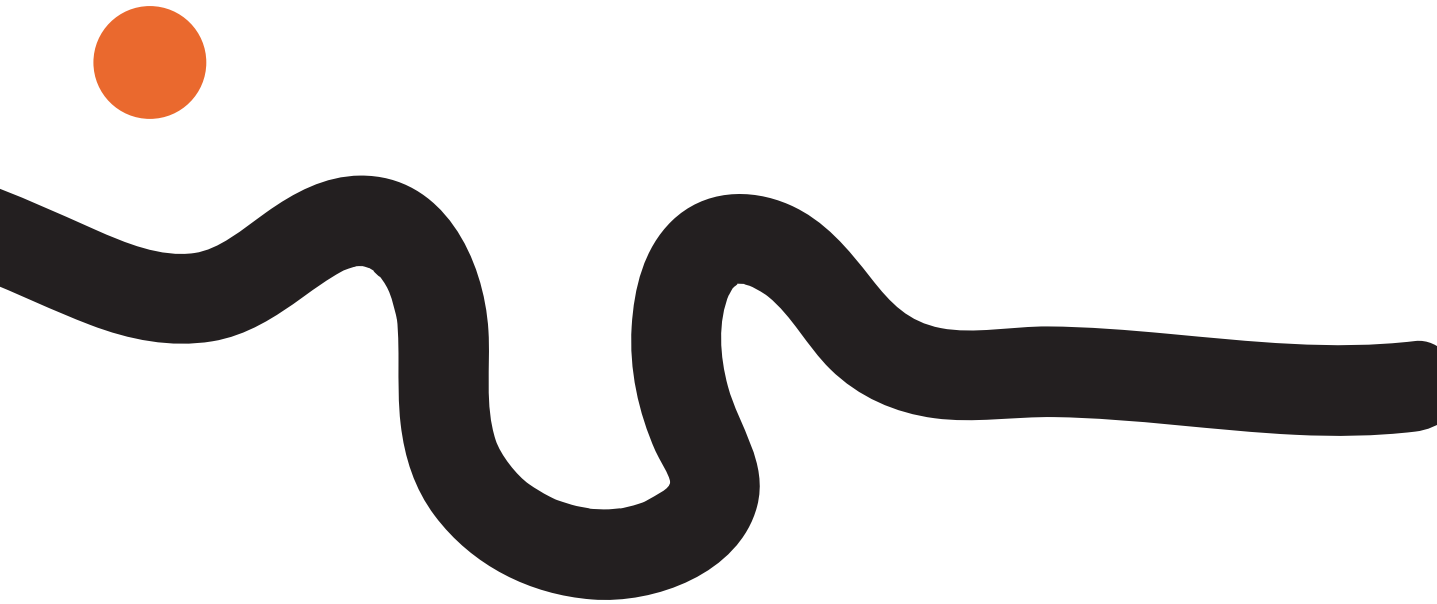

London’s Knowledge Clusters

London's Knowledge Clusters

By Jack Sallabank,
Future Places Studio

A report by

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“London should be looking to lead the world in science and technology.

The question we have is — what role does the property sector play?”

PAUL WILLIAMS, DERWENT LONDON

PAUL WILLIAMS, DERWENT LONDON

We would like to thank those that have taken the time to be interviewed for this report.

Professor Neil Alford, Imperial College London

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Dame Wendy Hall, Southampton University

Paul Williams, Derwent London

David Williams, London Borough of Tower Hamlets

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Foreword

London is famously a city of villages. The capital is a remarkable collection of neighbourhoods - each with its own distinct character and history.

We are delighted to have commissioned this – the first report for London Property Alliance – which looks at the role of evolving villages or 'clusters' based on the life sciences and associated industries. These delicate eco-systems, built on the strong foundations of London's world-class universities and teaching institutions - support jobs and innovation in education, science, healthcare, technology and creative services.

Knowledge Clusters are an increasingly important part of London's economy. This qualitative study for the London property sector has the following aims:

Explore a number of Knowledge Clusters in London, explain what they are and how they have developed and look at their challenges and opportunities.

Explore how the property sector can best respond in specific Knowledge Clusters.

Make recommendations on how the London property sector can work with the Greater London Authority and local councils to further develop London's Knowledge Clusters.

Rosie Day
Assistant Director,
London Property Alliance

I'd like to thank the research's sponsors - British Land, Cushman & Wakefield and Derwent London - for supporting and helping drive the findings of the report. I'd also like to thank the Boards of CPA and WPA, and the members of our newly formed Camden Working Group, for their valuable contributions.

As an organisation representing the owners, investors, professional advisors and developers of real estate in Central London, we are proud to support thought leadership and across the capital. We hope this report on London's Knowledge Clusters does just that.

UNIVERSITY COLLEGE LONDON, BLOOMSBURY

Executive summary

For many, London is a city of clusters. In Soho you have a clustering around media, advertising and digital marketing. The City and Canary Wharf are financial clusters. East London is a technology cluster. Agglomerations of sectors in specific locations are not new, but there are a number of features which are common to the Knowledge Clusters identified in this report:

1. Knowledge Clusters are geographical locations which attract organisations from the knowledge economy: a sector based on knowledge intensive activities, creating a greater reliance on intellectual capital rather than physical inputs. It is normally centred around education, science, healthcare, technology and creative services.

