of co-investment from business and charity partners.

The UK government has been working hard to ensure that investment and actions are taken to ultimately help commercial R&D activity in the UK. An important aspect of the work is the Academic Health Science Network (AHSN) initiative that endeavours to align education, clinical research, informatics, innovation, training and education and healthcare delivery. AHSNs were specifically established to deliver a step-change in the way that the NHS identifies, develops and adopts new technologies. London enjoys strong representation of these networks and there is expectation that their role will grow further into the future. Academic Health Science Centres (AHSCs) are similarly important, established to bring together academic and health partners that can speed up the process of translating developments in research into benefits for patients.

The UK Government is also investing in basic research that will benefit the sector, much of it in London. Located alongside the new Francis Crick Institute at King's Cross, commitment of £42 million has now been given to the Alan Turing Institute. Big data management and exploitation has huge potential to advance healthcare and there are many businesses working to deliver this. The Centre for Economics and Business Research estimates that the big data marketplace could benefit the UK economy by £216 billion and create 58,000 new jobs in the UK before 2017.

The Witty Review of Universities and Growth report in 2013 supports the drive to 'commercialise' research outlined in the Government's Industrial Strategy proposals. It supports greater collaboration between universities and SMEs, advocating "an enhanced third mission" for universities alongside research and education — to facilitate economic growth.

The review sets out a key role for Local Enterprise Partnerships (LEPs) as well as cities in helping build networks and disseminate funding to support these collaborations. The Department for Business, Innovation and Skills response agreed that LEPs should put universities at the heart of their thinking and decision-making and should direct a large share of the £1 billion of European Structural and Investment Funds to universities. Further, the Government has committed to a new Advisory Hub for Smart Specialisation along the EU concept of identifying regions' comparative advantages and promoting diversified growth in the industries where they have strength.

The London LEP, the London Enterprise Panel, has made investments to help create MedCity, funded the pilot London MedTech network and helped in setting up the MedCity Seed Fund.

Affordability of property in London

London is becoming increasingly expensive and prices of commercial real estate are some of the highest globally. Areas where businesses show a preference and would derive benefit from undertaking R&D are becoming particularly costly. International property agents Cushman and Wakefield state the following prime office rents and total occupational costs in London and other locations (www.occupiermetrics.com). The costs in the table below have been adjusted for differing measuring standards and assume a mid-rise building:

	Location	Rent per sq. m (usable space)	Tax & Opex per sq. m	Total
London	West End (Prime)	£1,200	£646	£1,846
	Camden/Kings Cross	£755	£465	£1,220
	Mid-Town	£668	£432	£1,100
	Paddington and Kensignton	£619	£413	£1,032
	Southwark	£607	£408	£1,015
	City	£656	£427	£1,083
	City East	£532	£380	£912
	Docklands	£409	£334	£743
Other UK	Manchester (Prime)	£344	£183	£527
	Birmingham (Prime)	£307	£170	£477
	Edinburgh	£312	£193	£505
	Cardiff	£242	£145	£387
Comparator Cities (prime)	Paris	£762	£77	£839
	Berlin	£269	£60	£329
	Boston	£256	£174	£430
	New York	£809	£250	£1,058

Source: Cushman & Wakefield occupiermetrics.com

It is evident that London is a comparatively expensive location for this type of business space – in both national and international terms.

Costs of employing staff in London

Data to compare staff costs for the sector is difficult to find. However, the Nesta Tech Nation Report of 2016 guides that London is the most expensive place to recruit digital talent – with advertised digital salaries running at an average of £58,978 per annum in London compared to an Oxford average at £47,499 and Cambridge at £47,185 per annum.[5]

Whilst London labour costs are high accessibility to talent is, however, relatively good. The Government's 2014 Strength and Opportunity Report confirms that the Southeast, London and East of England collectively contains 48% of the Life Sciences employment in the UK, with London employing approximately 18,000 people.

[5] Burning Glass, 2015

4 Demand

Summary

In assessing the level of demand for healthcare R&D real estate in London we have triangulated information from a number of sources: secondary research data from London and Partners, MedCity, the existing innovation centres and UK spin-outs; interviews with a number of academic and industry partners; and primary research from our demand study.

All of the information collected points to a strong pipeline of demand in London:

- **London and Partners have 37 potentially relevant enquiries at the current time**
- **MedCity have been receiving approximately 6 – 8 enquires per month**
- **All existing innovation centres have waiting lists**
- **Of the 81 R&D focused healthcare related businesses that took part in our survey, 39 stated that they would want to take space in London. 20 of these state that their requirement needs to be satisfied in the next 2 years. Of the total 251,000 sq. ft. of requirements identified 67,000 sq. ft. falls into this category.**

We will not have captured all the demand, and indeed it will be possible to create demand that isn't evident today through industry engagement that shows businesses an added value proposition. We believe there is good scope for that and particularly if further investment is made in hard and soft infrastructure to serve the sector.

From our survey, the most popular location is the zone around Euston Road.

Most occupiers expressing a need for alternative or additional accommodation are looking for a mix of office and biology laboratory space. Of the businesses with laboratory requirements, some require chemistry laboratory specification in their facilities, which requires more sophisticated buildings.

Proximity to transport hubs is identified as the most important criteria when choosing a location. Being in an R&D intensive city district is also seen as important to many of these occupiers, as is being close to a university or hospital. Being located on a hospital site was a polarised demand factor. For some it is seen as fundamental whereas for others it is ranked low, with few in-between.

Important amenities for these businesses are cafes, sports facilities and hotels and pubs, but the fundamentals around overall accessibility are more important.

Our interviews identified a number of recurring themes:

- **London has not yet reached its full potential to attract and accommodate healthcare related R&D activity**
- **As part of the Golden Triangle, London is within the best R&D cluster in Europe, and this is likely to drive strong demand in to the future**
- **Proximity to the academic base is crucial to start ups. Academics have multifaceted roles and travel time in the working day is hard to find**
- **Large international businesses see London as a gateway to Europe and a very important nodal hub**
- **Closer proximity to patients and healthcare delivery is important to a good number of businesses**
- **Current innovation centres have insufficient space to attend to need**
- **Businesses of all sizes would like to see more facilities that the healthcare research and healthcare R&D communities can use on a day-to-day basis without having to lease space**

This report was commissioned because of the anecdotal evidence that demand exceeds supply. We set out below objective analysis, arrived at through liaison with London & Partners and MedCity, through interviews with the managers of the three principal innovation centres that attend to the sector and through our own direct research through a formal engagement process with businesses.

Demand evident from secondary research data

a) London & Partners

As the official promotional company for the capital London & Partners has a dedicated Life Sciences team and is in constant contact with businesses that are seeking to undertake healthcare related R&D activity here.

London & Partners have 51 current enquiries within the 'Life Sciences' sector of which we analyse 37 to potentially include R&D activity and with potential benefit to the healthcare sector. Data on those 37 is as follows:

Company Scale	
Start-up	9
Large	8
SME	20

Area of search	
London only	12
Golden Triangle (London, Cambridge and Oxford	5
Wider UK&I	6
Wider Europe	10
Worldwide	4

Country of Origin	Number of Requirements
Asian Pacific Total	**10**
Australia	2
China	3
India	3
Japan	1
New Zealand	1
EUROPE Total	**5**
Finland	1
Germany	1
Greece	1
Switzerland	2
USA	**22**

b) MedCity

Over the last 12 months MedCity have typically received approximately 6 to 8 enquiries per month. These enquiry numbers have been generally increasing during 2015 and into 2016.

In 2014/early 2015 the majority seeking space were relatively small scale SMEs, often from Europe and looking for relatively small amounts of space. Over the last 9 months there has been more interest from larger SMEs and well-established large-scale corporations.

c) London Innovation Centres focussed on R&D intensive activity

Each of the three innovation centres in London that deliver accommodation for R&D intensive activity include provision of wet laboratories in their offer. All are able to offer laboratories that can involve chemistry as well as biology and at QMB's Whitechapel facility there is also clinical trials space. Data from these centres is as follows:

	QMB Innovation Centre	LBIC	Imperial Incubator
Total space	39,500	20,402	19,676
Occupancy rate	90%	95%	100%
Projected occupancy rate	90% plus	90% plus	85-95%
No. of occupancy requests pa (% turned away)	15 to 20 pa and well over 80% turned away	Jan to March 2016 40+ enquiries and 90% turned away	Jan to March 2016 36 enquiries and 90% turned away
Trends on rates of enquiry	Been strong continuously for about 3 year	Particularly increased September 2015 to March 2016	Appears to be increasing
No. of companies on waiting list	6	50 live enquiries (15k sq. ft. labs, 5k sq. ft. offices total)	5 companies (5,000 sq. ft. total)
Turnover rate of companies	Only had 2 exits over last 4 years	Typically companies stay 1 – 3 years	2-3 go and 2-3 come in pa
Business Model	Seek to keep occupancy at relatively high level and keep existing occupiers happy	Look for companies that add value to the academic work of the College	Annual consideration of tenant renewals and agreed maximum period of occupancy is 3 years
Profile of occupants	85% Life Sciences, 15% Research Institution	80% Life Sciences, 12% Consultants, 8% Other	30% Life Sciences, 50% 'Tech' and 20% CleanTech

d) London Spin-Out Activity from the Research Base

The numbers of spin-outs emerging from London universities has been cyclical. Over the last 10 years the number of life-sciences spin-out companies appears to be on a modest upward trajectory. UCL and Imperial College London are the institutions that have produced most of these spin-outs still in existence[6].

[6] Source: Spinouts UK

Institution	1995 - 1999	2000 – 2004	2005 - 2009	2010 - 2014	Total
Birkbeck		1			1
Brunel		1			1
City				2	2
Greenwich			2		2
Imperial	7	25	13	12	57
Inst of Cancer Research	1	2	1		4
King's	4	8	2	5	19
Queen Mary		2	3	1	6
Royal Holloway		3			3
Royal Vet		1		1	2
Royal College of Art			2		2
Southbank		1			1
UCL	7	11	4	17	39
TOTAL (Without double counting for joint Spin-Outs)	19	55	27	38	

From Life Sciences company spin-out rate data; interviews with personnel at some of the key universities and hospitals in London; interviews conducted with the Cell Therapy Catapult; and interviews with leading research institutes, we can ascertain that the spin-out numbers shown in Figure 3 below, may need to be catered for in terms of property provision assuming no increase on average spin-out numbers from the last ten years from universities and guided estimates from personnel at other institutions.

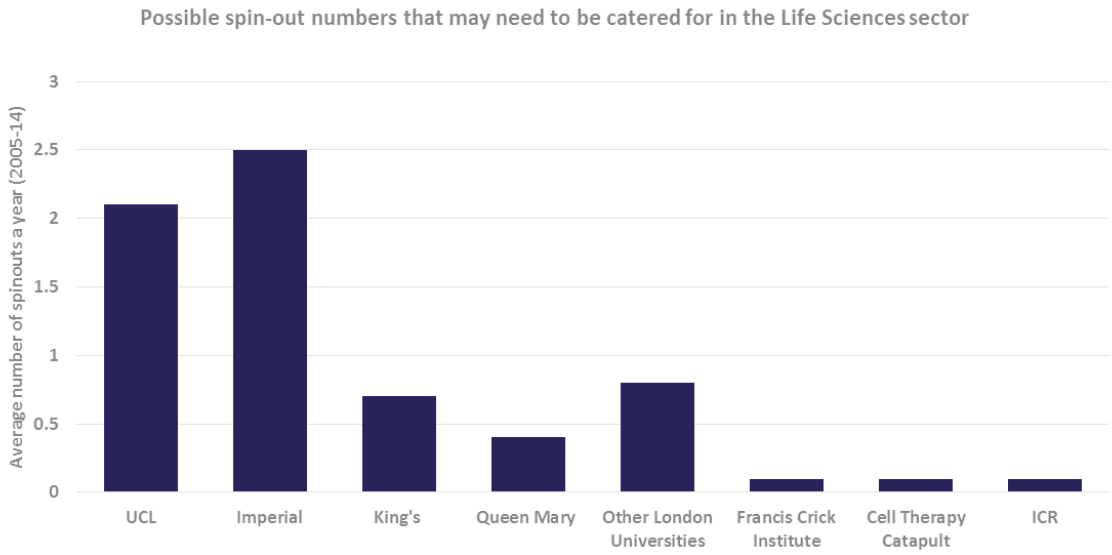


Figure 3

Because they lack history, the new institutions may deliver quite different numbers in practice. Furthermore, we can foresee that when there are changes in personnel at senior level in universities (as evident at both Imperial College London and UCL, for example) there is real possibility that numbers from the past do not act as a particularly reliable guide for the future. From our exposure to these organisations during the course of this study and our knowledge of trends in the sector we would suggest that rates into the future may be greater than shown above.

Results from our Demand Survey

Between December 2015 and March 2016 we invited companies to complete a questionnaire that would detail potential requirements for floor space in London. Businesses were encouraged to participate if they might be interested in enhanced community space that delivers lounge, hot-desking and meeting room in environments targeted to the sector, as well as areas of floor space they might want to acquire for their own independent use.

The make-up of the respondents

81 companies responded to our survey. 39 of the respondents provided detail on identifiable need for further accommodation for their own occupation in London, over a period of time that ranged from immediate through to over the next five to ten years. Where they had a preference for their accommodation to be within a supported innovation centre type facility they were asked to confirm this.

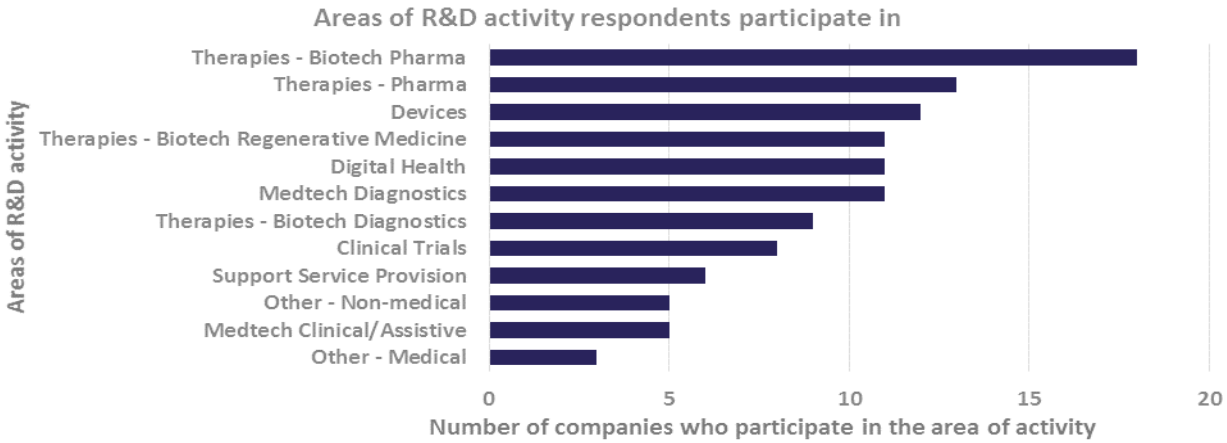


Figure 4

Figure 4 shows the activity areas of the companies with stated requirements for London. The greatest number are involved with pharmaceutical related activity although 64% of companies confirmed that they either work in, or aspire to work in, at least 2 of the areas of activity listed. 46% stated they aspired to or worked in at least 3 of the areas of R&D activity.

There was a significant range of sizes of companies stating a requirement for London:

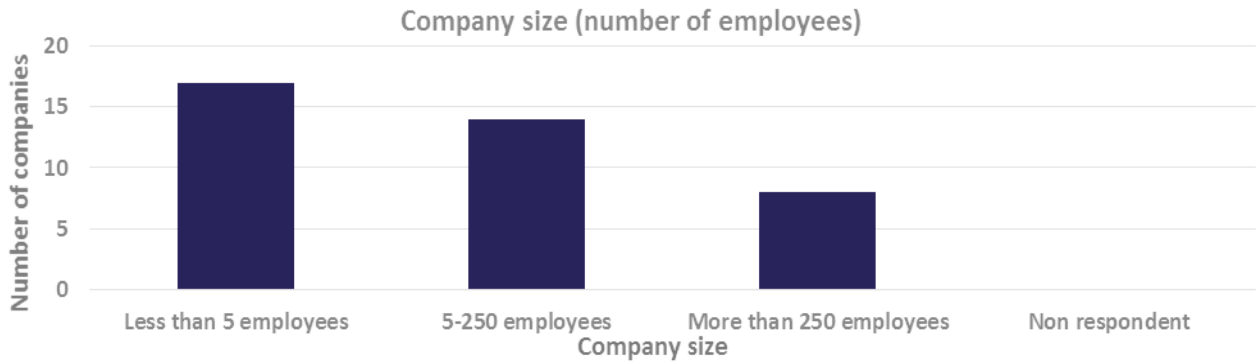


Figure 5

The need for new accommodation

Our survey also pointed to the nature and scale of floor space sought. Shown in Figure 6 is the total floor space requirements for each type of space, with the number of companies making up each type indicated at the top of each bar.