2. Knowledge Clusters tend to initially form around a specific anchor such as a university or hospital.

3. As the cluster develops there is strategic intent from members (anchors and tenants) of the Knowledge Cluster to support its growth and develop an eco-system of activity which includes start-ups, scale-ups and anchor corporates.

4. Creating opportunities for knowledge exchange between members of the clusters is encouraged. This can include shared learnings, collaborations, partnerships and joint ventures.

5. The local authority plays an active role in the growth and development of a Knowledge Cluster.

6. A positive impact on the local community is a key measure of success for a Knowledge Cluster.

London has a number of geographical locations which are established or emerging Knowledge Clusters. This report explores four such clusters, each at a different stage in their evolution and each with their own opportunities and challenges.

1. King's Cross and Euston: established Knowledge Cluster
2. White City: emerging Knowledge Cluster
3. Whitechapel: potential Knowledge Cluster
4. Sutton: future Knowledge Cluster

Key findings of the report
Based on interviews with subject matter experts, local authorities, anchor institutes and the property sector, the report's findings can be summarised as:

1. **All clusters are unique**
Each of the clusters that we explore in this report have challenges and opportunities which are unique to that location and therefore require a development strategy specific to that location.

2. **Role of life science**
Within the Knowledge Clusters that we explore the dominant or emerging sectors are life science and technology.

3. **Feast in the future**
There is over 2 million sq. ft of laboratory space which will be delivered across the four clusters featured in this report. That space will come on stream in the next 5 – 10 years.

4. **Famine in the present**
There is a shortage of commercial laboratory space in London at present.

5. **Opportunities for the property sector**
In each of the clusters featured in this report, there is a need for the property sector to contribute to the development of the cluster.

6. **Role of the local authority**
The local council has a pivotal role to play in the future of each of the Knowledge Clusters and increasingly this will include working with the property sector to develop space specific to that Knowledge Cluster.

Recommendations
This report makes the following recommendations:

1. The Greater London Authority, local councils and the London property sector work with key stakeholders (such as universities and hospitals) in each of London's Knowledge Clusters to produce a white paper that will outline a collaborative approach to the development of that cluster.

2. In specific locations the property sector needs to deliver space which supports the growth of that Knowledge Cluster. That space should include:

   - Lab enabled facilities in future developments
   - Re-furbishing existing buildings to deliver laboratory space
   - Affordable space for start-ups with flexible leases
   - Space for convening and collaborating between members of the Knowledge Cluster

3. In specific locations the local council should be supporting developers and landlords to provide space specifically for the growth of that Knowledge Cluster. This should include:

   - Greater flexibility from B1 use to D1 use
   - Speeding up the planning process where possible
   - Incentivising developers and landlords to deliver space specific to the knowledge economy

GRANARY SQUARE, KING'S CROSS

Introduction to Knowledge Clusters

In 2014 The Brookings Institution released a report authored by Bruce Katz and Julie Wagner called The Rise of Innovation Districts. This detailed the movement of innovation from out of town science parks into urban areas or 'innovation districts' particularly in secondary cities[1]. In London we have seen a similar trend of 'urban based innovation' which is fuelling the growth of London's Knowledge Clusters. The factors driving this are:

- **Talent:** Young talented people wanting to live and work in a vibrant and growing city, rather than the outskirts of a small town

- **Open innovation:** Innovation was once regarded as a dark art which happened secretly within an organisation for fear of ideas or Intellectual Property (IP) being stolen. Now organisations see the benefit and opportunity in collaborating with third parties, which has led to the concept of 'open innovation'.

- **Universities:** London's universities have had a catalytic role to play. These can be summarised as:

1. Centres of excellence: Imperial College London, Kings College London and University College London are world class universities - organisations want to be located near to them
2. Spatial: London's universities are expanding their footprint and in doing so they are becoming more open to the city, which has in turn, created an environment more conducive for collaboration
3. Commercial: Universities are getting better at commercialising their research in the form of start-ups and spin outs

How do Knowledge Clusters form?

Each of the clusters explored in this report have a different story behind their origin; they illustrate that there isn't 'one way' for clusters to form. We identified three drivers:

1. Serendipity: a series of unrelated actions by key parties in a specific location which begin to naturally create a critical mass of activity.
2. Top down: led by an anchor institute and/or the local council a number of strategic decisions are made to stimulate the development of a cluster.
3. Bottom up: a critical mass of activity from a specific sector begins to form in a location which then attracts anchor institutes and anchor corporates.

It is important to note that these three typologies are not mutually exclusive and different periods of a clusters evolution can be characterised by different drivers.

Typically, at the heart of a Knowledge Cluster is an anchor institute such as a university and / or a hospital. The 'cluster effect' then takes place as a range of knowledge economy tenants are attracted to locate within or around the anchor as they seek opportunities for collaboration, access to talent, resource and insight.

It is only over the course of the last 10 – 20 years that universities have had the open and collaborative model needed for them to be at the heart of a cluster. The traditional model of universities has been defined by a hard edge perimeter - single use buildings and faculties which were treated as separate growth opportunities. All of that started to shift in the last 20 years.

> "In the 1960s the perceived opinion was very much against urban universities. People who made the case for economic investment in town were overruled by the Ministry of Education and the University Grants Commission on the grounds that higher education needed to be out of town, needed to be in a green setting, needed to have lots of space for expansion, needed to be commutable by car. Those rules were built into the funding requirements in this country and the same thing happened in the US."
>
> Michael Hebbert, Professor Emeritus on Town Planning at UCL and author of The Campus and the City.

"Much more of an emphasis has been placed on joining up the buildings and there is a very big shift towards mixed use buildings with the typologies becoming much more urban." Michael Hebbert.

Two of the key drivers of this change for universities has been the need to create a place which attracts the best talent (students and faculty hires), and the need for universities to generate a greater commercial return.

This shift from universities has enabled them to become the centre around which a cluster can form. Kat Hanna from Cushman & Wakefield wrote in the report Spaces to Think, "the alignment of two trends – the growth of London's knowledge economy and the expansion of London's universities – presents London with a unique opportunity to cement its reputation as a leading hub for higher education, research and innovation." [2]

WHITECHAPEL

BLOOMSBURY

“We want to change the traditional long lease model for our tenants to one where instead we work with you as a partner. We believe the traditional long lease model in London dœsn’t help a Knowledge Cluster eco system.”

JOHN ANDERSON, DIRECTOR OF FINANCIAL STRATEGY, IMPERIAL COLLEGE LONDON

The Knowledge Cluster eco-system

Integral to a successful Knowledge Cluster is the ambition of cluster members (anchors and tenants) for it to be more than the sum of its parts. In other words, each organisation or company wants to contribute to something much greater than itself; this requires both a holistic and a collaborative approach to developing the Knowledge Cluster ecosystem.

Ecosystems are complex but can be best described as ‘an interconnected set of people and resources (and their physical environment) that provide the context for innovation-driven enterprises to start, grow and scale.’[3]

A Knowledge Cluster ecosystem requires a range of members, facilities, infrastructure and support:

Members	Facilities	Infrastructure	Support
University and/or research institutes / hospitals	University campus / research facilities / clinical facilities	Public realm	Governance
Start-ups	Affordable work space for start-ups	Close to transport nodes	Networks
Scale-ups	Incubator facilities	Food, drink, retail, leisure	Leadership
Anchor corporates	Multi-tenant space for SMEs	Housing including affordable housing	Investment
VC investors / Patient Capital Investors	Space for large single tenant occupiers	Digital (high speed Wi-Fi)	Political buy-in

For this report we are primarily looking at the facilities and space requirements of a Knowledge Cluster.

Space requirements of a Knowledge Cluster

One of the key trends that we have found in the four clusters that this report explores is the presence of life science.

“The life sciences industry represents one of the dominant economic sectors in the UK. ‘Health life science’ refers to the application of biology and technology to health improvement, including biopharmaceuticals, medical technology, genomics, diagnostics and digital health.”[4]

The presence of life science is one of the complexities of developing appropriate facilities for the growth of a Knowledge Cluster. Since the turn of the century there has been a shortage of commercial laboratory space in London; this was highlighted by a 2016 report into the provision of laboratory space commissioned by MedCity.[5]

There are a number of reasons behind this shortage:

- Complexities of building laboratories within London
- Cost for developing a laboratory building can be 20 % - 30 % higher in the base build than if developing for a standard office
- Greenfield science parks (e.g. Oxford and Cambridge) being the more obvious location to build laboratories
- Perceived lack of demand for such space within London
- Booming office market in London

Despite the complexities and additional costs of laboratories, the growth of London’s Knowledge Clusters now makes it more relevant for commercial laboratory space to be provided in London. The rent profiles for laboratory space in the locations that are explored in this report can be upwards of 30% - 40% higher than office rents.

Alongside the growth of London’s Knowledge Clusters is an evolution of how laboratories are designed, driven in part by an urban context and by advancement in technology. The following list is intended as a starting point for the property sector when thinking through an ‘urban laboratory’. [6]

- Make laboratories flexible and agile spaces. In return, lab space can be smaller than those expected in more traditional rural science parks
- Spaces that accommodate the exchange of knowledge and information
- Spaces that enable collaboration between small groups
- Mobile benches and unassigned workspaces
- Retractable electrical cords in the ceiling and putting technical infrastructure into moveable facades so that workspaces can be set up in different configurations around the lab floor
- Heavy duty floor slabs in corridors to accommodate the moving of heavy equipment
- Attractive workspaces to attract talent
- The miniaturisation of laboratory equipment has resulted in less space hungry pieces of equipment
- An improved relationship with the outside world - inviting people in to understand what goes on in a laboratory

Urban laboratory

An example of an urban laboratory is the planned new development at the Université Pierre et Marie Curie in Paris, which is still in the planning stage. The development is intended to bring together researchers from different disciplines, start-ups and established companies under one roof.

The building will be open to the public, who will have access to the building’s rooftop which is laid out as a park. The stairway leading to the roof terrace will allow visitors to see the labs and their everyday routine. The divisions between the labs will be transparent to ensure a visual link between different workplaces. In addition, the ground floor will hold a public bookshop, a café and exhibition areas. [7]

The below table provides an overview of the type of space required in a Knowledge Cluster beyond that of the anchor institute.