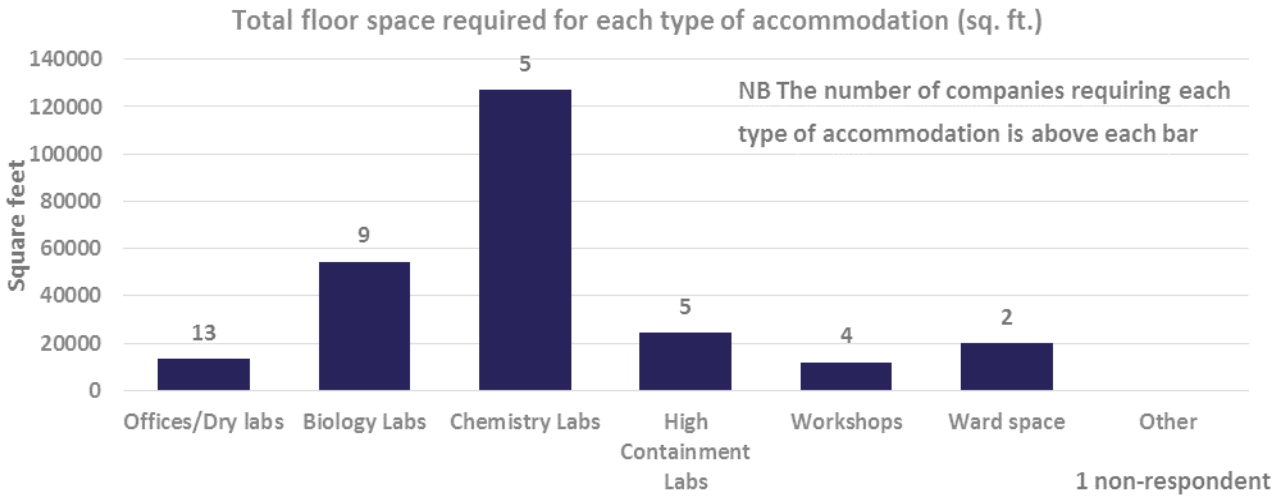


Figure 6

The total level of floor space need over the 10-year time horizon adds up to approximately 251,000 sq. ft. The methodology for calculating the amount of floor space needed for each type of accommodation can be found in Appendix 3.

For note we have categorised those requirements that include an element of chemistry laboratory need as 'Chemistry Laboratories'. This is because chemistry laboratories will typically require 'extract to air' ventilation that involves extraction plant, ductwork and chimneys - meaning that the nature of accommodation that needs to be delivered is at a significantly greater specification.

Where businesses want to be

We asked our respondents to select the top four zones they would be interested in from the map shown at Figure 7, assuming that they would have to pay full market rents for the locations in question. They were then asked to rank the four in order of priority.

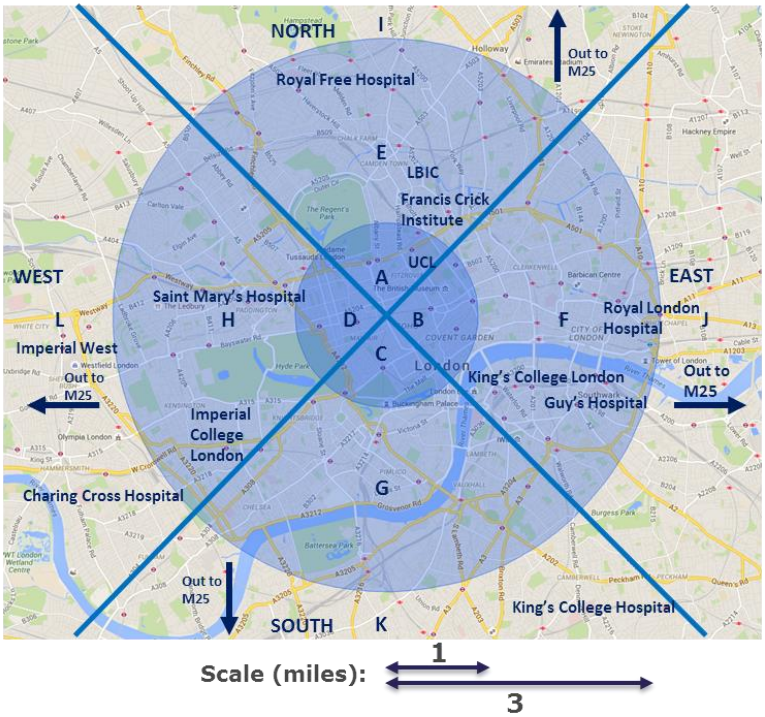


Figure 7

Figure 8 below shows the popularity of the different zones - highlighting those zones selected as first and second choices. Zone E, stretching from the Euston Road/King's Cross area up to the Royal Free Hospital was the most favoured location, followed by the north-central zone that includes the remainder of Euston Road (A). Of note the east-mid (F), west-mid (H) and south-mid (G) zones were all identified as ones that our respondents indicated would be good first and second choice locations.

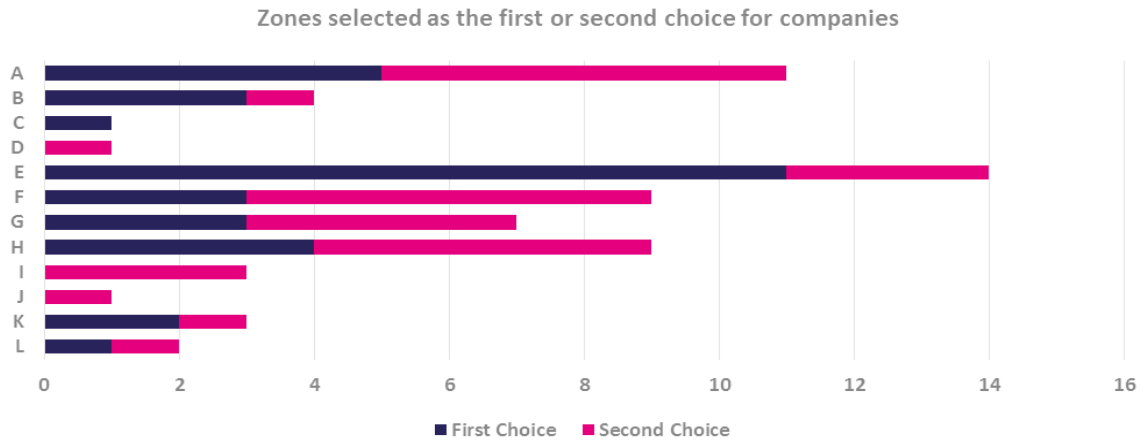


Figure 8

The survey also asked businesses to review what other factors influenced their choice of location. The detailed results are included at Appendix 4.1. Of highest importance to the businesses surveyed is proximity to major nodes of transport. In relation to the immediate environment in which they would prefer to be located, the strongest preference is for an R&D intensive environment that is within a city district. A city district with strong representation by 'general business' was of little interest.

Proximity to a hospital was quoted as important by almost 50% of respondents, to a university/research institute site just over 40%. For a smaller number of respondents a location on a hospital site was ranked as important – although there were a similar number that confirmed this would be something they would not be interested in. This suggests that provision of some space on a hospital campus will be important to provide.

When might this be required?

Companies indicating they could foresee further need for space were asked to indicate when they might have a requirement. Whilst not all of our respondents who indicated they had a need responded to this question, twenty companies stated that it was very likely that they would need accommodation in 0-2 years – a ranking of 8, 9 or 10 on a scale of 1 to 10. Figure 9 shows this and other detail on timing of perceived need.

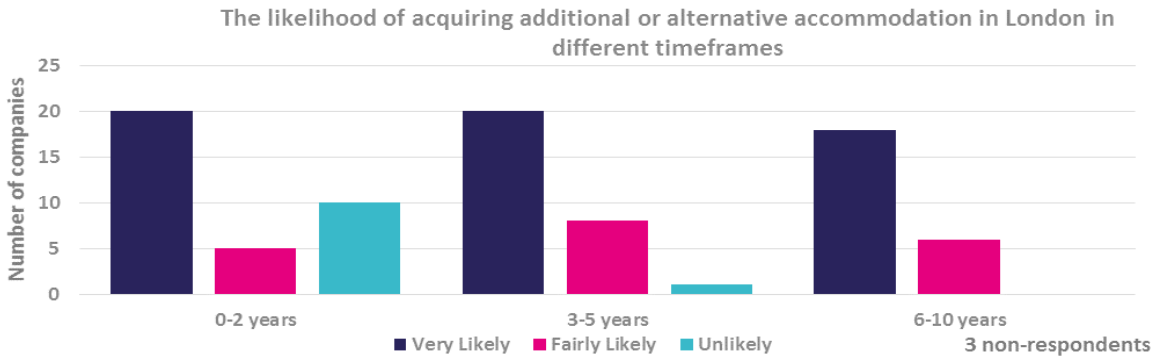


Figure 9

For the twenty businesses that confirmed a need for property within the next 0-2 years, the total amount of floor space required added up to 66,900 sq. ft. The distribution across the types of floor space and the numbers of companies in each category are shown on Figure 10 below.

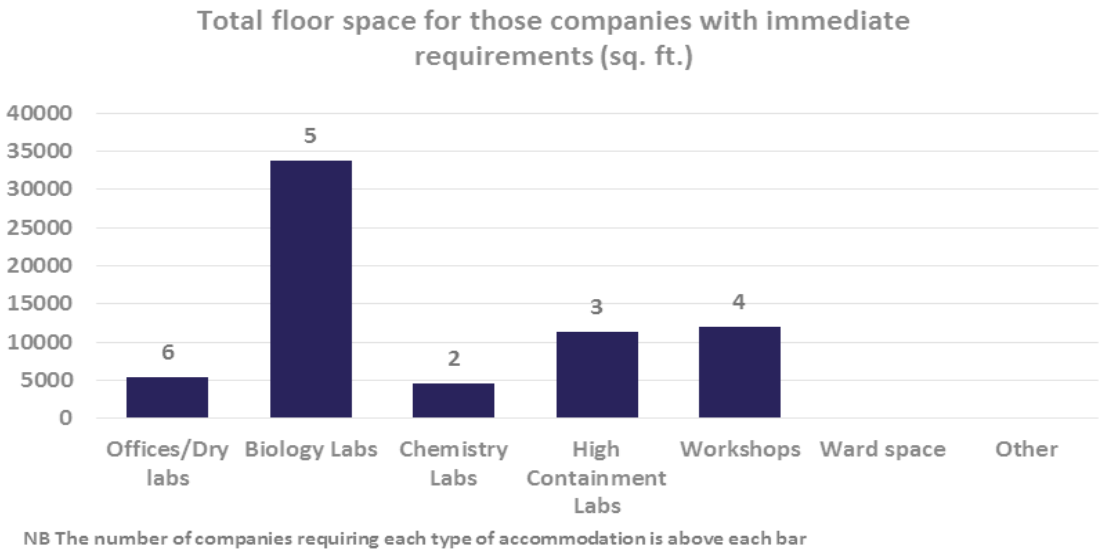


Figure 10

Detailed analysis of requirement nature, scale and timing is shown in tables in Appendix 4.2.

Where businesses with requirements are coming from

Only 2 of the requirements registered with us are from companies with no R&D representation in the UK today. Detail of where businesses with requirements undertake R&D today is detailed in Appendix 4.3. Some have R&D activity in more than one of the locations identified.

The nature of the physical environment

On the issue of desirability of operating in a supportive innovation centre type environment nineteen respondents said this would be attractive. This sort of environment is more management intensive and costly to deliver and involves businesses enjoying support services for which they typically pay (a) more rent and (b) additional sums for additional specific services. Such accommodation is more expensive for developers/landowners to deliver but is particularly helpful to those businesses that are small in scale at the location in question. For other businesses they have little interest in paying more rent to have the benefit of facilities and services they can deliver for themselves within their own suite, in their own way.

In relation to community space and amenity, with facilities that might include lounge space, hot desking opportunities and meeting rooms in London, out of the 81 companies who answered the survey, many said they would find these type of facilities very useful within an environment where they could meet and indeed potentially work alongside others involved in R&D. Figure 11 shows this in detail:

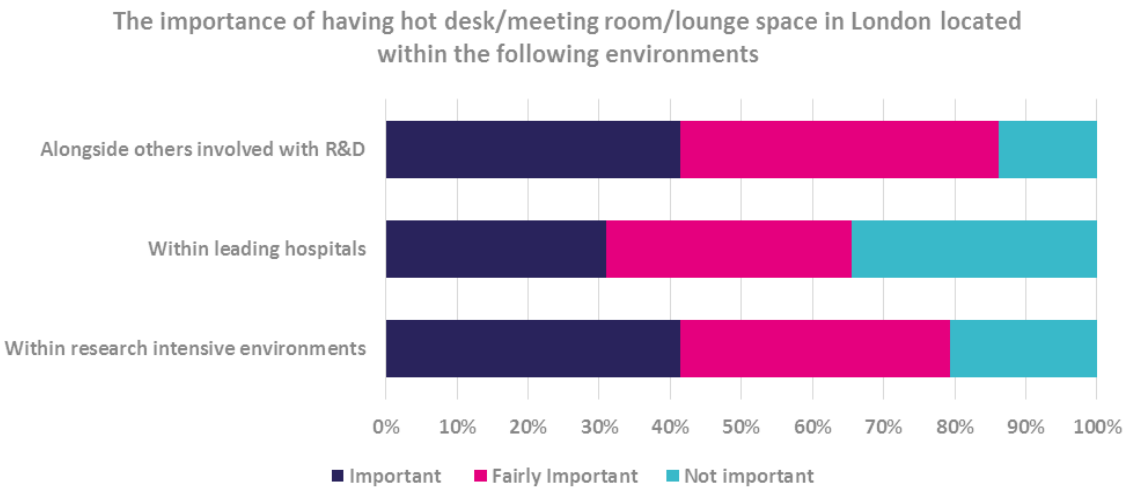


Figure 11

Industry interviews

Between December 2015 and March 2016 we interviewed a number of key stakeholders and businesses. The detail of findings in relation to business interviews can be found in Appendix 5.

Key points from the discussions that took place include the following:

SME businesses that are in London

- Spin-outs like being in and/or close to faculty
- There are opportunities to take space within hospitals (albeit limited)
- Access to staff and equipment is excellent
- Access to potential customers is excellent
- Address helps reputation
- Willing to look at second-hand low quality space
- Need to be in a place where there is a support network
- Once you start employing more people in London it becomes hard to leave
- Lack of space in London inhibits growth

Large multi-national businesses that are in London

- Provides excellent European Hub for travel anywhere around Europe
- Good location for accessing research/R&D activity across the Golden Triangle and beyond

SME businesses that have left London

- Simply had to leave London because at 40 staff could not find suitable property
- Do not believe they could have scaled up in London with the property and staff costs this would have involved
- Would like to attend networking events to stay in touch with the London community and if these could be held at relevant university and hospital campuses this would be beneficial

SME businesses that operate outside London

- Would like to see space they can access for a variety of different purposes in London without actually moving to the capital – touchdown space in good locations and places for hackathons, for example
- See that the Golden Triangle is where the focus of activity is and value cost effective access to the range of companies here

Large businesses that are outside London

- Very much want to be more open and to have more collaboration with others so actions to help facilitate this would be much appreciated
- Have small teams in London in key places for R&D and accessibility
- Want more engagement with the excellent academics and clinicians here
- Want to see London work more effectively as a whole and within the greater South-East/UK
- See London as 'full' and not clear that this is going to be resolved
- Funding of activity here in London is not a problem if the benefits can be seen
- Expect to help fund public/private partnerships

Experiences of businesses that have not been able to find what they want in London

Through our interview process we interrogated as best we could the issues around businesses failing to find what they needed in London. We wanted to understand perceptions and perceived consequences.

One expanding spinout business based in the capital found they outgrew an innovation centre they were in, took some additional space in another and then ultimately took further additional space elsewhere in the Golden Triangle. They have managed this in an acceptable fashion. They have looked at whether they could ultimately move everything outside London, but concluded that their preference would be to bring all their R&D back into London.

Another expanding spinout business advised that once they outgrew their innovation centre space they too took additional space in another and then moved the whole company to another location outside London yet in the Golden Triangle. They felt that once they were employing more than 50 people it became difficult to justify London rents for fitted laboratory space and felt that the savings in property costs by moving would be helpful. Importantly they could also see how the company could grow further with more confidence. They lost a few staff in the move but not many and have found that they have been able to recruit satisfactorily in Cambridge subsequently.

We have not been able to interview an identified business that would be new to London, really wanted to move in, but failed to find something suitable so had to go elsewhere. It seems that businesses will typically have a potential requirement for London but at the same time they are also looking at other locations, particularly around the Golden Triangle. Some take space in London and some go elsewhere and all appear to be happy with the outcome, regardless. Preferences are probably on a case by case basis and it would appear that Cambridge is a particularly strong location for such inward investment.

5 Supply

Summary

Supply of property for the sector is modest today. Further space that may be available to the sector is coming through.

There are a number of key stakeholders working hard to create more opportunities to attend to the evident demand. Each of the promoters have their own motivations. Their projects typically have their own unique selling points. However, there are potentially significant barriers to delivery in every instance. Where stakeholders are willing to invest time and resource to turn aspiration into reality, then concerted effort, typically involving a wider stakeholder group, and with some stakeholders making investment for the good of the sector, actual delivery may be realised.

Current supply of property promoted for R&D

Innovation Centres and incubation facilities

Innovation centres (please refer to our definition in section 2) are a key part of a research/R&D ecosystem and without them a cluster of R&D activity – in this instance healthcare related R&D – cannot flourish. Incubation can happen in a variety of locations and in a variety of property types. It is not the subject of this paper and is therefore not researched. Anecdotal evidence is that there appears to be a reasonable level of incubation activity across London and particularly within academic institutions. In places there are steps being taken to grow the activity and there may well be benefit in certain locations working to provide further dedicated incubation space into the future to support the number of businesses emerging in the sector. This will all add to demand for commercial floor space over time.

Between 2000 and 2007, when Development Agencies existed and the London Development Agency allocated money to subsidise the cost of setting up innovation centres focussed on scientific R&D in London, three centres were built. These are linked to the Royal Veterinary College, Imperial College London and Queen Mary University. A summary of these projects, their occupancy levels, nature of businesses occupying them and the experiences of those managing the space is covered in the previous section. Since 2007 there has been no further supply brought forward even though those managing the centres have typically been operating at circa 85% plus occupancy levels within 3 years of opening. For innovation centres 85% this level of occupancy is considered 'full' – there typically being 5 to 20% of total lettable floor space vacant at any point in time as occupiers come and go and indeed move around the building as they expand and contract.