Space Requirements	Components of the space	Delivery challenge
Start-up space	CAT A office space designed to accommodate co-workers and small start-ups	- Below market rate cost - Flexible lease length required - Requires additional level of operational support
Laboratory incubator space	Wet and dry laboratory space to accommodate a range of science including chemistry, biology and computational science. Tenants will be start-ups	- Unless associated with a university pipeline of tenants can be difficult to achieve - Expensive to develop - Expensive to fit out - Different users have different requirements - High turnover of users - Health & safety complexities - Heavily regulated - Requires skilled operational support
Scale space	Wet and dry laboratory space to accommodate life science companies at the point of scaling their business	- Expensive to develop - Expensive to fit out and user dependent so generally tenant will carry the cost or they will forgo the rent free period - Health & safety complexities. - Heavily regulated
Corporate space	Wet and dry laboratory space to accommodate large anchor corporates	- Expensive to develop - Expensive to fit out and user dependent so generally tenant will carry the cost or they will forgo the rent free period - Health & safety complexities - Heavily regulated

“The life sciences industry represents one of the dominant economic sectors in the UK. ‘Health life sciences’ refers to the application of biology and technology to health improvement, including biopharmaceuticals, medical technology, genomics, diagnostics and digital health.” [4]

LIFE SCIENCES INDUSTRIAL STRATEGY

Challenges for Knowledge Clusters

There are several short to long-term challenges that can affect a Knowledge Cluster at different stages in its evolution.

Short term: Speed of development

Once a Knowledge Cluster has begun to form and attract early adopters the speed at which it can respond to the increasing demand is a challenge. This issue is especially prevalent with Knowledge Clusters seeking to accommodate life science. David Green, from Perkins + Will architects, has delivered numerous laboratory projects in the US and feels this is the UK's biggest challenge:

"The regulatory and planning process is extremely time consuming and expensive in the UK, more than anyplace else I have worked. In the US, for instance, one would deliver a project in 2 years so there is a much higher probability that the project is aligned with the market issues and demands. It is almost impossible to predict a market 5 years out and this is why we have seen less commercially driven, speculative research facilities in the UK. It takes too long to get these projects constructed. In the UK this effort is being pushed forward, centrally, but is not being pulled forward by the market."

Medium term: Cost increase

The agglomeration benefits of being within a Knowledge Cluster are one of the reasons why a cluster grows beyond the initial anchor institutes and early adopters. Proximity enables opportunities for collaboration, shared resources, access to talent and networks. However, as a cluster grows it can create cost challenges for that area:

1. A growing concentration of businesses and people raises demand for factor inputs, which in turn raises prices in these markets. [8]

2. Population growth places additional demands on local services and transport, which may increase the costs and/or effect the quality of service provision. [9]

3. Population growth places additional demands on housing in a location.

The costs associated with higher densities are the diseconomies of agglomeration.[10] The long-term sustainability of a cluster is dependent on an area's ability to manage these challenges.

Medium – long term: Brexit

Whilst still an unknown, Brexit may have a negative impact on the medium to long-term sustainability of Knowledge Clusters. A vital ingredient of a Knowledge Cluster is its ability to help businesses that locate in that area to access, attract and retain talent. It remains to be seen how Brexit will impact London's ability to keep attracting the best talent, and the subsequent knock on effect to our Knowledge Clusters.

Long term: Sector sustainability

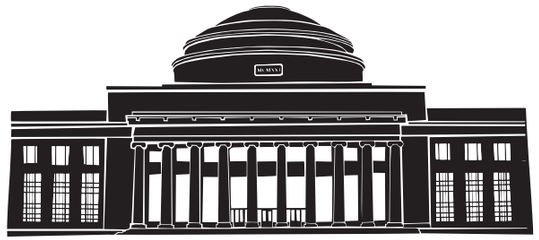
The success of a specific sector can affect the long-term sustainability of a Knowledge Cluster. Life science is a research-intensive sector with many products not being market fit for 15 – 20 years. On one hand this could make for a more secure tenant base for a Knowledge Cluster, but on the other hand life science is a risky market with a high failure fate.

Knowledge Clusters need to mitigate against this risk by accommodating a range of knowledge economy tenants across their cluster and providing space that can transition easily from laboratory to office space.

Global examples of Knowledge Clusters

Some of the opportunities and challenges that London's Knowledge Clusters are experiencing are similar to the experiences of Knowledge Clusters globally. Three examples are Kendall Square, New York and Barcelona

Kendall Square



Kendall Square, alongside Silicon Valley, is arguably the world's leading Knowledge Cluster. Kendall Square follows the 'anchor model' of a Knowledge Cluster with the anchor being the Massachusetts Institute of Technology in Cambridge Massachusetts. Additional anchors in close proximity are Harvard University and Massachusetts General Hospital.

66,000 people live and work in the Kendall Square area every day.[11] 30 different industry sectors are represented with the top being technology, the second science and the third professional services. [12]

Kendall Square has a number of the assets that London based Knowledge Clusters seek to replicate

- World class intellectual institution in Massachusetts Institute of Technology (MIT)
- Significant research facilities such as: Genomics, Neurological Research, Cancer Research, Creative Technology.
- Incubator facilities for startups: Cambridge Innovation Centre (Technology incubator) and Lab Central (Biotechnology incubator). The Cambridge Innovation Centre has housed over 1,400 companies and attracted more than $1.8 billion in venture capital investment to its startups.[13]
- Anchor tenants from biotechnology and pharmaceuticals: Merck, Pfizer, Novartis, J&J, Biogen, Amgen. 13 of the top 20 global pharmaceutical companies are located in Kendall Square.[14]
- Anchor tenants from digital technology: Google, Amazon, Facebook, Yahoo, Microsoft, Twitter. ▸
- Significant presence from VCs: Google Ventures, Fidelity Biosciences, MPM Capital, Highland Capital Partners.
- Institutional support for start-ups: MIT Global Founders Skills Accelerator, Start MIT, MIT Ideas Global Challenge, MIT Entrepreneurship Centre.[15]

The Kendall Square that we see today has been nearly 50 years in the making. MIT started buying up former industrial land in the 1970s and then leveraged its own properties in order to enable the re-development of the land, long before universities were seen as Knowledge Cluster anchors.

"The fabric of the area as a former industrial area lent itself to the building typologies which are required for laboratory space. Not only in terms of the size of the blocks but old industrial buildings which were large and flexible and could easily be converted into laboratories and technology spaces. That area could therefore be quite resilient due to the ability of the buildings to flex from one knowledge based industry to another. At one point the area developed as a hub for the dot com boom in the late 90s. When that bubble burst it seamlessly transitioned to the biotechnology and pharmaceutical industries because those were areas which benefited from being close to the knowledge that was coming out of universities, but also required the same type of footprint and same type of buildings." Victor Eskinazi, Sasaki Architects.

New York

New York is an interesting example to illustrate as it demonstrates how the State is trying to attract the knowledge economy, especially life sciences, into the city.

In the US, New York competes primarily with the San Francisco Bay Area and Kendall Square to attract and retain life science companies. There are a number of challenges that New York has had in competing with these locations:[16]

1. A high cost structure in NYC makes it more challenging for start-ups to gain proof of concept
2. Lack of a critical mass of residents with experience of commercialising life science products
3. Universities have not yet fostered a culture of tech entrepreneurship
4. Lack of laboratory facilities

In order to overcome the lack of laboratory facilities we have seen a number of moves by the State, developers and businesses:

- New York State has pledged $300million to help landlords transform their properties into appropriate work spaces to accommodate life sciences
- The developer Alexandria Real Estate has launched Alexandria LaunchLabs the first biotech incubator to launch in the city. The companies that work from Alexandria LaunchLabs have access to capital for funding through the Alexandria Seed Capital Platform.
- Johnson & Johnson has launched a JLABS in partnership with New York State. This model includes shared and private laboratory space.

Barcelona

22@ Barcelona is regarded as the first 'innovation district' to have been designed by policymakers. As a Knowledge Cluster it is an interesting example as it started without an anchor institute.

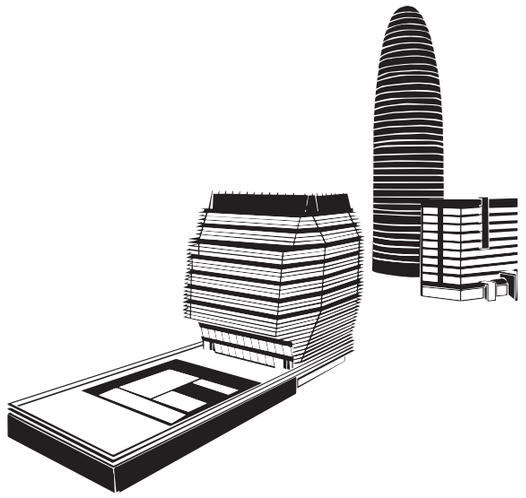
In 2000, the City Council under the leadership of former Mayor Joan Clos created an urban regeneration project in Poblenou, a former industrial district close to the city centre. The project had three objectives:

1. Large scale urban regeneration
2. Attract high-tech industries from knowledge economy sectors
3. Make Barcelona a leading centre of scientific and technological production

In order to achieve these objectives 22@ focused on attracting a cluster to form around five sectors: media, ICT, medical technologies, energy and design. ▸

'All of the land in the 22@ district belongs to private owners. The state provides incentives for both real estate development companies and private owners to build new spaces by increasing the construction rights to build per square meter of land owned, under the condition that the new activities developed are knowledge intensive.'[17]

22@ now occupies nearly 500 acres of land and from 2000 to 2011 nearly 4,500 companies joined the area. The city's five top universities now have an office in the location.



What can London learn?

London can learn important lessons from these and other global examples of Knowledge Clusters. Those learnings include

1. The role of the state in helping to bring forward and develop a Knowledge Cluster
2. The type of tenants and activity it is possible to attract to an area should the Knowledge Cluster develop successfully
3. The active role needed by the property sector to deliver buildings specific to the knowledge economy

“The property industry has a chance to make a material difference in human wellness if we provide the right spaces for London’s research industries to flourish.”

JULIETTE MORGAN, HEAD OF CAMPUS - REGENT’S PLACE, BRITISH LAND.

This report will now explore four of London’s knowledge clusters; King’s Cross and Euston, White City, Whitechapel and Sutton.


KING’S CROSS


WHITE CITY


WHITECHAPEL


SUTTON

1

KING'S CROSS AND EUSTON

ESTABLISHED CLUSTER

This Knowledge Cluster is known by many as The Knowledge Quarter, a one-mile radius of King's Cross with over 90 members from tech, research, arts and academia.[18] Based on the quantity and impact of the tenants located in King's Cross and Euston this location is London's leading Knowledge Cluster. However, the area does have a space and cost challenge which could inhibit the cluster's future development.

THE FRANCIS CRICK INSTITUTE

"We see ourselves as being in the role of trying to enable the area to continue to be successful and a large part of that is trying to bring forward additional space for the life science and technology based sectors. There are a number of big opportunities around that we are exploring."