Other property to serve the sector

Imperial College London has brought forward refurbishment of buildings on the southern side of their White City Campus, which together provide around 109,000 sq. ft. of accommodation. This includes space in Centre House and Forest House. Existing buildings have been transformed to accommodate bespoke biotech laboratories, digital and technical labs, co-working and warehouse space. Over 50 companies in a variety of sectors including, tech, digital, biotech and media ventures are based here.

In 2014 SOG Group acquired the former Sanofi pharmaceutical manufacturing site in Dagenham, now branded Londoneast-uk, where there is a range of specialist laboratory, manufacturing and office buildings together with development land. Whilst some of the buildings are currently occupied by the Elutec College of Design and Engineering and are in part used as film locations, there is in total some 360,000 sq. ft. of built space that can provide laboratory, office, GMP manufacturing and warehouse accommodation to Life Sciences businesses.

Across London there are locations where there are smaller scale and more limited amounts of space that are available for multi-occupancy by business. These include innovation space at Denmark Hill close to the South London and Maudsley Hospital, space within the Royal Free Hospital at Belsize Park and space within Guy's Hospital. There are also properties which are on the market of a larger scale, potentially offering owner occupation (and indeed other) options – such as the Francis Crick Institute premises at Potters Bar (just inside the M25). The latter may ultimately be offered for multi-occupation.

A map showing scale of property supply for multi-occupancy at key locations is shown in Figure 12.

Map Location	Name	Current Space (sq. ft.)
1	LBIC	20,402
2	White City Campus	108,873
3	Imperial Incubator	19,676
4	Queen Mary Bioincubator	39,000
5	Londoneast-uk	360,000
	Total	**547,951**

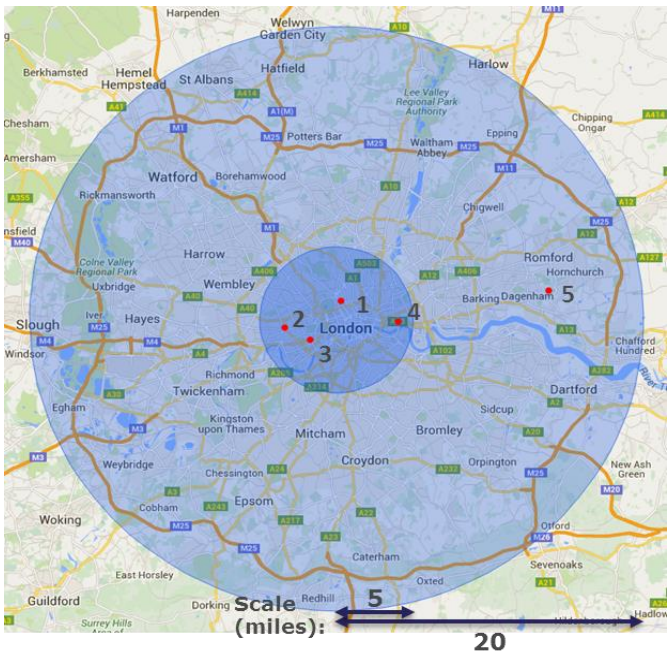


Figure 12

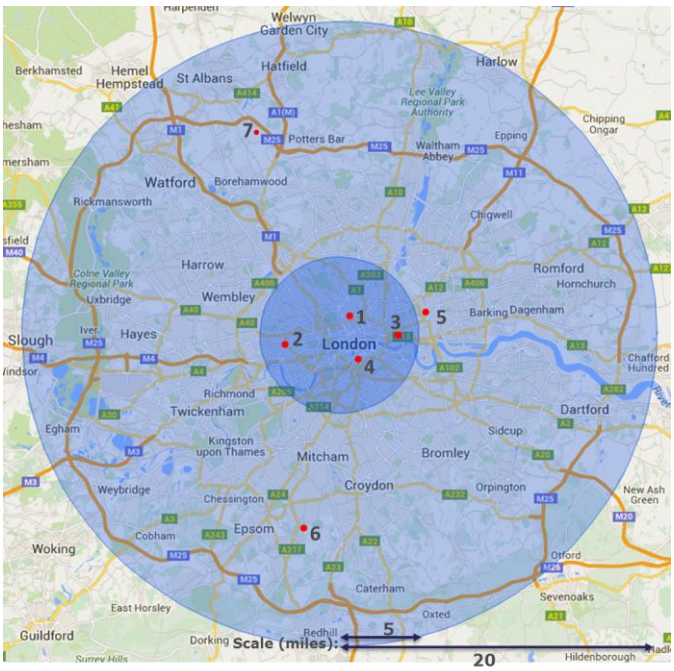
Additional potential supply to serve the sector

Over the whole of the last 20 years there have always been a number of locations being promoted as potentially suitable for scientific R&D activity. In practice only the projects listed above have delivered floor space. Some projects have been mooted but have not come to fruition. Previously these have included Cane Hill, Croydon and Innova Science Park, Enfield. More recently projects such as the London Science Park at Dartford and Royal Albert Dock have been promoted. Difficulties in delivery will relate to complexities, insurmountable barriers to success and changing agendas (often affected by occupational demand and land issues).

Other projects with relevant aspiration include the Royal Oak and Park Royal Development. All have a potential role to play and as the wider property offer for London emerges it will be important for them to secure good research body engagement and develop strong 'value add' propositions for business so that they can not only compete but also actually realise their ambition of attracting businesses in.

It is also for note that across London there are a variety of primary and secondary healthcare facilities and there will be opportunity across the whole spectrum for relatively small suites of space to be created for businesses that may wish to co-locate with activity to help advance healthcare delivery – through both product and service evolution. This study does not attempt to look across that wider market place to identify pockets of activity or potential activity, but its exclusion does not in any way suggest that the activity is any less valuable to the sector. Indeed it is a really important element of the whole ecosystem.

At the current point in time potential further supply targeted for this use is not inconsiderable. In this report we endeavour to schedule those projects that have laboratory space, are being built now or at a reasonably advanced stage of their planning and have relatively tangible/strong research association. These are identified below in Figure 13.



Location	Name	Planned Additional Space (sq. ft.) (2016-17)	Potential Additional Space (sq. ft.) (2018-20)
1	British Library Site		700,000
2	White City Campus	181,000	355,000 +
3	Royal London Hospital Whitechapel		50,000 +
4	Royal Street, St Thomas' Hospital		10,000 +
5	Olympicopolis/Pudding Mill		50,000 +
6	Royal Marsden/ ICR Sutton		900,000 +
7	Clare Hall		129,791
Total		**181,000**	**2,144,791**

Figure 13

Only the White City Campus has development committed at this point.

For each location shown in the table as potentially able to provide accommodation post 2018 we comment as follows:

British Library Site

This is a development site between the Francis Crick Institute and the British Library where site owners The British Library believe there is capacity to deliver significant floor space. Some will be for the library itself and the Turing Institute. Whether any of the property ultimately developed on this site may be available to those undertaking healthcare related commercial R&D activity will very much depend on how any selected development partner sees commercial advantage in working with key stakeholders in the sector and has ambition to deliver space that the sector may use.

Given that this site is located adjacent to the Francis Crick Institute, where there will be world leading, relevant research and it is right in the most popular zone in London for the community we are seeking to provide accommodation for, the British Library site is of particular importance.

In terms of timing a planning application for development is expected to be submitted this calendar year, with development progressed shortly after consent is secured.

White City Campus

A new Research and Translation Hub building is under construction at Imperial College London's White City Campus. This is being promoted for R&D intensive uses that may have synergy with Imperial College London. Whilst there are 5 floors that are being delivered with wet laboratory capability and marketing activity is underway to target occupiers that may use space for this purpose, not all of this laboratory capable space will be fitted out in this way at the outset. How much accommodation is taken by businesses working in healthcare R&D remains to be seen.

Imperial College London is just embarking on a master planning exercise to plan for further development beyond the Research and Translation Hub building. At this point there is no time frame or indeed commitment to deliver further space to the sector – even though the Vision for the campus clearly involves it - alongside related faculty that are expected to move out here and new research institutes that are likely to be established here too.

Whitechapel, land adjoining the Royal London Hospital

All around the new Royal London Hospital refurbishment and wholesale redevelopment is being planned. Already located close by is QMB's Innovation Centre. Queen Mary University, along with Barts Health NHS Trust, have ambition to see healthcare related research and commercial R&D activity provided for alongside other uses, such proximity, and indeed linked to opportunity in the hospital, provides very good additionality to this proposition.

At the current point in time land ownership, partnership and master planning issues need to be worked through prior to planning applications being submitted. In the meantime it may be possible to look at bringing forward, for research/R&D purposes, parts of the new hospital that are already built but not yet fitted out for research/R&D purposes.

Guy's and St Thomas' Charity land, Royal Street

Guy's and St Thomas' Charity own approximately 5 acres of land just to the south of St Thomas' Hospital. The land is within an area that is to undergo significant regeneration and the landholding is being planned for wholesale redevelopment. The Charity is in dialogue with Guy's and St Thomas' NHS Foundation Trust and King's Health Partners as to how its property holdings may best be utilised for mutual benefit, whilst pursuing some short term plans to refurbish part of one of the existing buildings on the site for use as serviced office space, principally open plan. Expectation is that at least some of the individuals that would use such

space will be involved with healthcare provision, possibly developing new products and services. Further provision of accommodation for healthcare R&D may be made in due course as plans for the site evolve.

Olympicopolis

For many years UCL have been working with the London Legacy Development Corporation on the way in which the College may relocate some of its faculty to Stratford, alongside other research, education and commercial R&D activity. There is a vision for part of the 560 acre Queen Elizabeth Olympic Park area to create Olympicopolis – involving not just UCL but also the University of the Arts London, the London College of Fashion, Sadler's Wells and a new V&A museum.

Whilst the location is still at the master planning stage, the development of Crossrail will increase the accessibility of Stratford to other key areas of London including:

- Paddington 19 minutes
- Whitechapel 5 minutes
- Tottenham Court Road 8 minutes

Through HS1 trains already run at 15 minute intervals to and from King's Cross to Stratford International Station through the main part of the working day, with journey times of 6 minutes. Further, the former Press and Broadcast Centres, now known as Here East and quite close to where Olympicopolis is to be developed, have been transformed into a digital campus with occupiers that include the University of Loughborough, Hackney Community Centre and BT Sport. Close to the Olympicopolis site there is also development opportunity at the Pudding Mill Site although at this point it is unclear whether they will be an element of research/commercial R&D that will be developed in this location.

Sutton, land adjoining the Institute of Cancer Research

The Institute of Cancer Research has ambition to deliver extended research and related commercial R&D activity on the site where it is located in Belmont, Sutton - alongside the Royal Marsden hospital and what was previously Sutton General Hospital.

Land upon which such development would take place is principally owned and controlled by the Royal Marsden and Epsom and St Helier NHS Trusts, both of whom are interested and are engaging over the creation of a development framework/master plan. A million sq. ft. of commercial R&D may ultimately be possible, subject to planning consent and the landowners agreeing to such use being both allocated and developed, and satisfactory financial terms being agreed. From the perspective of the Institute of Cancer Research, they have some further development land within their own control, equating to in the order of 5 acres, but intend to retain this for their own expansion.

Opportunities for businesses undertaking R&D to move to the site are likely to be limited to remodelling of any existing buildings in the short term. No reliable timeline programme can yet be set for when new development may take place.

NHS Estate

NHS England and the hospital trusts across London have been working to identify land that is surplus to requirements for the future, for inclusion in the register of public sector land that can be disposed of. NHS England believe that Trusts will want to realise optimum receipts to counteract current financial difficulties that exist within the NHS and the prospect of commercial R&D allocation being promoted on land/buildings that are to be sold is not very great – where this use may well deliver lower receipts in comparison with others.

However, the trusts are currently putting together business plans that will be introduced later this year. NHS England has encouraged trusts to consider whether there is opportunity within estate that is to be retained for businesses that might come into the hospital environment to undertake commercial R&D activity – thus enabling income to be generated and creation of activity that may help with recruitment and retention of excellent and progressive staff.

As part of this study Creative Places has visited the Barts, Guy's and the Royal Free hospitals and started to explore the issues that potentially surround such activity. What we have learnt is as follows:

1. Securing economic fit-out of space for businesses is difficult in a hospital developed through a PFI process. Annual costs of such real estate are very high. However, it does appear that hospital management teams are keen to explore opportunities and combining research and commercial R&D propositions may help create a case for such investment. The Royal London Hospital at Whitechapel provides an example.
2. Finding additional space for business appears difficult, but where research-intensive activity exists within a hospital there are very strong forces for commercial R&D growth. Opportunities in these environments need to be better understood. We see an example of this activity at the Royal Free Hospital in Hampstead, where there is tangible demand for more space to be created for existing occupiers in addition to potential inward movers.
3. Intensification of use creates opportunity and relocations/redevelopment is being considered and progressed by forward thinking Trusts that have research-intensive universities intensively involved with their activity. Guy's Hospital by London Bridge is an example.

In all of the above, steps to create opportunity in such environments need to be encouraged and supported.

University and Research Institute Property

A good number of businesses involved with healthcare R&D activity have historically secured floor space within research intensive environments controlled by universities and research institutes. We believe this trend will continue and indeed through dialogue with the academic community through this study there are locations where delivery of such space and activity is a growing aspiration.

Where innovation centres a delivered close to research they are likely to be fed with occupiers and ideally they will help companies show and encourage them to move on from such space within appropriate timeframes.

Corporate space that is available for businesses to move into

The Open Innovation agenda has meant that large corporates are now keen to create opportunity within their locations for smaller businesses. Opportunities within central London are not yet very apparent but will inevitably come forward. GE Healthcare has made such space available at its campus in Amersham and GSK has done so at Stevenage. Johnson and Johnson have been progressing the acquisition of space elsewhere around the world to introduce SMEs into, although typically with public sector funding support.

Golden Triangle Provision

As supply vs demand in London is considered our survey indicates that a number of businesses may be willing to look at other locations, particularly elsewhere in the Golden Triangle. Key locations such as Cambridge and Oxford and projects such as the Stevenage BioCatalyst and BioPark at Welwyn are finding that demand exceeds supply. However, they require careful monitoring as they are changing to ensure that there is not excess supply. Of particular note, AstraZeneca have acquired significant laboratory space in the Cambridge market whilst their new facilities are built at Cambridge Biomedical Campus. They will potentially vacate most of the space in 2018, which will increase laboratory supply in that market at the time.

6 Comparator Cities

For the purposes of this study we visited New York, Boston, Paris and Berlin in order to compare the apparent picture in terms of supply and demand and to identify lessons in how real estate is being delivered. Our visits involved visiting key projects and liaising with relevant stakeholders.

Clearly, due to historical and geographical variances it is challenging to draw like for like comparisons between London and the other comparator cities. The value of analysing these cities is more in identifying the key trends that are evident from each. We set out below the key lessons followed by consideration of London's relative strengths. More detail on each of the comparator cities is provided in Appendix 6, where we provide information on the nature and scale of provision at each.

Key Lessons

Open Innovation driving demand levels at city level

It was apparent from Boston in particular that a strategic cluster that offers a range of co-located activity can experience rapid growth. Businesses are moving away from individual secure research hubs and choosing to re-locate to the city. New York was very significantly over-shadowed by Boston – in terms of total demand levels, supply of property and occupancy levels of real estate delivered to the sector. Care is therefore required in considering London's position nationally, in relation to other 'Open Innovation Hotspots'.

We suggest that because London is part of the Golden Triangle cluster and has a stronger research base its limitations are not as great as may exist in New York - where there are some pockets of research excellence not too far away but one has to travel greater distances to get to other concentrations of commercial R&D.

Importance of accessibility/co-location at local level

We see projects in good central locations, alongside the research base and/or clinical activity, performing very well. Accessibility for commuting staff and proximity to research centres were both important. In Berlin this was evident at Berlinbiotechpark, adjacent to Jungfernheide metro station and less than ten minutes from Berlin Tegel Airport. In New York, by contrast, the BioBAT facility was attracting only modest interest from businesses and we believe that this has been as a consequence of distance from both the research base and transport hubs.

In this respect London has delivered some well-located property at Imperial College London's South Kensington Campus, at the Royal Veterinary College's campus in Camden and alongside the Queen Mary University's Blizzard Institute in Whitechapel. Our research suggests that more could potentially be done in terms of delivering space near to other leading universities/research institutes and at the city's leading research-intensive hospitals.

Importance of a range of property

There is evidence of other cities providing a greater range of property than London, in terms of suite sizes and property types. Both Boston and New York have delivered real estate for very early stage businesses, providing a supportive environment to companies needing to rent a bench or desk only. Larger suites have been delivered by Alexandria Real Estate Equities at the Alexandria Life Sciences Center in New York.

London's supply is very much focussed on innovation centre wet laboratory/office space, with relatively little early stage (pre-innovation centre) or grow on space (post-innovation centre). There is also little visibility on either communal space to serve the healthcare related R&D sector or large scale suites of space for large scale corporates in locations alongside other relevant activity, delivered by landlords passionate about growing the sector.

Importance of re-purposing space as well as delivering new

In all locations delivering accommodation for the sector is expensive, particularly for laboratory space. In a number of locations existing space had been refurbished to deliver space more cost effectively. Lab Central in Boston, Harlem Biospace in New York and Berlinbiotechpark in Berlin were good examples of this.

Our survey has shown that not all businesses need new, top quality specification premises and indeed that there is demand for accommodation that exists here and now. The innovation centres in London generally offer very good quality space, although there are some minor variants to this. In a capital city where prices are high more needs to be done to deliver refurbished space – at times of lesser specification. There is an added benefit that through refurbishment space can typically be delivered very much more quickly than through new development.