DAVID JOYCE, DIRECTOR OF REGENERATION AND PLANNING, LONDON BOROUGH OF CAMDEN.

Cluster spread

The map of The Knowledge Quarter is a one mile radius of King's Cross station. To the west this includes Great Portland Street Station, to the South near Holborn Station, to the east Angel station and to the north half a mile up the York Way.

The core of the cluster is west to east along the Euston Road. This includes the British Land campus Regent's Place to the west and the Argent development Granary Square to the east. Along that route there are a number of anchors including University College London, University College London Hospital, The Wellcome Trust, the London BioScience Innovation Centre and The Francis Crick Institute.

How the cluster formed

In 1992 Norman Foster said of King's Cross: "you can't come across a site that is more ridden with all the problems of the inner city than King's Cross. It's a deprived area. It's a wasteland, close to the heart of the city. All those sidings, and a big question mark. Dereliction. An opportunity, an incredible opportunity, but a difficult one."[19]

The King's Cross described by Norman Foster is unrecognisable from the vibrant, attractive and interesting location that it is today. But its evolution as a Knowledge Cluster has been through a series of serendipitous moments, which have led to top-down strategic moves to consolidate and strengthen the cluster. One of those strategic moves was The Francis Crick Institute locating to the area. The irony of the story behind The Crick coming to the area is that the London Borough of Camden was originally not supportive of the plans as the site had been earmarked for housing. The Crick is now a major calling card for the area and is central to Camden's attempts to further develop the Knowledge Cluster.

KING’S CROSS

THE WELLCOME COLLECTION, EUSTON

“We seek to convene the brightest minds in medical research, alongside decision makers on policy, alongside innovators and entrepreneurs. Euston Road is the place for us where all that happens.”

ED WHITING, DIRECTOR OF POLICY, WELLCOME TRUST.

Components of the cluster

Drop a pin into King’s Cross and Euston and you will most likely land on a location in which people are doing something to push the boundaries in life sciences.

A journalist recently reported on his visit to the operating theatre in University College Hospital London (UCHL) on Euston Road, where he witnessed a 59-year-old man from Potters Bar having his cancerous prostate gland removed by the four metal arms of a robot.[20]

The same paper reports on the University College London (UCL) Centre for Medical Imagining, based on Foley Street (five minutes’ walk from Euston Road in Fitzrovia) launching a project to create a tiny surgical robot that could transform the treatment of children with spina bifida and other congenital conditions. [21] This project is funded by the biomedical research charity The Wellcome Trust (based on the Euston Road) which is the world’s second wealthiest charitable foundation, with an endowment of over £23 billion.

One of Wellcome Trust’s best-known beneficiaries, The Crick, opened in 2016. It brought together 1500 scientists and support staff making it the biggest biomedical research facility under a single roof in Europe. [22]

For this part of London, a relatively recent addition which could have significant benefits for the life science cluster, is the emerging presence of the data and Artificial Intelligence (AI) based organisations. In 2012 when the AI company DeepMind moved into King’s Cross it occupied 29,000 sq. ft. In 2014 Google acquired DeepMind for $500 million. Six years later the company, still located in King’s Cross, span 320,000 sq. ft.
In 2016 DeepMind began a partnership with one of their neighbours in the Knowledge Quarter, UCHL, to explore the potential benefits that AI technology could have in planning treatment for patients suffering from head and neck cancers. To do this, UCHL supplied DeepMind with permission to access up to 700 scans from former (consenting) patients.

The King’s Cross and Euston cluster also benefits from unrivalled transport connections. The stations connect London with the North, but also Oxford and Cambridge. This connection with Oxford and Cambridge helps position London as part of the ‘golden triangle’, the largest life science cluster in Europe. In addition, St Pancras connects London with the rest of Europe and the research hubs of Paris and Brussels.

Notable tenants in the cluster include Google and Facebook.


JAMES COOK
The Voyages

Kings Cross and Euston
Challenges for the growth of the cluster

1

Lack of Space

The MedCity report of 2016 found that along Euston Road was the preferred location for life science companies looking to locate in London. [23] This correlates with our own research for this report with numerous mid-size life science companies stating that, if the space were available, King's Cross and Euston would be their number one location. It has also been reported that the US pharmaceutical giant Merck are keen to set up base in this area. This move from Merck would be in line with the 'hubs to hot spots' model that we are seeing from pharmaceutical companies that are now locating to urban environments close to potential research partners, as opposed to isolated science parks. [24]

Despite the interest from potential tenants there is a lack of commercial laboratory space in the cluster. Camden Council is currently working with developers in the area to help address this problem:

- The developer, Stanhope, is planning to deliver 400,000 sq. ft. of 'lab enabled' space as part of the development of the site between The British Library and The Crick. This project is 5 – 8 years away from coming on stream.
- There is the potential that we will see laboratory space form part of the Euston development by LendLease.
- The council is looking at a number of their own sites including St Pancras Hospital.

THE BRITISH LIBRARY

REGENT'S PLACE

2

Space for start-ups and SMEs

Affordable space for start-ups with flexible lease lengths are key to ensuring the health of a Knowledge Cluster ecosystem. British Land seek provision for this part of the market in the King's Cross and Euston cluster with their flexible workspace brand Storey. However, providing more affordable workspace in the cluster remains a challenge.

3

Density and infrastructure

Developing the core parts of this cluster is complex and slow due to the density of the location and the travel infrastructure in the area. This creates both a logistical and regulatory challenge.

King’s Cross and Euston
Opportunities for the property sector

First movers

For developers and landlords in the core areas of the cluster there is an opportunity to benefit from the demand for laboratory space and be first movers in the market. This is more likely to be from refurbishing existing buildings as opposed to building new. We have seen this approach adopted in the US recently where 1.1 million sq. ft of new laboratory space in San Diego became available in under a year by converting office buildings. In San Diego’s Sorrento Messa location, all of the laboratory space comprises industrial and flexible buildings that have been converted.[25]

Convenors

Knowledge Clusters require places, spaces and opportunities to bring people together to think, meet and collaborate. Those with buildings in core areas can play an important role in this. We have seen this activity from British Land who sponsored the 2018 Knowledge Quarter conference ‘The future of knowledge’ and ‘Thought Fest’ - a week long festival of interactive experiences exploring sustainability, wellbeing, technology and the future. [26]

Recommendations

The London Borough of Camden is already in conversation with a number of developers in the area about how best to respond to the supply and demand challenge in the core areas of the cluster. There is the potential for laboratory space to come on stream as part of new developments, but the majority of that is 5 – 10 years away.

What is needed is a short-term strategy that sees laboratory space being delivered in the next two years, or there is the risk of losing interested occupiers. This issue has become more pressing with the emergence of the Knowledge Cluster in White City.

2

WHITE CITY

EMERGING CLUSTER

Since 2009 Imperial College London has been developing its White City campus. This development has coincided with Stanhope re-developing BBC Television Centre (now Television Centre) and refurbishing Media Village (now White City Place). These two pieces of activity, supported by a pro-active local authority, have created an interesting emerging Knowledge Cluster. The challenge the area has is how to build on the opportunity.

“One of the conversations I have had with Alice Gast, the President of Imperial College, is how do we create a Kendall Square in White City?”

CLLR ANDREW JONES, LONDON BOROUGH OF HAMMERSMITH & FULHAM

Cluster spread

The cluster in White City is currently limited to a circa half mile strip along Wood Lane, with the Imperial College London campus to the North of the A40 and then running south to Television Centre / Wood Lane Station.

How the cluster formed

Initially a number of serendipitous moments are to thank for what has now become a top down strategic cluster with active involvement from the local council.

In 2006 – 2009 Imperial College London was looking for suitable land to develop post graduate student accommodation and thus acquired the northern part of their White City site. In 2009 the BBC announced that it was leaving the area and the council were concerned about the effect that would have. The London Borough of Hammersmith & Fulham began a conversation with Imperial College London to encourage them to deliver something more dynamic on their site, alongside the post graduate accommodation. At the same time the university’s Department for Chemistry, based on the South Kensington campus, required new space and showed interest in moving to White City.
“The arrival of 800 world class academics, researchers and postgraduates at The Molecular Science Research Hub (MSRH) in White City is pivotal - and provides both a strategic boost to underpinning the ecosystem at White City, whilst also mitigating wider operational challenges across the College’s estate.” John Anderson, Director of Financial Strategy, Imperial College London.

Subsequently Imperial College London has acquired the south part of the White City site taking their land holding to 23 acres.

WHITE CITY PLACE WITH IMPERIAL COLLEGE LONDON CAMPUS IN THE BACKGROUND

“What we hope is that White City will become a district for innovation, invention and entrepreneurship.

A place where things will really happen.”

PROF NEIL ALFORD, ASSOCIATE PROVOST, IMPERIAL COLLEGE LONDON.

Components of the cluster

At the heart of the cluster is the Imperial College London White City Campus which is still in development. The MSRH, which will be the new home for Imperial’s Department for Chemistry, is set to open later this year. That has joined the buildings already on site which include student accommodation and the 190,000 sq. ft Translation and Innovation Hub (I-Hub) which opened in 2016. Within the I-Hub is the Imperial Incubator which is 18,000 sq. ft of space for life science start-ups and SMEs.

The Michael Uren Biomedical Engineering Research Hub will open in 2019 and will be home to over 500 engineers, clinicians and scientists. In addition to this will be the School for Public Health which Imperial is currently raising funds for.

“By 2020 there will be 1300 world class academics, researchers and postgraduates on the site and that is a scale that is meaningful. This is an exceptional community that can legitimately consider MIT, Stanford and Oxbridge as its peer group. That fundamentally changes the perception of what White City is.” John Anderson, Director of Financial Strategy, Imperial College London.

The next piece of the jigsaw for Imperial College London is ‘Scale Space.’ This joint venture with digital venture builder Blenheim Chalcot, will result in a 200,000 sq. ft technology and innovation centre on the south side of the Imperial site. The £50million development will provide space for new, high growth technology companies as well as housing many of Imperial’s and Blenheim Chalcot’s businesses. This will mean that a business can go from being in the Imperial incubator and to then scale-up on-site. This solved a challenge Imperial had experienced on their South Kensington site.

“In the original incubator that we ran, after a three or four-year gestation period, the start-ups would have to move out because they were becoming too big for the incubator. Due to their need for high tech facilities they would often have to move to one of the science parks somewhere outside of London and, as a consequence, risk losing a substantial proportion of their employees due to needing to commute across London.” Tony Hickson, Managing Director, Imperial Innovations.