Importance of multi-stakeholder delivery

When one looks in the comparator cities selected for this study it is evident that there has at times been stronger engagement by private sector property investors specialising in the sector, and also by large-scale corporates in the sector, delivering opportunity for others. Biomed Realty and Alexandria Real Estate in the US are good examples – as is the involvement of J&J and others at LabCentral, and Bayer with the Berlin CoLaborator. The public sector stakeholders (Universities, national and regional government) in these locations have worked to underpin the development of real estate and foster entrepreneurship to help de-risk and leverage investment by the private sector, through limited subsidy. Otherwise private sector investments would not have been made.

London needs to work harder to help provide better opportunity for these organisations to invest – and particularly when we know that a number of them have London on their requirements list.

Cost is a limiting factor

In many capital cities there are inevitably concerns over the ability of those undertaking commercial R&D activity to pay market rents. In major cities where demand for a range of property types is very considerable and property costs are consequently very high. Thus it is often difficult to deliver property for the commercial R&D sector, other than for good covenant tenants willing to sign long leases. This was evident in Paris and New York particularly. As a contrast, when Boston started to deliver property to the sector land prices were a lot lower than they are today, in real terms, which made it easier. In France there is cheaper property that has helped establish clusters in Alsace and Lyon, for example.

Stakeholders looking to grow activity in London must recognise that property cost will be a limiting factor, but at the same time, it has so many positive aspects to its offer and so many benefits, to so many, that endeavours to enable it to deliver more should be pursued.

In further considering the strengths that London has by comparison to New York, Paris and Berlin we would emphasise the following:

1. London has a far stronger research base. Five of the world's top 25 universities/research institutes in the fields of Life Sciences and medicine are located within approximately 50 miles of London – not even Boston or San Francisco in the US can match this.

2. The unique nature of the NHS in terms of healthcare provision and patient records presents opportunities in the UK and London for identifying and delivering healthcare innovation that international comparators struggle to offer.

3. London sits within the leading cluster for commercial R&D activity in Europe - if a 60-mile diameter is taken for what may reasonably be considered to be a functional cluster – it being located within the UK's Golden Triangle. Within the UK's Golden Triangle, the transportation links between Cambridge and Oxford are so poor, by private car or public transport, London effectively sits at its centre in terms of accessibility around the Triangle.

4. The UK is Europe's number 1 location for Foreign Direct Investment and within the UK London is the only location served by four international airports, including those offering long haul flights around the whole of Europe/the world. US businesses are the strongest investors in healthcare related R&D in the world. They generally fly into Heathrow when they come to the UK and typically like to stay in world-class accommodation with world-class amenities relatively close to the airport.

7 What is needed

Gaps in Supply versus Demand

What we can see from this study is that all innovation centres in London focussed on delivering space for scientific R&D are effectively fully occupied and have been so for a number of years. They are at capacity and there are needs that are not being satisfied by current supply – although there is now some space firmly in the pipeline at both White City and Londoneast-uk.

Analysing demand at a detailed level it is evident that developments in the pipeline delivering additional space for occupation in the current calendar year have the potential to satisfy some of the unmet demand, but there are many businesses that are seeking property of a different nature, or in different locations, to these property offerings.

Our assessment is that if we are to deliver what businesses are looking for there is a need to consider additional provision in each of the following categories:

Relatively small suites of accommodation close to the research base

Spin-outs emerging from the research space typically want to remain close to their originating faculty and at times are not finding this space readily available. There is also evidence of multi-national companies wanting to work closely with the research base who would find this type of space appealing.

Innovation Centre space

Demand is clearly exceeding supply for current space. There is additional Innovation Centre delivery in the pipeline at White City and if Imperial Innovations retain control over a reasonable amount of floor space at South Kensington then this will help ease the demand/supply mismatch, but will not be sufficient alone.

Grow on Space

As businesses scale up in London, some appear willing to leave London but others are telling us they would prefer to stay. The additional capacity being provided at White City and Dagenham will suit some, but we would expect there to be a number of businesses that would want to remain in London in other locations or other types of accommodation. Of the 20 occupiers who stated they had a high likelihood of acquiring space in London in the next 2 years, 14 stated that this was for between 5-25 members of staff.

The space these occupiers need covers a variety of accommodation types, with a number stating a need to for containment biology labs and workshops.

We feel this shows a pressing need for grow on space with laboratory and write up capability of circa 1,500 – 5,000 sq. ft.

Space within/very close to hospitals

We identified a clear need from some respondents that is currently unattended to and for which provision is required

Lounge/community space with meeting rooms

Businesses that are not represented in London have identified a desire to get closer to the London healthcare R&D community and indeed we believe that there will be organisations already in London that would find these facilities beneficial.

Our primary research provided a strong indication that large multi-national businesses want to be closer to the London research and R&D community. The above range of facilities could provide opportunity for them to do so.

What we learn from this is that a variety of property types and locations need to be delivered. There are a good number of opportunities emerging. Not all of the projects referred to in this report will necessarily deliver space to the sector, and there will be a plethora of further opportunities not identified in it that will create additional opportunity. A range of offerings in a range of locations will be healthy for the sector, with scaling up of activity at some key nodes that become recognised as particular hot spots used extensively by the sector.

If a number of the property supply initiatives being worked on can come to fruition then there is prospect of delivering the range of accommodation types in the range of locations that businesses seek. If not, within a relatively short time frame, alternatives that ultimately can be delivered need to be found. We would advise that refurbishment opportunities also need to be particularly identified – they are capable of delivering property sooner, at lower cost of delivery and at a lower cost of occupation.

8 Financial aspects of delivery

Summary

- **When undertaking financial development appraisals for the types of space required for healthcare R&D, a combination of relatively high cost and relatively low capital values for wet laboratory accommodation and a range of occupiers the open market will not provide the type of accommodation required**
- **Delivery of such space therefore needs to involve one or more stakeholders providing either a secure income stream for an investor/developer and/or an injection of capital is required – motivated by non-financial agendas.**
- **There are a number of structures and funding sources which we could use to remedy this (these are outlined in a table below)**
- **There is also the potential to use the planning system to help facilitate development of space for this sector**

Viability

Analysing the businesses that have taken part in this study, the nature of the properties they seek and the way in which they wish to procure the accommodation there are some fundamental issues over delivery that need to be understood as we look to consider how supply might be brought forward to attend to evident need.

Nature of occupier/covenant

Of the 39 respondents who state they had a requirement in for space in London, 17 had 5 or fewer employees. We infer from this that the covenant strength and risk profile of these companies is likely to be weak and high respectively. This is not uncommon for this industry.

Nature of property required

The requirements are generally a mix of office and laboratory space, with over 20 requirements for some kind of biology or chemistry laboratory and most seeking relatively small amounts of floor space – sub-10,000 sq. ft.

Nature of property tenure required

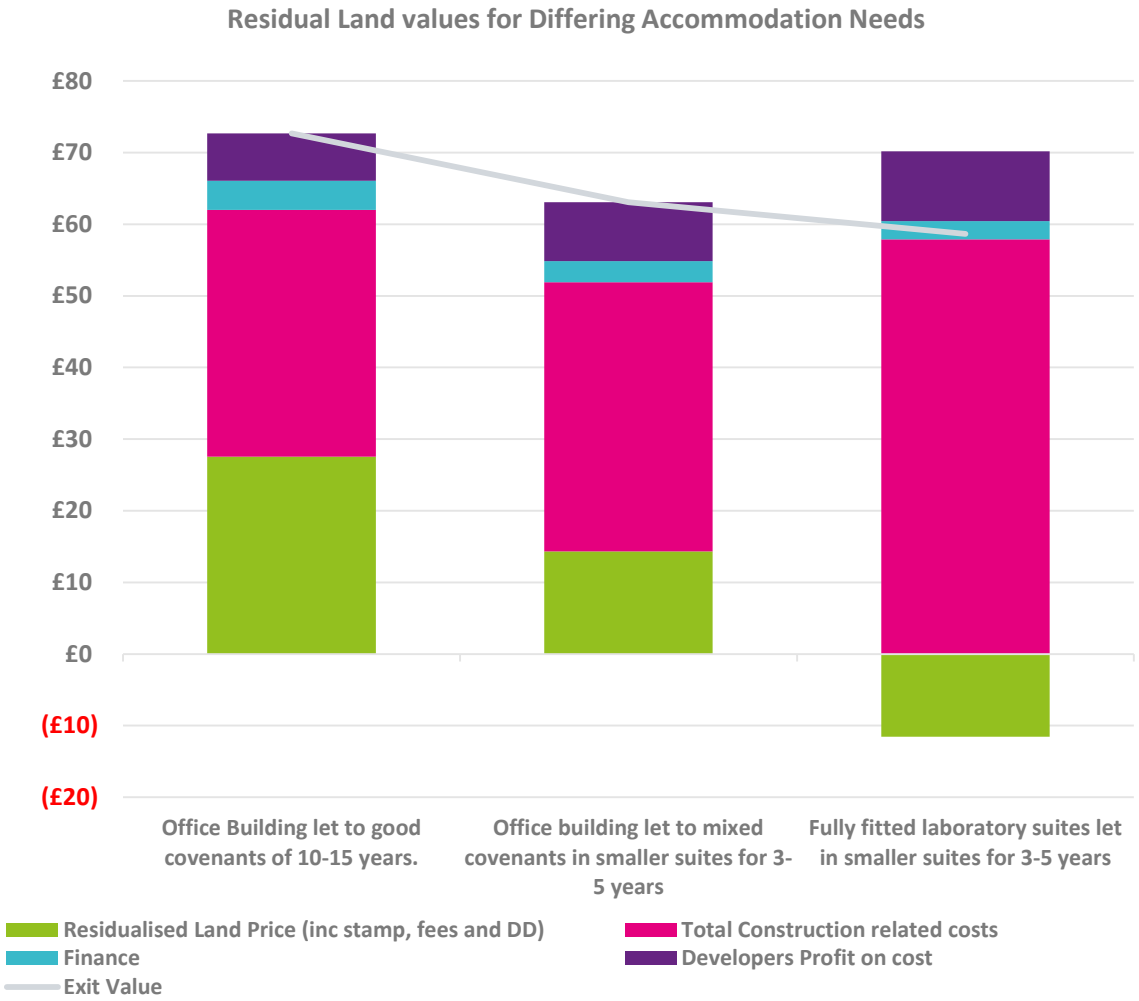
86% of respondents to our survey advised that they are not prepared to sign a lease of over 10 years. We generally expect start-ups or small businesses involved with Life Sciences R&D to prefer shorter leases, which will fit in with R&D business plans and funding rounds. Typically lease terms of less than 3 years' commitment are sought by SMEs and indeed larger companies if the size of suite required is not that large.

Viability of delivering to this audience

The combination of factors described above leads to viability issues that can be illustrated by running residual appraisals on a fictitious suite of accommodation totalling 100,000 sq. ft. gross floor area – making various 'typical' assumptions. All other assumptions have been kept constant. Full appraisals can be found in Appendix 7.

Scenario	1	2	3	Comments
	Office Building let to good covenants of 10-15 years	Office building let to mixed covenants in smaller suites for 3-5 years	Fully fitted laboratory suites let in smaller suites for 3-5 years	
Area (sq. ft.)				
Gross	100,000	100,000	100,000	Gross area which will include common corridors, stairs, lifts atria and plant rooms.
Net	82,000	75,000	75,000	Smaller suites for scenarios 2/3 will generally mean larger communal areas and more partitioning, which in turn results in a less profitable gross/net ratio.
Gross/Net Ratio	82%	75%	75%	
Value				
Rent per sq. ft.	£50	£55	£60	Larger floorplates to a good covenant will result in a discounted rental value than for smaller suites. There is usually a small premium for laboratory space.
Yield	5%	6%	7%	Capitalisation yield/expected return increases with risk. Laboratories present higher perceived high risk as they appeal to a more limited market than office space. Weaker covenants and shorter leases are also higher risk.
Costs				
Construction cost per sq. ft.	£275	£300	£450	Construction is more expensive for smaller suites and is much higher for fully fitted laboratories. We are assuming tenants in scenario 2/3 conduct less of their own fit out.
Contingency %	5%	5%	10%	Contingency is higher for scenario 3 as developers generally allow more margin for laboratory costings than offices.
Professional fees %	13%	14%	15%	Professional fees tend to be higher for more specialised space due to increased plant requirements.
Letting (Agents and legals) %	20%	20%	15%	Letting fees tend to be lower for laboratory space because more requirements come through word of mouth.
Developers Profit on cost				
% Profit on cost	10%	15%	20%	Developers profit is higher for scenario 3 as specialised space will be perceived as higher risk.

These appraisals provide the following residual land values and developers profits:



	Office Building let to good covenants of 10-15 years.	Office building let to mixed covenants in smaller suites for 3-5 years	Fully fitted laboratory suites let in smaller suites for 3-5 years
Exit Value	£73M	£63M	£59M
Total Construction related costs	£34M	£38M	£58M
Finance	£4M	£3M	£3M
Developers Profit on cost	£7M	£8M	£10M
Residualised Land Price (inc. stamp, fees and DD)	£28M	£14M	-£12M

What this illustration demonstrates is that the open market will not provide a number of accommodation types required by a number of the companies working in the sector. The risk profile of tenants and the increased build costs of laboratories result in lower (indeed negative) land values for these use types, which in turn means that any developer bidding for development property will be outbid by developers with plans for a more typical office scheme. The cost of the building and land could even exceed the value of the end product, as shown.

This suggests that without gap funding of some kind, the open market will not provide this space. This is what typically has happened in the UK - with all new small site laboratory buildings having required some level of funding from a party with a vested interest.

Potentially sustainable solutions to deliver floor space into the future

There are various potential ways in which development of the type of non-viable required space might be delivered, to overcome the residual land price issue described above. All of these involve one or more stakeholders providing either a more secure income stream for an investor/developer or an injection of capital where financial return is not the key driver.

In each case we identify a potential solution, where funds might be sourced, some advantages and disadvantages and some examples of where this solution has been used to deliver real estate. It will also be possible to combine some of these solutions.

Potential solution	Potential Source of Funds	Pros	Cons	Examples
Public sector grant funding of whole cost	EU - ERDF UKG – BIS, Research Councils LEP - RGF	Funding de-risks the development Development can focus on job creation and supporting early stage businesses	Increasingly limited funding available	Babraham Research Campus Edinburgh Bioquarter
Public sector grant funding of part cost	As above	Gap funding reduces risk and enables leverage of private sector funding	Increasingly limited funding available Grant conditions may restrict appeal to private sector	Citylabs Manchester Londoneast-uk
Institution taking over-riding lease – where the lease will typically be 20 plus years	Universities Research Council Local Authority	Institution with vested interest in success leverages covenant strength Potential for institution to generate income exceeding cost	Institution takes on risk. Lease commitment appears on balance sheet.	Enterprise Centre (Reading University) The Technopole Building, Edinburgh Technopole

Potential Solution	Potential Source of Funds	Pros	Cons	Examples
Institution creating lease and leaseback with annuity fund – typically with a lease term greater than 30 years	Universities Local Councils	Institution leverages covenant, spreading cost over 30-40 year period No initial capital requirement At expiry of overriding lease institution owns asset.	Institution takes on risk of income exceeding rent paid out. Long term financial commitment. Lease commitment appears on balance sheet.	Imperial College Research & Translational Hub
Re-use of existing redundant buildings	University NHS Trust	Lower capital cost of delivery improves viability	Existing specification and layout may compromise offer Best value requirements may mean sites have to be used for other higher value uses	Royal Street (GSTC) Imperial Incubator, South Kensington
Private sector R&D company investment – where global R&D businesses invest to support delivery of space	Private sector R&D businesses.	Potentially significant sources of funding Increasing business interest to enable open innovation	May involve only one business, limiting funds and potential appeal May generate only limited capital so requiring a blend with other solutions	Lab Central, Boston (US) J Labs Stevenage Bioscience Catalyst (GSK)
Planning constraints – requiring part of a development to be made available to required user base	Private sector developer	No financial commitment required by public sector. Enables a limited amount of space to come forward for target group	May impact on viability to the extent that development isn't delivered. May be difficult within existing planning frameworks.	UK affordable housing Boston (US) zoning requirement in East Cambridge

In relation to the final suggested solution above, we have had some initial discussions with the GLA to consider potential ways in which the town planning regime in London might help bring forward suitable space.

The London Plan and Local Authority Plans can help facilitate delivery and they already contain provisions that can be used to help secure accommodation for the sector. Whilst there may be further tools that could be evolved to assist the process we believe that the current range have the potential to deliver what could be very helpful – it is how these tools are deployed at local level to make a positive contribution that is potentially most helpful to work on.

Opportunities exist in the following areas:

- Introduction of an allocation for Healthcare R&D space under Section 106 Planning Agreements.
- Working towards planning policies that favour Healthcare R&D in certain situations – where need can be demonstrated and National Planning Guidance suggests that such needs must be attended to.
- Local Development Orders to help streamline the planning process for R&D space if a Local Authority were willing to put one in place for this purpose. They may not though overcome viability issues.
- There may be an opportunity to add R&D space to Community Infrastructure Levy (CIL) schedules thus generating revenue to help facilitate its development.
- There are a number of heritage assets in London which have sufficient development constraints to make development unviable for standard office uses but which may be acceptable for Life Sciences R&D use. If a creative approach is taken to some of these assets there may be an opportunity to re-invigorate them through R&D use.

A number of consequences flow from deploying these mechanisms to help grow commercial healthcare R&D activity in London in the key locations important for the healthcare sector. Difficulties in implementation are inevitable but without commitment at local level to deliver to strategic objectives important opportunities to grow healthcare R&D activity will be missed.

It is for note that for wet laboratory accommodation to be delivered, involving benches, sinks, fume cupboards, use of gases, etc. buildings need to be planned for this activity, or have capacity for adaption. Some activities require 'extract to air' plant that will mean that storey heights need to be a little greater, plant space and plant ducts adequately provided for, and chimneys, gas delivery areas, etc. built into the facilities/loading areas. Not all wet laboratory accommodation of this nature needs to be in properties that look different to conventional office buildings. It will be important for those involved with planning property allocations to form a view on potential needs and what may be appropriate to plan for. A lot of the businesses in the sector will not require specialist buildings at all, but at the same time Local Authorities may need to be a little more explicit about provision of laboratory accommodation and the nature envisaged.

It is also for note that a lot of the businesses in the sector only seek relatively small suites of floor space. As Local Authorities think creatively about planning for the sector, use of specific provisions relating to suite sizes as well as laboratories may be worth considering too.

As the London Plan is reviewed policy approach may be informed by this study and key stakeholders forming a view on an appropriate vision for the sector. Obviously the critical issue is how approaches work at local level when implementation is considered, so key

boroughs and key stakeholder groups, such as London Borough of Camden's Knowledge Quarter, need to be closely involved in such consideration. There will be Opportunity Areas, HS2 and Crossrail related locations to be thought about, and evolution of development plans associated with specific Area Plans, such as that for the Euston area.

9 Recommendations

London has developed good quality space where businesses want to be and there is evidence that there is demand for more space. Whilst the US is the strongest location for healthcare related commercial R&D activity in the world large scale multi-nationals will tend to want R&D activity in each continent so even US based companies will tend to seek representation here. Within Europe the UK's Golden Triangle is the strongest cluster and the Open Innovation agenda being pursued by businesses developing their products and services today means that this location is only likely to become stronger, for both SME and large scale multi-national activity.

This study has identified tangible demand. It will show less demand than exists and that can be created by key stakeholders in London working creatively and progressively to build it. We recommend that plans are put in hand to help deliver more space than this survey suggests is required, as we have seen good evidence of desire to build demand.

With healthcare R&D growing very strongly, globally, with EU programmes to encourage further activity and the UK Government needing to attract the best clinicians to attend to the NHS challenges there appears to be good reason to attend to what industry is telling us it wants. Well informed infrastructure investment can help improve UK productivity and drive the economy in areas the UK is naturally very strong in – where growth can be anticipated into the future.

Demand is for a variety of accommodation types and so even with Imperial College London's White City Campus being delivered, at relatively significant scale, and laboratory space at Londoneast-uk being made available, there is a need to do more. The quality of accommodation required ranges significantly, from businesses willing and able to pay relatively high property costs for good quality space to businesses keen to keep overheads low and quite content to accept lower quality accommodation. It is important to offer a range of property at a range of costs.

Public sector grant and loan money will be an important ingredient in the solution. There is very significant opportunity to leverage private sector money (of which there is currently significant intent to spend from well financed specialist property investors).

Actions to address unsatisfied demand

We set out below six principal recommendations for early attention over the next six months, directly informed by what we have learnt through this study. This is purposely kept as a short list. The intention is to ensure that where time is of the essence in taking action on one or two key projects that can materially help the sector enjoy a step change at an early date, that there can be very clear focus for endeavour. There is also the intention of setting out some

actions that can help build a greater pipeline, ensure that its delivery is helped as much as it reasonably ought to be, and that stronger demand for projects into the future will exist – thus also helping to ensure that activity in the sector grows in London and there is a stronger business case to deliver further projects where building design and fit-out decisions are not so pressing.

1. Support to ICL at White City

Imperial College London have designed their latest development so that businesses that need wet laboratories to undertake healthcare related R&D can be accommodated. However, costs of fitting out the space for this use will be high and healthcare related R&D is only one of a number of sectors that Imperial College London is looking to attend to. Other sectors' companies will not tend to need such expensive fit out and the College may well find it easier and indeed financially more attractive to let space to office users. If as the development lets up wet laboratories are not created or fitted out to the level they could be, opportunities, at least in the short to medium term, might be lost. Further, rather than soak up demand that will not then be available for other projects elsewhere, we believe that take-up could actually increase demand for other locations – as the capital grows its activity in the sector and businesses' Open Innovation agenda gives them more reason to come. Such take up would also help give others more confidence that if you build floor space for the sector there really is justification in so doing.

Added value at this location, from a business perspective, can be influenced by many organisations beyond those that are linked to Imperial. Adding such value reduces industry's concern over 'silo' mentality in the capital, which is helpful too.

2. Support an agenda that includes Life Sciences for the British Library Site at King's Cross

This is a development site right alongside the new Francis Crick Institute and could provide a once only opportunity to secure accommodation in a 100% prime location for the sector, able to support a wide variety of healthcare related R&D.

Whilst the British Library is clearly interested in innovation and the Government is keen to help, a third party will ultimately be selected to develop the site and the form of development/letting objectives/management regime is as yet unknown. We believe that there may be action over the next six months that can affect the outcome, although care will be required. Stakeholders in the sector need to think creatively over how engagement may help. Specifically, there is likely to be merit in helping promoters and development controllers see the need, understand how best to manage it, and indeed exploit it. There may be opportunities for accommodation to serve the healthcare related R&D community that need to be further explored pro-actively.

Commitments to support finding tenants and demonstrating need will be at the simplest end of the spectrum for sector stakeholders. Working with the site owners, prospective developers, businesses, the Local Authority and the GLA to find the best way forward that is fair and reasonable for all is more difficult to plot a course for. A select group of impassioned sector representatives to help research this better and manage the process is probably helpful. Ideally win-win solutions can be found, possibly involving development of more floor space than may otherwise be possible because of the benefits that flow from building research/commercial R&D interface and activity in this location.

3. Seek to utilise existing research and hospital space more fully for R&D activity

Universities, research institutes and hospitals need to work very hard in looking at how existing estate that is to be retained into the future may be used to create opportunities for refurbishment/development.

London could play a much stronger role in the Golden Triangle for healthcare related R&D if it has a wider range of property available, as discussed in Section 7 of this report. Success here could have very significant benefits around adoption of technologies and enhanced success of spin-out businesses. It could enable greater levels of and more effective collaboration. It also helps deliver important messages to businesses about intent of the clinical and research communities in London. Consideration should be given to key hospital and research locations, and to places where there may be long term ambition yet ability to deliver short term space that starts to 'put the place on the map' now for the sector. Examples might be at Euston and Old Oak.

The healthcare R&D community, including large scale multi-national element that may not even be in London today, is really keen to see space for use by those involved with commercial R&D developed. Space could provide lounge space with coffee and tea readily available, hot-desk facilities and meeting rooms – located so as to draw people in from research/clinical activity as well as commercial R&D. Work could be developed with Contract Research Organisations, who can be particularly powerful in driving growth.

4. Build a team to keep sector needs articulated and to the fore

This report provides a partial, snap shot picture at a particular point in time. It sets out what we have been able to see as consultant advisors. There will be demand that we have not been able to get to/publicise and, importantly, there will be demand that can be created through the actions of those involved in research and clinical care. This is a very dynamic sector with huge scope. It appears that there will be increasing work to build opportunity for businesses involved with healthcare R&D to get more out of London. A key

piece of work into the future will be to keep the understanding of needs alive and up to date.

We believe that it would be helpful to identify and support key research/clinical champions working with business who are able to influence the level of demand and success of the ecosystem, who can create demand/opportunity and who can articulate it from first-hand experience/knowledge. This group probably ought to come together through one of the existing structures that exist, maybe meeting three times a year. We think it can steer and champion areas of investment that will be very important for the sector into the future. Because many of the people that might get involved with this have vested interests in success, good contacts with industry/Venture Capitalists, and are simply passionate about growth in innovation and enterprise in the sector, this could be something delivered without great expenditure, whilst proving immensely valuable.

5. Ensure that funding and planning matters are progressed in a more strategic fashion

From what we have seen it will be helpful for there to be a better understanding of potential public sector funding sources for real estate delivery – linked to more concerted endeavours to raise such monies. Again this may be progressed through MedCity, charging it with identifying funds coming through the European Union, central and local Government sources and the London Enterprise Panel. Understanding how best to make the case for appropriate allocation is really important – with supporting data over how public sector investment may leverage private sector investment and deliver significant impact.

As the UK Government pursues its plans for a Northern Powerhouse and for devolution we consider this to be a really important action to put in hand. This would play to agendas that would include leveraging money from other sources and enhancing the UK's productivity level – all of which will be really important over at least the next five years.

We have had initial discussions with the GLA to consider potential ways in which the London planning framework may help deliver additional R&D space. Some potential solutions are suggested in the previous section. Dedication of a staff resource, even if it is only part time, to the role of "Commercial R&D planning champion" might help. This could be through the GLA and could help drive forward agendas that include more than just planning. For example, it could also help with skills development and employment diversification.

6. Position London's offer far more strongly in a context of the Golden Triangle, the Greater South East and the UK

MedCity and wider stakeholders need to more successfully promote London as part of the golden triangle, the Greater South East and the UK. We believe that to create a stronger proposition and opportunity for places like Southampton to be better recognised/engaged. The way in which London would be seen if this recommended promotion happens is likely to be much more powerful – the way it connects to this wider base and is not insular in attitude. We believe that London's stakeholders can be confident that it is the centre of infrastructure, finance and government; and in a very powerful region enjoying immense research quality and global significance.

Other areas for attention

There are many other actions that are important to work on, that may come more to the fore in terms of need for concerted effort as time passes. Projects of particular importance to help facilitate include:

1. Direction of businesses that may find Londoneast-uk good for their purposes to this location
2. Work to help stakeholders, planners and the GLA create opportunity for development of space alongside key research and hospital locations such as at Whitechapel and Sutton, where existing stakeholders have clear ambition but where a number of barriers to success will need to be overcome to bring these projects to fruition for the sector
3. Further evolution of programs to help build aspiration, entrepreneurship, collaboration and community/social capital could have significant impact on levels of demand experienced into the future, not costing too much money
4. Ongoing government programs to make it easier to integrate commercial R&D activity into research and clinical activity will be very helpful, along with enhanced procurement and adoption processes and opportunities

10 Consequences of not taking action

The consequences of not taking action now are:

1. Some spin-outs from London institutions will fail to grow to their potential for a variety of reasons
2. Large scale multi-national businesses will not settle in London for the purposes of undertaking R&D at scale, which has a negative effect on both the research base here and also the potential vibrancy of the micro and SME businesses in the capital and the rest of the UK
3. London will fail to play its part in growing the strength of the UK's Golden Triangle for this activity
4. London's research intensive universities will have diminished competitiveness
5. London's research intensive hospitals will find it harder to recruit and retain the best clinicians – with consequences on their ability to deliver to required targets efficiently
6. A real opportunity to make a significant contribution to the UK's elusive increase in productivity will be missed

Appendices

1. Appendix 1 – Methodology
2. Appendix 2 – List of interviewees
3. Appendix 3 – Methodology for calculating floor space
4. Appendix 4 – Further Demand Survey Analysis
5. Appendix 5 – Detailed findings from business interviews
6. Appendix 6 – Comparator studies
7. Appendix 7 – Financial Appraisals

Appendix 1

Methodology

Objective	Methodology
Obtain detailed review of background information available	Client interface to finalise scope of study and methodology for securing data/inputs
	Analysis of existing studies and data
Assess demand levels	Survey of businesses through a detailed questionnaire that members of One Nucleus, OBN, the BIA and SEHTA were encouraged to complete
	Making direct requests for completion and attending events such as Genesis to lift awareness and secure one-to-one engagement with businesses involved with healthcare related R&D
	Direct engagement with businesses over issues that can best be explored through dialogue
	Engagement with the research base and, as appropriate, businesses, reference spin-outs and collaborations
	Direct discussion with key health and life science leaders
	Meeting with international firms of real estate consultants to secure helpful data and information to support the study
Assess supply levels	Conduct investigations through the network to identify existing supply in London
	Investigating development pipeline
Assess how the issue is being tackled in comparator cities	Visits to New York, Boston, Paris and Berlin to explore nature and extent of property supply focussed on the sector, nature of public sector support and lessons to learn from these places as comparators to London
Identifying potential pipeline	Research work into buildings and sites that are being promoted or considered for R&D activity specifically, including a significant level of Life Sciences activity – including work to assess potential, barriers to success and potential timing of delivery
	Assessment of economically sustainable models for future bio-incubator/innovation space
Provide information on specific sites as commissioned by individual parties.	Area specific research and engagement in relation to the wider Euston Road area for UCL, London Bridge/Waterloo for Guy's and St Thomas' Charity and Whitechapel for the London Borough of Tower Hamlets.

Appendix 2

One-to-One Interviews

Interviews have taken place with the following:

Abzena
Alan Turing Institute
Astra Zeneca
Barts Health NHS Trust
Biomed Realty
British Library
Cell Therapy Catapult
Cell Medica
Centre for Cell, Gene and Tissue Therapy
Centre for London
Cushman and Wakefield
DeltaDot
Digital Catapult
Eli Lilly
Francis Crick Institute
GE Healthcare
Greater London Authority
GSK
Guy's and St Thomas' Charity
Guy's and St Thomas NHS Foundation Trust
Health Innovation Network South East London
HCPI
hVIVO
Imanova
Imperial Academic Health Science Centre
Imperial College London
Inner Circle Consulting
Institute of Ophthalmology
Institute for Cancer Research
J&J Innovation
King's College London
King's Health Partners
Kwikscreen
London & Partners
London BioScience Innovation Centre
London Borough of Camden Council
London Borough of Lambeth Council

London Borough of Tower Hamlets Council
Londoneast-uk
London-Stansted-Cambridge Consortium
MedCity
MedDigital
Microsoft
NHS England
Novartis
OBN
Office for Life Sciences
One Nucleus
Puridify
Queen Mary University
Sanofi
SEHTA
Stevenage BioCatalyst
Tecrea
UCL
UCL Partners
UKTI
University of East London

A number of businesses had one-to-one interviews but did not want their company name registered as a participant in the study.

One-to-One and Group Discussions

In addition, at various events where relevant stakeholders have come together (OBN and One Nucleus events, UKSPA events, etc.) discussions have taken place that inform the findings in this study, involving the following:

BioCity
BioHub Birmingham
BioMed Connections
Biovica
Eagle Genomics
Instincif Partners
Medherent
Oxford BioEscalator
Rift
Tetricus

Appendix 3

Methodology for floor space calculation

- Respondents were asked:
  - Whether they required alternative or additional accommodation in London
  - How many people this was to accommodate
  - What type of space they required from a list of different types.
- We have then assumed a likely floor-space per person based on our experience of best practice. This should be taken as indicative only.

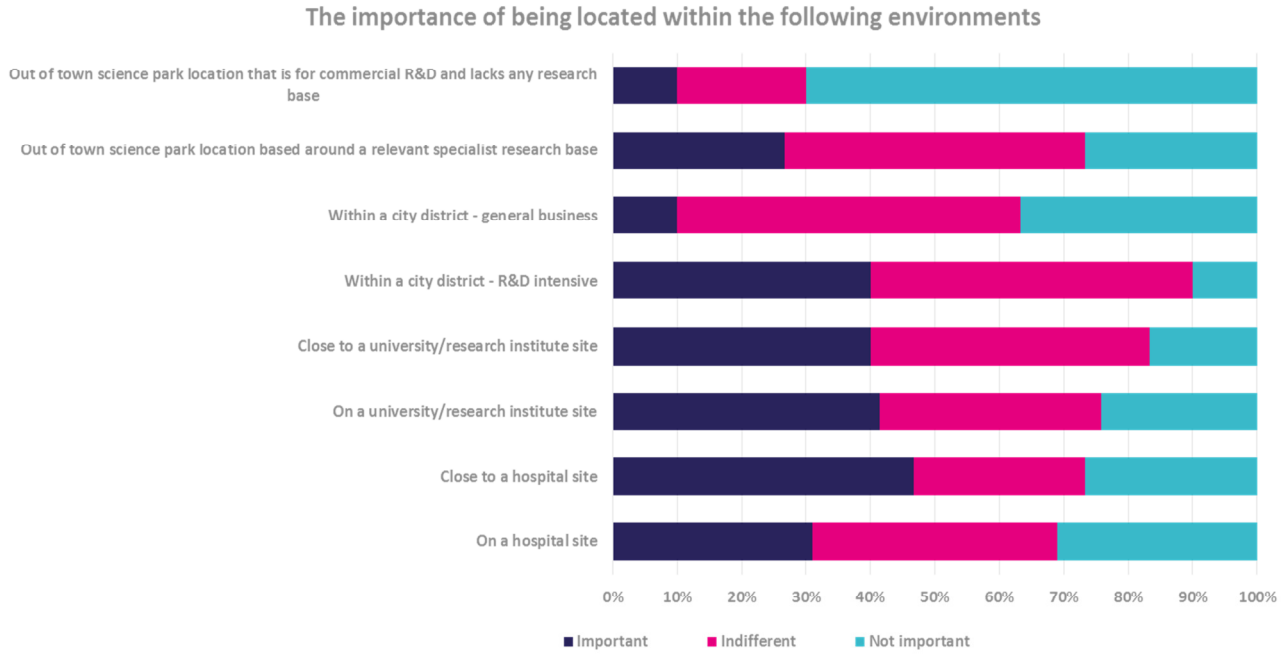
Space Type	Typical Floor area per person (sqft)
Offices/Dry Labs	100
Labs	250
Ward with beds/ Workshops	500

- Companies were asked to select from several ranges how many people they were looking to accommodate, we used the mid-point of the range to calculate the square footage
- When a company selected multiple types of accommodation needed, we chose the predominant accommodation type to calculate the square footage

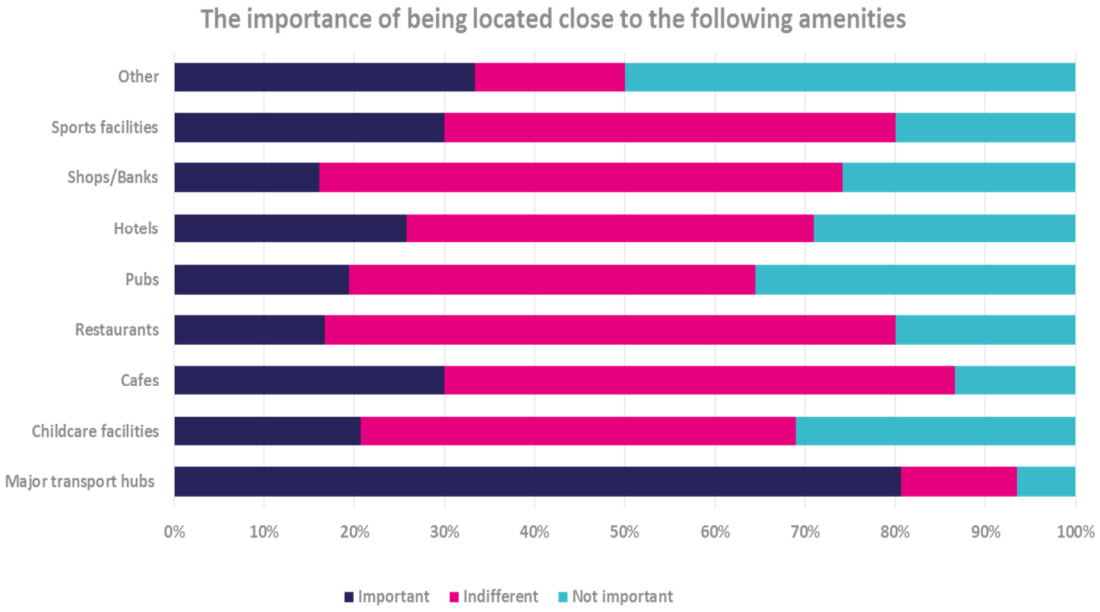
Appendix 4

Further Demand Survey Results

4.1: When asked about preference for location scored 1 - 10 (with 1 being unimportant and 10 being very important), R&D intensive areas were most favourable in particular those close to a hospital site or university site



When asked to rank which amenities it was most important to be located close to, major transport hubs was the clear favourite. Cafes, sports facilities and hotels all ranked favourably as well



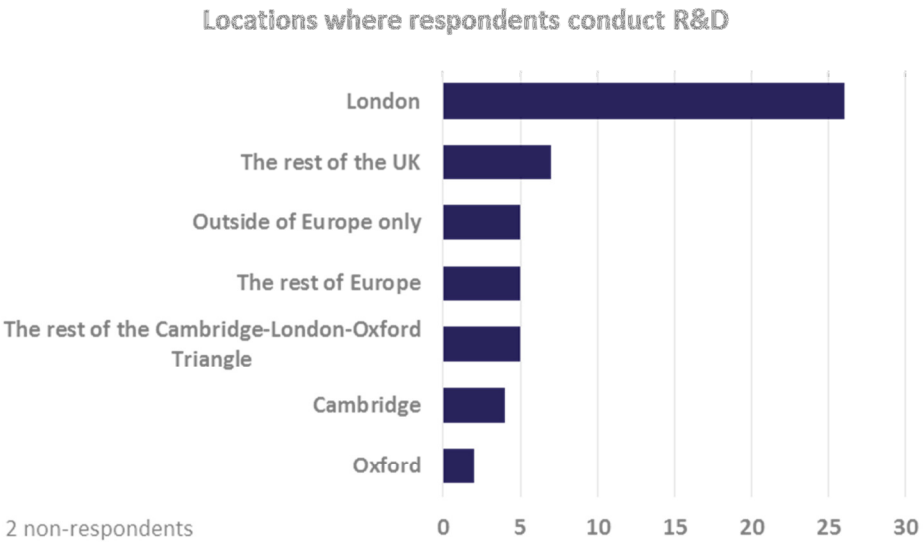
Appendix 4

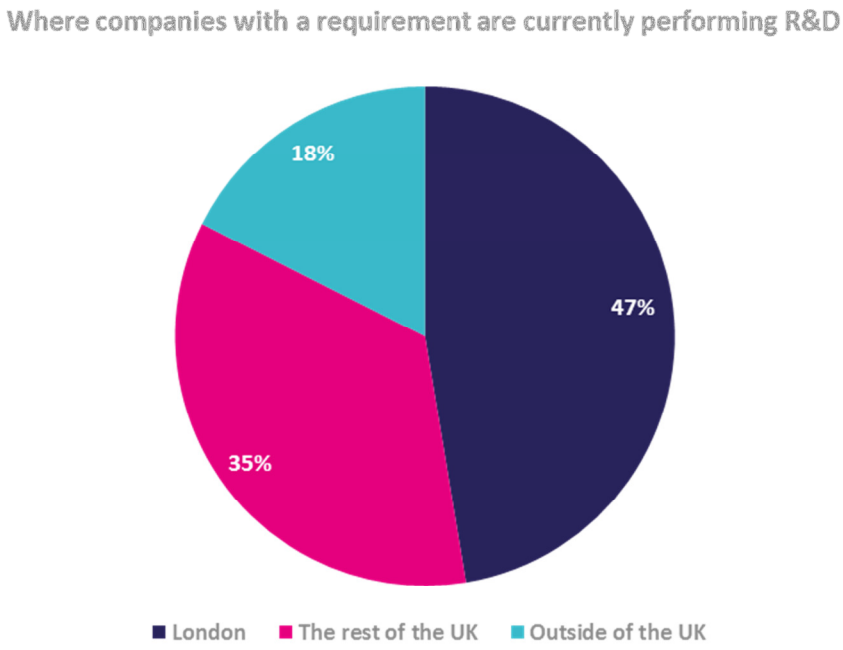
4.2 Requirement Type and timescale

	Accommodation types for those with immediate requirement						
Accommodation Type	**Company size**	**< 1,000 sq. ft.**	**1,000 – 5,000 sq. ft.**	**5,000 – 10,000 sq. ft.**	**10,000 – 50,000 sq. ft.**	**> 50,000 sq. ft.**	**Total floor space required**
Office	Micro	2	2				3,600
	SME	1	1				1,800
	Large						
	Total	**3**	**3**				**5,400**
Laboratory	Micro	1	4				15,750
	SME		2				7,500
	Large		2		1		26,250
	Total	**1**	**8**		**1**		**49,500**
Workshop	Micro	1	1				4,500
	SME		2				7,500
	Large						
	Total	**1**	**3**				**12,000**
Ward	Micro						
	SME						
	Large						
	Total						
Total floor space required		**2,400**	**45,750**		**18,750**		**66,900**

	Accommodation types for those with requirement in the next 10 years						
Accommodation Type	**Company size**	**< 1,000 sq. ft.**	**1,000 – 5,000 sq. ft.**	**5,000 – 10,000 sq. ft.**	**10,000 – 50,000 sq. ft.**	**> 50,000 sq. ft.**	**Total floor space required**
Office	Micro	3	3				5,400
	SME	2	4				6,600
	Large		1				1,500
	Total	**5**	**8**				**13,500**
Laboratory	Micro	1	7				27,000
	SME	1	4				24,500
	Large		2	1	3	1	154,500
	Total	**2**	**13**	**1**	**3**	**1**	**206,000**
Workshop	Micro	1	1				4,500
	SME		2				7,500
	Large						
	Total	**1**	**3**				**12,000**
Ward	Micro			1			5,625
	SME						
	Large				1		14,250
	Total			**1**	**1**		**19,875**
Total floor space required		**3,000**	**72,000**	**24,625**	**51,750**	**100,000**	**251,375**

4.3: Locations where companies are conducting R&D





Appendix 5

Detailed findings of Business Interviews

SME businesses that are in London

- As a spin-out starting off in faculty space works well
- Staff availability is excellent
- Find access to equipment and facilities very helpful in a university related/proximate innovation centre – might be able to function similarly if up to a km away. Being based at a university site provides opportunity to access wet laboratories within the University
- Benefits probably outweigh the risks of trying to grow a business in London
- Have contacts with others in London that might want to use their technology
- Enjoy benefits from co-locating with other Life Sciences businesses
- When you are in London a great number of people (customers and potential customers included) can easily and do pop in, which is very helpful to the business
- On cost of property re-evaluation is required from time to time – as a small business you want to focus funds in leveraging up further grants and co-funding of further projects
- Can occupy small suites of space in hospitals by way of licence that works very well
- Need to stay in London for access to laboratories
- Universities and hospitals not always easy to deal with
- Staff come in from all over the South-East so relatively central London location works very well
- Costs are high but not prohibitive and location is very convenient and good
- Undertake R&D in London but have also put some into Hertfordshire because of lack of laboratory space in London – now wondering whether they could move some administration functions out and move the R&D activity back in
- Would be very interested in hot-desk facilities in key locations
- Will always want a presence in London, great as an HQ for profile and global accessibility
- Staff recruitment is easy in London
- Would be very interested in hospital space that could be rented, in locations where relevant specialisms exist
- Research and clinical interface is generally good but see silo activity that is not helpful
- London address is very good for reputation

- If a spin-out and money is short you can find small suites of space to go to but may not be in ideal locations. Who you know is really important but you cannot necessarily afford prime space to achieve this
- Very happy to look at second-hand relatively low quality space and to enhance it a little if necessary
- Businesses need to be in places that provide a support network
- Costs of employing people in London is not seen as prohibitively expensive and once you start employing people in London it is harder to then contemplate leaving
- Businesses benefit from remaining close to co-founders' place of research work
- Without space provided in London there will be limitations on growth

Large multi-national businesses that are in London

- Find that the business uses the offices as the European Hub for travel anywhere around this continent
- Good location for accessing research/R&D activity across the Golden Triangle and beyond

SME businesses that have left London

- As a spin-out grew to employing circa 40 and then had to leave because nowhere to grow on to – so moved to Cambridge. Looked at Stevenage but did not want to share any laboratory space and at Welwyn but location not liked by a number of Cambridge resident staff
- Do not believe they could have scaled up in London with the property and staff costs this would have involved
- Rent rooms in places like the IOD facility on Pall Mall and hold board meetings in London at the offices of board members that work in organisations that have such space
- Working flat out to deliver to customer needs and no longer have a lot of time to speculate on academic liaison but may seek to do this more into the future and have indeed started to form relationships with the research base in Cambridge where they are now based
- Would like to attend networking events to stay in touch with the London community and if these could be held at relevant university and hospital campuses this would be beneficial

SME businesses that operate outside London

- Would like to see space they can access for a variety of different purposes in London, including hackathons
- Would be interested in good touchdown space in good locations

- Seek cost effective access to a range of companies in the Golden Triangle – this is where the real action is in the UK

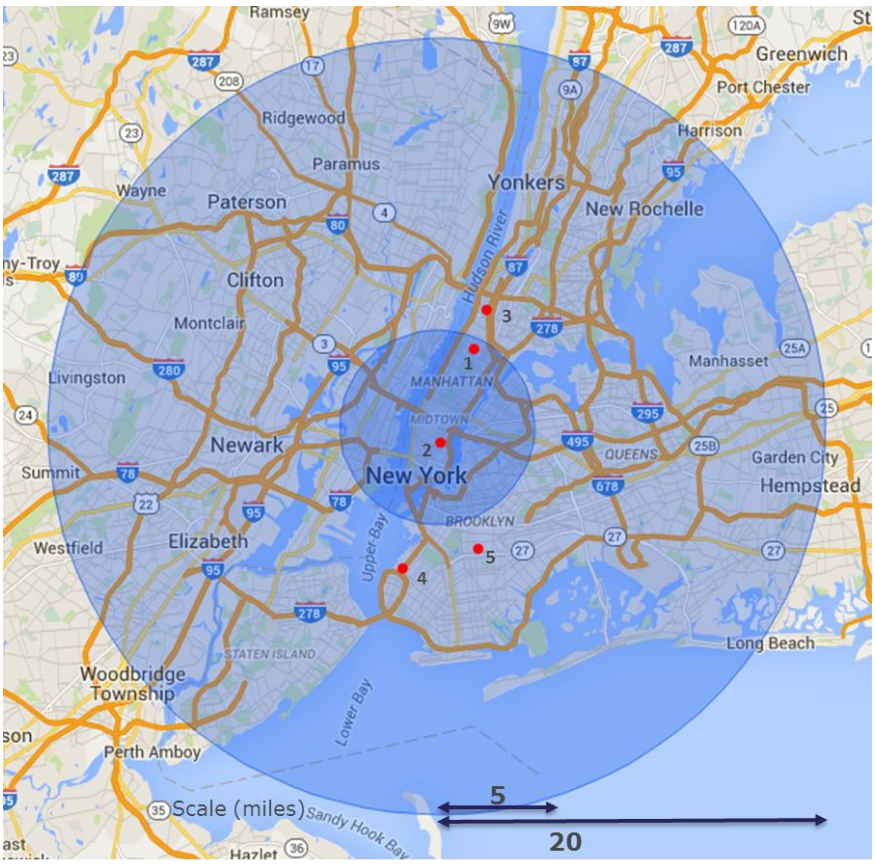
Large businesses that are outside London

- Have a small team working in London in a discreet area of R&D activity to and also have an office in the Euston Road area so as to have access to markets and people in London
- Would like to see MedCity with stronger engagement and relationships across the Golden Triangle
- Would like to see the Golden Triangle work better
- Very much want to engage more with academia and in hospital environments
- Would like to see London with a stronger common vision and less silo'd behaviour that would enable it to compete more effectively at international level
- Quality of research and the NHS is absolutely fantastic in London
- If London invested in manufacturing of therapies and tools and had some money for programmes around this then it could be a global Top 5 player but not there today
- When they look to locate activity in different places actions of national governments help and ultimately a business case has to be made – not always about keeping costs down
- Amount of floor space they need to do what they do is reducing
- Seeking to be more open and collaborate more. Want to bring in more external companies to locate with them where the undertake their R&D
- Happy to pay for equipment that can be used by others in locations that they commit to
- Encouraged by the intent of London but see it as 'full' and ownership of the problem isn't clear
- UK is not much bigger than some of the other global super-clusters
- Suggest that London looks at Biopolis and how a bold vision, working with a whole range of stakeholders can be very powerful – although accepts that there is a very different political system here. Believes that London could be many times better than Biopolis if it worked at it
- Funding is not a problem for large scale businesses once they are clear about their objectives and how to achieve them
- The NHS is an unbelievably under-utilised asset in the UK
- Would be helpful if the Government could be clearer, consistently, over intent and in tackling some of the key issues such as infrastructure enhancement and key worker housing
- Have many collaborations with academics and where the company undertakes its R&D is still quite fluid – strategic decisions will be taken at key points in time

- Facilities in Stevenage are very relevant as they look at London
- Expect to fund public-private partnerships
- Work well with the Catapults
- Clinical Advisory Service is helpful
- Could be interested in funding more academic fundamental research
- Do not want to be distant to what is happening in the UK and see that as effectively meaning the Golden Triangle
- Cost is not seen as prohibitively expensive in London – operate in a number of expensive locations around the world
- A key lesson from the Cambridge's is that having an ecosystem around you, involving academics, all size companies, hospitals, patients and material is essential, in a locality. 'Hyper local and broader area both very relevant to a business.
- See absolutely huge opportunity in the UK – which has the best ecosystem in Europe, not far behind the US
- Want to give their scientists better access to what the UK has to offer
- Have and use other offices in London but still do not have something that is good and offering what would really be helpful
- London is an excellent place because of its international accessibility and also its easy access to Cambridge, Oxford and Stevenage
- Very interested in relationships with bio-tech businesses as these can offer quicker access to markets than research per se

Appendix 6

Comparator Study Maps – New York



Location	Name	Current Space (sq. ft.)	Potential Space (sq. ft.)
1	Harlem Biospace	2,500	15,000
2	Alexandria Center for Life Sciences	718,000	350,000
3	Audubon Biomedical and Technology Center	60,000	
4	BioBAT	38,000	85,000
5	SUNY Downstate Advanced Biotech Incubator	50,000	
Total		**868,500**	**450,000**

New York

New York has many similarities with London. It is a global city, a leading financial centre, a hub for a significant geographical area and the location of major research institutions and

healthcare facilities. Real estate is expensive, both for those living in or near the city and those wishing to locate businesses there. Within the five boroughs of Manhattan, Queens, Brooklyn, The Bronx and Staten Island there is today around 850,000 sq. ft. of real estate focussed on providing space for life sciences businesses undertaking R&D. Within this is both very early stage space where businesses can rent a lab bench by the month (Harlem Biospace), lab/write up suites of less than 2,000 sq. ft. (SUNY Downstate Advanced Biotech Incubator) and larger suites let on long leases to multi-national companies (Alexandria Center for Life Sciences). The latter provides around 80% of the current provision and three occupiers take up most of this facility. There is very little available space that is ready for occupation.

Some further provision is provided beyond this area but within a 30 mile radius from Manhattan. These include Biomed Realty's facility at Eastview, two centres on Long Island and the recently released former Pfizer research facility at Pearl River. These provide substantial additional space – 1.5 to 3 m sq. ft. depending on how much of the Pearl River site will be suitable – and are all someway out of the city. They therefore appeal to a more specific group of occupiers as well as those that cannot find accommodation closer to the centre of New York.

The City Economic Development Corporation (EDC) has for a number of years been promoting New York to the sector. It has funded delivery of real estate, developed programmes with stakeholders to support entrepreneurship and provided tax incentives to encourage businesses to locate in the city. It has ambition to grow the sector to provide 3 million sq. ft. by 2025, working in partnership with industry. Investment has included work to deliver space within the Brooklyn Army Terminal, a 4m sq. ft. facility owned by the city authorities lying about 45 minutes from central Manhattan, where investment has exceeded £40m but where occupier demand has been limited.

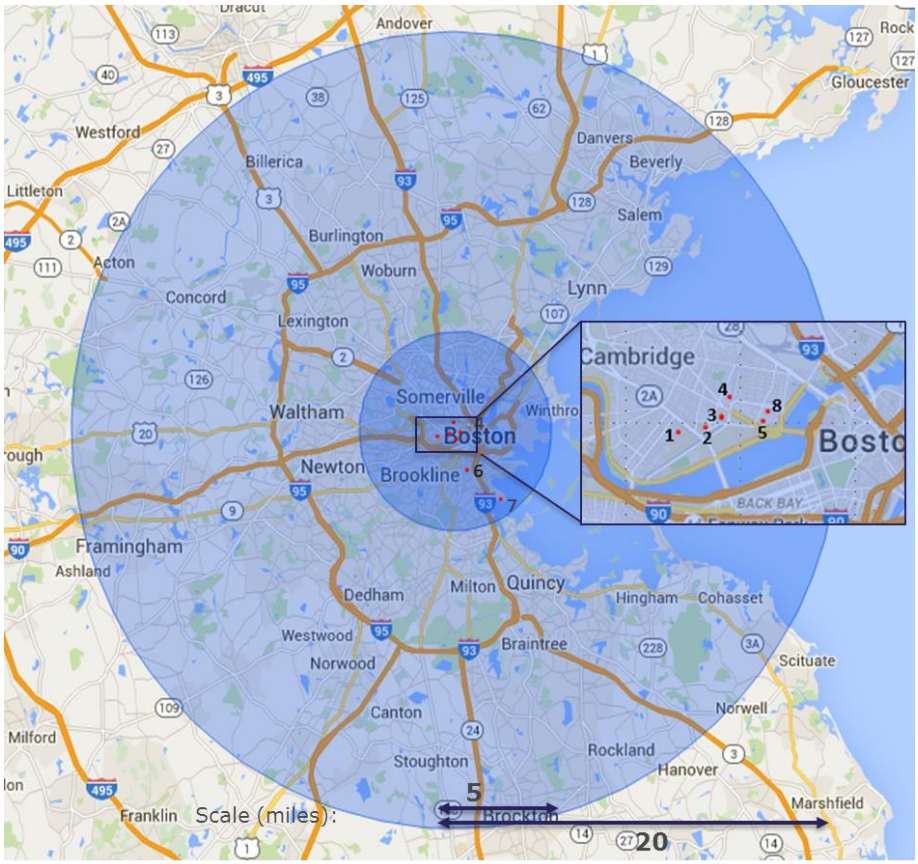
The EDC, academic institutions and the private sector real estate industry are all actively looking at ways to add further floor space. It is expected this will be focussed in Manhattan, where many of the academic institutions are and where transport connections are best. The viability of delivering healthcare R&D real estate and the zoning (town planning) requirements are cited as potential barriers to delivery. There is also a recognition that many businesses and their VC backers see Boston as close enough to be an alternative and offering a much larger cluster to participate in.

Key Lessons Relevant for London:

- **Occupiers are increasingly showing a preference for locations close to major transport hubs and research institutions**
- **Total real estate delivery is not greatly more than London. There is less incubator space but work is apparent to increase provision with the city authorities keen to grow the sector around the research institutions**

Appendix 6

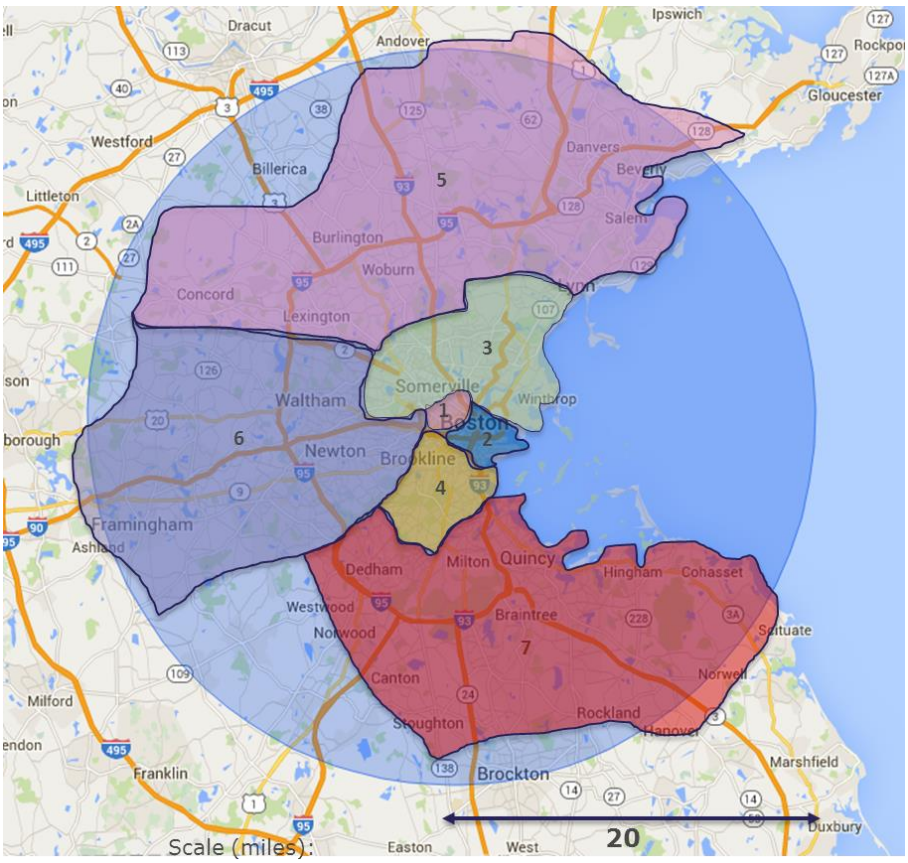
Comparator Study Maps – Boston



Location	Name	Current Space (sq. ft.)	Potential Space (sq. ft.)
1	University Park	1,700,000	250,000
2	Lab Central	28,000	60,000
3	Cambridge BioLabs	10,000	
4	Technology Square	1,158,000	
5	Cambridge Innovation Center	500,000	
6	BioSquare	700,000	
7	Umass Venture Development Center	18,000	
8	Mass Innovation Labs	124,000	
Total		**4,238,000**	**310,000**

Appendix 6

Comparator Study Maps – Boston



Location	Area	Current Space (sq. ft.)	Potential Space (sq. ft.)
1	Cambridge	11,700,000	2,200,000
2	Boston	721,000	
3	Inner North	172,000	
4	Inner South	1,600,000	
5	North I28	2,800,000	
6	West I28	1,100,000	
7	South I28	668,000	
Total		**18,760,000**	**2,200,000**
Source: Newmark Grubb Knight Frank			

Boston

Boston has developed a cluster of healthcare R&D businesses, institutions and real estate that is truly world leading. There is over 20 million sq. ft. of space occupied by R&D businesses within the city and the surrounding 30 miles, more than half of which is now concentrated in

East Cambridge alongside MIT and Harvard. Those we interviewed and secondary research revealed a picture of significant demand and development in the last 10 years for accommodation in the heart of the cluster, with many multi-national businesses moving research facilities here to seek the benefits of open innovation.

As with New York the public authorities have been actively pursuing a growth programme for the sector. The State Governor and legislature established the Massachusetts Life Sciences Center (MLSC), an organisation charged with implementing the 2008 Massachusetts Life Science Act, a 10 year $1bn initiative. Its goal is to make the State the strongest life sciences ecosystem in the world. Funds have been invested in five areas: translational research partnerships between industry and academic institutions; entrepreneurship and the pipeline of early stage companies; workforce development; infrastructure; and new models of collaboration within the state and internationally.

Investment has enabled the creation of floor space for the sector. This includes Lab Central, a 30,000 sq. ft. facility that provides desk and lab bench space for early stage businesses. This has been jointly funded with industry and MIT and has exceeded expectations in terms of demand. Businesses within it have seen significant growth and additional space is now being planned.

The availability of accommodation for those businesses seeking to grow on from incubator/innovation centre space is an issue in the East Cambridge area. Occupiers in this group are having to look further afield, in some cases out to legacy pharma facilities 15-30 miles out from the centre.

Key Lessons Relevant for London:

- **Open innovation is driving massive change, with major research businesses keen to locate alongside early stage businesses and the academic institutions that are developing new ideas and educating future workforce.**
- **Delivery of real estate for very early stage businesses can be particularly effective in supporting the development of a cluster. This can be bought about by stakeholders from industry, academia and the public sector working together, provided the location is right.**

Appendix 6

Comparator Study Maps – Paris

Location	Name	Current Space (sq. ft.)	Potential Space (sq. ft.)
1	Paris Biotech Santé	13,000	No current known plans
2	Agoranov	25,000	
3	iPEPS Bioincubator	11,000	
4	Villejuif BioPark	57,000	
5	Biocitech	215,000	
6	Genopole campus	1,100,000	
Total		**1,421,000**	

NB There are plans to build a Paris-Saclay campus which is envisaged to have significant research capability and opportunities for innovation

Paris

In 2004 the French Government launched an industrial policy involving 'Poles de Competitivite' – clusters focused on particular sectors in specific zones of the country. Support to the poles comes in part through the government part financing the governance structures alongside

Local Authorities and companies and part through financing R&D projects and innovation platforms.

The Medicen Paris Region cluster was founded in 2005 with the aim of positioning the Paris Region as a European industrial leader in diagnostic and therapeutic innovation and leading-edge health technologies. In practice its mission is not very different to that of the Alsace Biovalley cluster 500 km away.

Today the Paris region has five notable locations at which businesses involved with R&D for the healthcare sector agglomerate, providing a relatively wide range of property types. Occupancy levels are high, from the enquiries we have made. At Genopole, the largest project, occupancy is currently at 87%, which means that it has approximately 140,000 sq ft available in the market place. Expectation of those managing the space is that it will be up to 100% occupancy by the end of 2016.

Our enquiries suggest that large scale multi-national companies undertaking commercial R&D activity are not very prevalent, with almost all companies represented in the projects we have identified falling into the SME category. Since 2000 a number of incubator facilities have been set up, some at hospital sites. These appear to have been relatively successful at growing and supporting R&D intensive businesses.

Those involved with funding and ultimately making a success of these projects include universities, technology institutes and research centres. The relatively small Agoranov Incubator, of approximately 25,000 sq. ft. and located relatively centrally (approximately 2 miles from the city centre), claims to have created 260 start-ups since 2000 and that its companies have raised 354 million euros from private funds, ultimately creating 3,900 jobs.

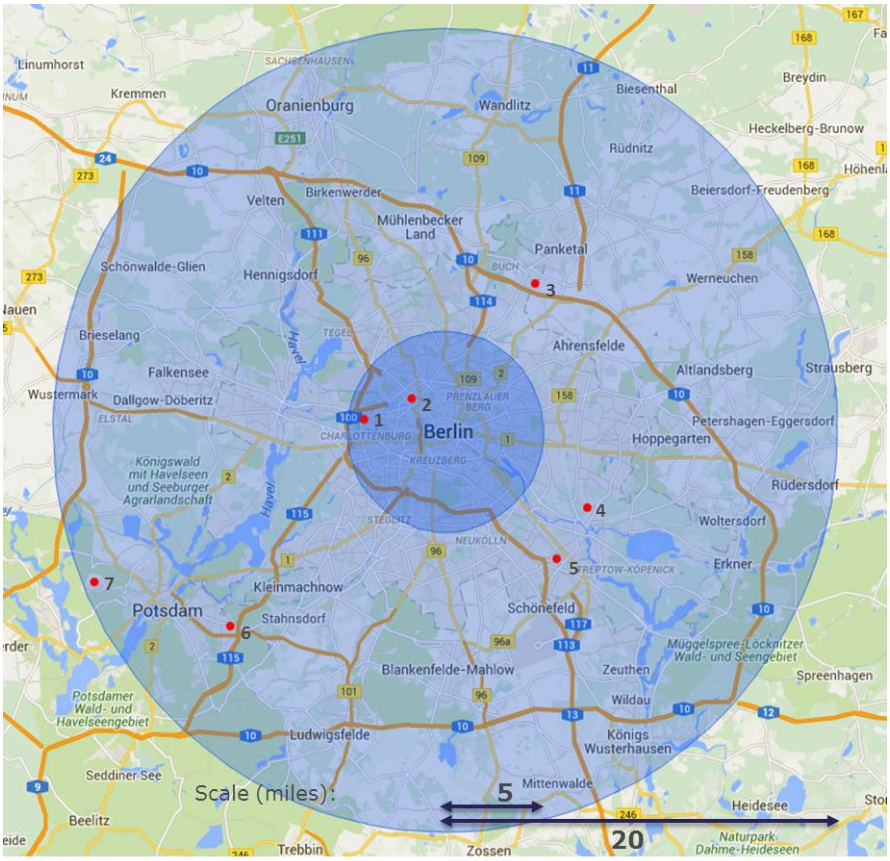
In 2012 the iPEPS Bioincubator launched, alongside a Brain and Spine Institute, ICM. Whilst the facility only comprises 11,000 sq. ft. it claims to give businesses locating there access to 75,000 sq. ft. of core facilities that include cellular imagery, human neuroimagery, histology and a clinical investigation centre. It has proved very successful and hosts approximately 15 companies today.

Key Lessons Relevant for London:

- **Relatively small scale incubator/innovation centre facilities located relatively centrally and alongside top quality research hubs can be very successful at spawning new businesses**
- **There appears to be a trend towards delivering more business opportunity immediately alongside specialist patient care/research**

Appendix 6

Comparator Study Maps – Berlin



Location	Name	Current Space (sq. ft.)	Potential Space (sq. ft.)
1	Berlin BioTech Park	Cira 700,000	300,000
2	CoLaborator (Bayer)	9,000	
3	Campus Berlin Buch	301,000	Circa 70,000
4	Wulheide Innovation Park	570,000	
5	Berlin Adlershof and IGZ Innovations-Zentrum	736,000	Circa 50,000
6	Potsdam Biotech Campus	123,000	
7	GO:IN Innovation Centre	43,000	
8	Dahlem site		Circa 50,000
Total		**1,922,000**	**470,000**

Berlin

In the early 1990s Berlin had suffered a loss of industry due to East/West segregation. There was a drive following reunification to bring new industries to the city, one of these being biotechnology. Those research and science parks that have been delivered are generally full and there is strong apparent demand. That said the main cluster of activity in Germany was described by those we interviewed as being around Munich, rather than in the capital.

Berlin faces many of the same generic challenges as London: the main focus is on house building as house prices have doubled in the last 2-3 years. A period of oversupply of offices space is coming to an end, presenting challenges for business as this situation drives rental growth.

Real estate investors such as Alexandria have explored development opportunities in Berlin but this has not led to investment being made – we are advised due to the higher risk of the sector compared to others. This is partly a product of the subsidy structures supporting fledgling businesses. These have an eight year life and so such businesses are perceived as not being able to pay rent after the subsidy expires.

Despite this, Berlin Biotech Park is an example where a private investor has made a success of redevelopment of a former Bayer site, where pre-lets to large corporates have resulted in significant development. There are also several incubators, one of which is provided by Bayer in a similar structure to JLabs or Pfizer incubators in the US.

Berlin has a focus on digital start-ups, particularly E-commerce. The number of Bio-tech start-ups is small (25 - 50 at any time). Many 'healthcare' start-ups are digital health businesses who do not need laboratory space but importantly want office space within very close proximity to hospitals/clinical trials/laboratory space businesses to help develop their digital healthcare services and applications.

The most likely area for successful development appears to be Adlershof, where there is available land and a successful cluster of activity already in existence. The site is well located next to the university but from our visit it seemed somewhat peripherally located, which may deter some occupiers but help aid development through lower residual land values. This area is where Berlin Partners, the promotional organisation set up by the city authorities, seem to be focussing their efforts. There is also scope for development in Dahlem, on land which is well located next to the university.

Key Lessons Relevant for London:

- **There is scope for development of R&D space in the private market but this is dependent on strong covenants.**
- **A strong central location (such as Berlin Biotechpark) helps to attract tenants.**

- **By focussing on related strengths (in the case of digital technology generally) it is possible to build more robust demand for healthcare R&D space.**
- **Large corporates such as Bayer can be instrumental in setting up successful open innovation parks, such as we see at GSK's Stevenage facility here in the UK**

Appendix 6

NEW YORK PROPERTY SUPPLY TABLE

				Existing Space		Planned Development				
	Project Name	**Area**	**Description**	**Type**	**Total Area sq. ft.**	**Type**	**Total Area sq. ft.**	**Targeted Delivery Date**	**Stakeholders/Funding**	**Comments**
Located within 20 miles of central New York	Harlem Biospace	Harlem	Biotech incubator offering shared wet lab space	Biology Labs/write up	2,500	Grow on space	15,000	2016/2017	NYCEDC, Sam Sia, Christine Kovich	Small facility providing early stage businesses opportunity to lease lab space by the bench, with shared equipment and facilities.
	BioBAT	Brooklyn	56,000 sq. ft. floorplates refurbished building offering shell and core accommodation for R&D and biomanufacturing	Biology Labs/write up/ containment labs	38,000	Biology Labs/write up	85,000	2016/2017	SUNY Downstate Medical Centre, NYCEDC	Former Brooklyn Army Terminal managed by NYCEDC. Up to 500,000 sq. ft. available in the 4m sq. ft. complex, subject to funding being provided to convert space. Tax incentives offered to attract businesses. To date the City and State authorities have invested around $40 million - including funds to create space as well as preserve the building fabric.
	Audubon Biomedical & Technology Center	Washington Heights	Mary Woodward Lasker Biomedical Research Building, adjoining Columbia University	Biology Labs/write up	60,000				Columbia University, New York City, State of New York.	University owned project which is now diminishing in scale as the University occupy increasing parts of the site for their own, rather than commercial R&D use.
	Alexandria Center for Life Sciences	East Side Manhattan	Two towers proving office and research accommodation, with potential for additional tower.	Offices, biology labs/write up	718,000	Offices, biology labs/write up	350,000		NYCEDC and Alexandria Real Estate	First building of 308,000 sq. ft.. Second building of 410,000 sq. ft. . Large occupiers but also Accelerator Corp which is funding and supporting early stage biotechs using funding from Eli Lilly, Pfizer, J&J and has partnered with 7 institutions in the city. Potential for third building.
	SUNY Downstate Advanced Biotech Incubator	Brooklyn	Modular wet lab/office incubator with access to Downstate Medical Center Resources	Biology Labs/write up	50,000				SUNY Downstate Medical Centre, NYCEDC	Original building of 24,000 sq. ft. recently extended (Dec 15) to current size. Lab sizes range from 400 to 1,000 sq. ft.
				TOTAL	**868,500**		**450,000**			
Located between 20 – 50 miles around central New York	Broad Hollow Bioscience Park	Long Island	Not for profit entity designed to support early stage companies with a need for wet lab space. 50,500 sq. ft. is early stage, increments of 500 sq. ft. and 62,000 sq. ft. is ideal for corporate research facility.	Biology Labs/write up	102,500				Farmingdale State College (SUNY), Cold Spring Harbor Laboratory and Research Foundation of State of New York	Clustering growing biotech companies along the Route 11 Bioscience Corridor. Maybe 40km east of Manhattan
	Long Island High Technology Incubator	Stony Brook	Located at Stony Brook University, provides 40 plus suites of offices and wet labs between 500 and 1,000 sq. ft.	Offices, biology labs/write up	62,000				SBU	Located approximately 50 miles east of New York City on the north shore of Long Island.
	The Landmark at Eastview	Tarrytown	Biotech campus with medical and pharmaceutical laboratory and office space	Offices, labs	1,120,430				Biomed Realty are the developer	
	Commercialization Center for Innovative Technologies	New Jersey	Incubator dedicated to life sciences and biotechnology companies	Offices, wet and dry labs	46,000					Located on the campus of the Technology Centre of New Jersey
	Pearl River (Pfizer Site)	Pearl River	A combination of laboratory, pharmaceutical manufacturing, office and support space. Old Pfizer facilities	Offices, wet and dry labs	2,000,000				Sold by Pfizer to Industry Realty Group	Pfizer will continue to operate some R&D facilities on the site, it is expected that some of the sold land will be designated for R&D companies
				TOTAL	**3,330,930**					

Appendix 6

BOSTON PROPERTY SUPPLY TABLE

				Existing Space		Planned Development				
	Project Name	**Area**	**Description**	**Type**	**Total Area sq. ft.**	**Type**	**Total Area sq. ft.**	**Targeted Delivery Date**	**Stakeholders/Funding**	**Comments**
Located within 20 miles of central Cambridge	Lab Central	Kendall Square	Early stage laboratory, office and communal space in ground floor of MIT owned building	Laboratory/ Office	28,000	Laboratory/ Office	60,000	2016	Massachussetts Life Sciences Center, Lab Central, various corporate organisations, MIT	Provides early stage space for selected companies, able to rent bench and desk space as well as private labs and offices. J&J, MLSC and Triumvirate are principal sponsors.
	Lilly Cambridge Innovation Center	Kendall Square	One whole and a part floor in Biomed Realty Building designed to serve as a portal for external partnerships and collaboration activities, expected to open at end of 2015.	Laboratory/ Office	23,000				Eli Lilly	Part of the Eli Lilly R&D group, including concept development and make-up space where Lilly can collaborate with academics and businesses. See convergence of pharma, delivery and digital technologies.
	Technology Square	Technology Square	Consists of seven buildings totalling over 1 million square feet of office, lab and retail space.	Laboratory/ Office	1,157,671				Alexandria Real Estate Equities, Inc.	
	Biosquare		offering over 2.5 million square feet of new laboratory and office space	Laboratory/ Office	700,000					Located in the heart of Boston's academic and medical community in close proximity to Boston University's Medical Center and Charles River campus, Harvard/Longwood Medical area, Tufts/New England Medical Center, and Massachusetts Institute of Technology
	Cambridge Biolabs	Kendall Square	Cambridge Biolabs Biocloud provides individual bench space for single scientists. Twenty individual lab bays with access to shared equipment and support services.	Laboratory/ Office	10,000					Provides early stage space and advice to start up companies. Linked to Lab Central with common directors.
	UMass Boston Venture Development Center		Wet lab, dry lab and office space for early stage tenants to lease. Access to mentoring, entrepreneurs in residence and investors	Dry and wet lab	18,000				Part of the University of Massachusetts Boston, on the southern side of the city of Boston	Supportive environment for early stage businesses to access expertise and advice to grow their ventures.
	University Park		Campus environment adjoining Massachusetts Institute of Technology and close to the research and academic institutions of Boston. A collaborative environment that brings together ten advanced life science R&D buildings, as well as traditional office space, 531 residential units, a hotel and conference center	Laboratory/ Office/Retail/ Residential	1,700,000	Laboratory/ Office/ Retail	250,000	2016	MIT and Forest City	
	Cambridge Innovation Center	Kendall Square			500,000					
	Mass Innovation Labs			Laboratory	124,000					
				TOTAL	**4,260,671**		**310,000**			
Located between 20–50 miles around central Cambridge	CreaGen Life Science Incubator	Woburn	Flexible and affordable chemistry-focused facility	Chemistry Labs/Offices	17,000					Undergoing a major renovation and expansion over the next 12 months with the aim to be able to house 30 life sciences entrepreneurs
	North Shore InnoVentures	Beverly	Biotech and cleantech incubators, with shared laboratories	Offices/ Shared Labs	10,000					
	Tufts Biotechnology Transfer Center	North Grafton	Small laboratory and office suites for start-up life science companies	Labs/Offices	4,000					
	Mansfield BioIncubator	Mansfield	Incubator for biotech companies	Labs/Offices	10,000					Up to 100,000 square feet and 63 acres available for further expansion
	Massachusetts Biomedical Initiatives	Worcester	Laboratories for start up biomedical companies, spread across four buildings	Labs/Offices	30,500					
				TOTAL	**71,500**					

Appendix 6

PARIS PROPERTY SUPPLY TABLE

				Existing Space		Planned Development				
	Project Name	**Area**	**Description**	**Type**	**Total Area sq. ft.**	**Type**	**Total Area sq. ft.**	**Targeted Delivery Date**	**Stakeholders/Funding**	**Comments**
Located within 20 miles of central Paris	Genopole Campus	Evry	Full range of laboratories, offices and innovation centre space alongside strong research base	Laboratory space/write up and offices	600,000					
	Paris Biotech Santé	75014 Paris	Incubation space of circa 1,200 sq. m of laboratories and offices in Paris Descartes University, plus a 3,500 sq. m 'nursery' facility dedicated to the development of enterprises in human health, located within the Cochin-AP-HP hospital	Laboratory space/write up and offices	12,916				Founding members are Université Paris Descartes, ESSEC, Centrale Paris and the Institut National de la Santé et de la recherché medicale. Funding comes from Mairie de Paris and the Ministere Education Nationale Enseignement Superieur Recherché, along with private sector businesses that include AMGEN, AstraZeneca, Sanofi-Aventis, Beaufour Ipsen, Biocodex, Boehringer Ingelheim, Chiesi, Chugai, Ferring, Juniper, GSK, Innothéra, Lilly, Lundbeck, MSD, Nycomed, Roche, Thea	In the Enterprises Incubator there are currently 24 businesses, all very small scale. 8 are devices businesses, 5 drugs and 11 service companies. There are a further 11 in the nursery - 6 devices, 4 drugs and 1 services company.
	Agoranov	75006 Paris	2,300 sq. m of air conditioned offices, wet laboratories, open plan space and café space.	Laboratory space/write up and offices	24,756				Founders are Inria, UpMC Sorbonne Université, Dauphine Universite Paris, ParisTech and ENS. Partners today include Sorbonne Université, Institut de la Vision, the eit Climate-KIC and 104 Cent Quatre Paris. Sponsors are the EU , Mairie de Paris, Ile de France and the Ministere de L'Education Nationale.	Start ups here include a full range of sector types, including 77 digital, 60 in industry and the environment, and 74 in Life Sciences. They claim to have helped circa 260 companies set up over a 15 year period.
	Villejuif BioPark	Mathe-94800 Villejuif	5,340 sq. m of net lettable floor space in a single three storey building dedicated to Life Sciences businesses, available as 70 suites that range from 40 sq. m up, along with common areas (including café) and meeting room (75 sq. m) that is divisible) on the ground floor. Local shared technical facilities in a room of 180 sq. m. 50% of the suites to let are offices, 50% wet laboratories. Extract to air plant. Nearby facilities include imaging and cytometry, integrated biology and veterinary services.	Laboratory space/write up and offices	57,479				The owner is Sadev 94. Investors alongside Sadev 94 are the Regional Council of Ile de France, the General Council of Val de Marne and the Community Agglomeration of Val de Bievre.	Location is at the heart of the Scientific Bievre Valley, immediately adjacent to Hopital Universitaire Paul Brousse and the CNRS Institut Andre-Lwoff. It is on the south side of Paris, at Villejuif, just to the south of the Boulevard Peripherique between the A6 and the N7 (about 20 minutes from the centre by car). Currently host to 16 companies, all SMEs. An entry approval process exists for budding entrepreneurs and start ups, involving an Accreditation Committee.
	Biocitech	Greater Paris	Nearly 20,000 sq. m of specially designed premises (biology and chemistry laboratories to BSL-2, preclinical testing facilities, offices and storage) Modular rental space, from 12 sq. m to over 5,000 sq. m. Flexible options that cater for your business as it develops 30 businesses today, with 50 expected in 2016. Has a gym, café and conference/seminar rooms available for use.	Laboratory space/write up and offices	215,278					
	iPEPS Incubator	Paris	1000 m2 of office space/laboratories Indivdualized secured space Access to 7000 m2 of cutting-edge core facilities (cellular imagery, human neuroimagery, histology, lentiviral transgenesis, molecular biology, etc.) Access to the Clinical Investigation Centre (1200 m2) Access to the equipment of the building (meeting rooms, video conferencing, cafeteria, etc.)	Laboratory space/write up and offices	10,763				iPEPS-ICM is based on the Pitié-Salpêtrière Hospital campus	
				TOTAL	**921,192**					

Appendix 6

BERLIN PROPERTY SUPPLY TABLE

				Existing Space		Planned Development				
	Project Name	**Area**	**Description**	**Type**	**Total Area sq. ft.**	**Type**	**Total Area sq. ft.**	**Targeted Delivery Date**	**Stakeholders/Funding**	**Comments**
Located within 20 miles of central Berlin	Berlin Adlershof	Berlin-Adlershof	Science and Technology Park. One of the largest in the Berlin area has just under 736,000 sq. ft. of space for businesses. Currently over 1000 companies and institutions	Chemistry Labs/write up	736,000	Mixed laboratory and office	50,000	Not set	The park in its current form has been developed by the development agency Adlershof GmbH (WISTA-MANAGEMENT GMBH since 1994) which was set up by the federal state government	
	IGZ Innovations-Zentrum	Berlin-Adlershof	Incubation Centre for Innovation and Business sits in the Belin-Adlershof technology park, company also runs another incubation centre on the park focused on start ups with an international reach	Offices	20,4514				IZBM, Innovations-Zentrum Berlin Management GmbH, managing company for innovation and business incubation centres in Berlin turned into a 100% subsidiary of state-owned WISTA-Management GmbH (see above)	IZBM operates very close with start-up and pre-incubation initiatives of Berlin Universities.
	Berlin BioTech Park	Berlin-Charlottenburg	Inner city Biotech park offering accommodation for research, development and production. Businesses have access to a café and conferencing facilities	Labs/ offices/ workshop space	140,000	Mixed laboratory and office	350,000	Phased/ dependant on pre-lets		Development is privately funded and is generally pre-lets to larger corporates with good covenants.
	Potsdam Biotech Campus	Hermannswerder peninsula	Small biotech campus designed for biotechnology businesses in particular pharmaceutical, chemical services, medical / diagnostics	Laboratory space/write up and offices	123,000				Owned and operated by BIOTECH CAMPUS POTSDAM Gmbh, a fully owned subsidiary of the Investment Bank of the state of Brandenburg	The ILB and the Brandenburg Economic Development Board advise the Potsdam Biotech Campus GmbH individually. New space is very challenging to build because the area is prime for residential development.
	Campus Berlin Buch	Berlin	The Biotech Park Berlin-Buch is one of the largest biotech parks in Germany. It offers around 31,000 square meters of industry-specific laboratory and office space. Start-ups can grow in the Innovation and Incubation Centre; building sites on campus allow for future development options.	Laboratory space/write up and offices	301,389	Mixed	70,000		The shareholders of BBB GmbH are the Max Delbrück Centre for Molecular Medicine in the Helmholtz Association (MDC) (60 %), the Leibniz-Institute für Molekulare Pharmakologie (FMP) (20 %) and Bayer HealthCare Pharmaceuticals, Bayer Pharma AG (20 %).	There is a potential development pipeline but this is challenging due to infrastructure constraints.
	GO:IN Glom Innovation Centre	Potsdam	Innovation centre for biotech start-ups situated on a campus including the University of Potsdam and a Max Planck research centre	Laboratory space/write up and offices	43,055				A joint project of the Technology Centre Tetlow GmbH and the technology and industrial centres Potsdam GmbH	The location by the Max Planc research centre is strong but any further development is limited in the same way as Potsdam (which is relatively close) due to the prevalence of expensive housing which take development precedence.
	CoLaborator	Berlin	An independent incubator on the Bayer Research Campus in Berlin, suited for start-ups in life sciences whose ideas, developments and technology platforms are related to Bayer's research interests	Laboratory space/write up and offices	8,611				Set up by Bayer, non-disclosure agreements may need to be signed by start ups.	Because Berlin is very strong for digital R&D Bayer have tried to piggyback on this and a number of the occupiers in this space are Digital Health
	Dahlem Site	N/A	Potential Development site	N/A	N/A		50,000		Not yet clear	There is an opportunity to redevelop a site in Dahlem which is very close to the academic campus. Berlin Partners seemed confident this might come to fruition.
	Wuhlheide Innovation Park Berlin	Berlin	At the Innovation Park there are currently approximately 140 companies located over a total rental area of around 53,000 m².	Laboratory space/write up and offices	570,487				The Wuhlheide Innovation Park is owned by the State of Berlin and managed by Wuhlheide Innovation Park Managementgesellschaft mbH (IMG mbH).	Not part of the strategic vision for Biotech space provision
				TOTAL	**2,572,542**		**520,000**			
Located between 20-50 miles of central Berlin	Biotechnology Park Luckenwalde	Tetlow-Flaming	30 miles south of Berlin and home to 38 companies	Laboratory space/write up and offices	Incubator:96,875				Set up by the Structural and Economic Development Corporation of the District of Teltow-Flaming	The facility is based in an old soviet army barracks. Berlin Partners suggested that whilst it is established, it wouldn't be where one would choose to locate a biotech park.
				TOTAL	**96,875**					

Appendix 7

Financial Appraisals

	Standard London Office - Speculative for long term good covenants	Short term low covenant office lets	Short term low covenant laboratory lets
Area			
Gross	100,000	100,000	100,000
Net	82,000	75,000	75,000
Gross/Net Ratio	82%	75%	75%
Development Value			
Rent per sq. ft.	£50	£55	£60
Total annual rent	£4,100,000	£4,125,000	£4,500,000
Yield	5%	6%	7%
Purchasers Costs	5.75%	5.75%	5.75%
Rent free (years)	1.25	0.5	0.5
Exit Value	**£72,695,035**	**£63,061,466**	**£58,662,614**
Costs			
Construction cost per sq. ft.	£275	£300	£450
Construction cost total	**£27,500,000**	**£30,000,000**	**£45,000,000**
Contingency %	5%	5%	10%
Contingency total	**£1,375,000**	**£1,500,000**	**£4,500,000**
Professional fees %	13%	14%	15%
Professional fees	**£3,575,000**	**£4,200,000**	**£6,750,000**
Marketing	**100,000**	**100,000**	**100,000**
Letting (Agents and legals) %	20%	20%	15%
Letting (Agents and legals)	**£820,000**	**£825,000**	**£675,000**
Sale (Agents and legals %)	1.50%	1.50%	1.50%
Sale (Agents and legals)	**£896,572**	**£806,611**	**£765,957**
Total Construction related costs	**£34,266,572**	**£37,431,611**	**£57,790,957**
Finance			
Rate	6.50%	6.50%	6.50%
Land	**£2,615,312**	**£1,338,010**	**£0**
Construction	**£1,465,773**	**£1,610,420**	**£2,525,035**
Total	**£3,079,251**	**£2,258,654**	**£2,525,035**
Total Non-Land Costs	**£38,541,511**	**£40,519,352**	**£60,429,974**
Developers Profit on cost			
% Profit on cost	10%	15%	20%
Total Profit	**£6,610,242**	**£8,209,090**	**£9,762,312**
Residualised Land Price (inc. stamp, fees and DD)			
Total	**£27,543,283**	**£14,333,024**	**-£11,529,672**