The I-Hub and Scale Space will not only provide the facilities, infrastructure and networks to support the growth of tenants, but the ambition of the College is to also provide a leasing structure for tenants which best supports their development.
“We want to change the traditional long lease model for our tenants to one where instead we work with you as a partner. We believe the traditional long lease model in London doesn’t help a Knowledge Cluster eco system.” John Anderson.

Opposite the Imperial campus are the newly refurbished and re-developed BBC buildings (White City Place and Television Centre) by Stanhope. They are a mixture of residential, office, leisure, retail and F&B. New tenants include co-working space provider Huckletree, as well as Net-A-Porter, Publicis and the White Company. In addition to the media, arts and technology companies now being attracted to White City, Stanhope has recently accommodated two life science tenants, Autolus and Synthace.

Seeing Autolus and Synthace take space in White City Place, is an early sign of the ripple effects created by Imperial College London.
“We noted the growing demand for lab enabled accommodation in Central London, and how the life science sectors are drawn to cluster in certain locations that provide the right environment and amenity for their research to prosper. We have successfully attracted and lab enabled accommodation for two pioneering firms - Autolus and Synthace and hope to announce more life science firms to join the growing community in White City.” Charles Walford, Stanhope.

Jonathan Burroughs from Creative Places - a key contributor to the 2016 MedCity paper which looked at the demand for life science space in London - explained how developers need to do more than just be located next to institutes such as Imperial College London.

“Developers/Investors can be key players in a Knowledge Cluster, but they have to embrace the sector and be in it for the long term. It is much more than a property offer, and much more about the way in which businesses will gain the added value from being in the location. Leaving that case to look after itself, building space next to academic institutions and believing that it is good enough, won’t work.”

This view is supported by Kat Hanna from Cushman & Wakefield in the report Spaces to Think, who suggests developers could work with institutions and local communities to create a clear vision for the mix of uses and tenants required in a Knowledge Cluster.[27]

White City
Challenges for the growth of the cluster

1

Lack of anchor corporates

A key element of a Knowledge Cluster, which is currently lacking in White City, is the presence of large corporate anchors. “The priority at the moment would be to attract anchor corporates and that is where the partnership between Imperial College London and the local authority should focus. We need to utilise Imperial’s network, credibility and investment to attract corporate investors, anchor corporations and life science players to move to the area. Imperial can do a lot to attract those anchor tenants, but so can the council in terms of creating a supportive and conducive environment for inward investment.” Cllr Andrew Jones, London Borough of Hammersmith & Fulham.

This is a view supported by Imperial College London. “I would love White City to attract a global life science corporate like GSK, J&J or Merck on its own terms – I believe Stanhope share this aspiration.” John Anderson, Director of Financial Strategy, Imperial College London.

In addition to the 1 million sq. ft of office space that currently occupies White City Place, Stanhope has planning consent for the adjacent Gateway Project which comprises of a further 1 million sq. ft of commercial space. Therefore, should a large anchor tenant be attracted to the area, there is the land and buildings to accommodate them.

2

Limited scale

Beyond the Imperial College London campus and the Stanhope development, this cluster may be limited by the lack of opportunity to develop further.

White City
Opportunities for the property sector

Extend the cluster beyond White City

Other than the developers who are currently operating in the area Stanhope, St James, Westfield and the proposed education campus- EdCity, there is limited scope for other developers to get involved in the immediate location.

The opportunity for the property sector may lie beyond White City. In the short to medium-term extending the Knowledge Cluster south to Shepherds Bush, and then longer-term north to Park Royal and Old Oak Common.

Recommendations

The London Borough of Hammersmith & Fulham and Imperial College London are working in partnership to develop the White City Knowledge Cluster. A key focus of that partnership must be attracting a big name corporate to the area. As part of that strategy, Stanhope should be working closely with both parties to determine how best to use their current and future space to accommodate the growth of the Knowledge Cluster. The potential for this cluster is evident, however it needs all parties to commit to its growth.

In the medium to long-term the vision for the GLA and local authority should be how they extend this Knowledge Cluster north to connect with Old Oak Common, creating a Knowledge Cluster of incredible scale.

3

WHITECHAPEL

POTENTIAL CLUSTER

The Whitechapel Knowledge Cluster has the potential to position itself as ‘the place where science and technology meet’ but the opportunity has been held back by a lack of progress on a proposed life science campus. The challenge the cluster has is how it can build momentum and compete with the likes of King’s Cross and Euston and White City.

“A large part of my interest is making sure that local people have the opportunity to benefit from the Knowledge Cluster in Whitechapel.”

VICKY CLARK, DIVISIONAL DIRECTOR GROWTH AND ECONOMIC DEVELOPMENT, LONDON BOROUGH OF TOWER HAMLETS.

Cluster spread

The anchor of the Whitechapel cluster in East London will be a life science campus delivered by the Department of Health and Social Care, Queen Mary University of London (QMUL) and Barts Health NHS Trust. The ambition of the campus should be for the cluster to spread to include the tech clusters in Bethnal Green, Shoreditch and Old Street.

How the cluster formed

In 2013 a wider Whitechapel masterplan was signed off by the London Borough of Tower Hamlets and it was this that has stimulated a conversation about developing a life science campus in Whitechapel.

For the last three years key stakeholders in the cluster, Tower Hamlets, Barts and QMUL have met on a regular basis to discuss a life science campus. In 2017 a pre-app was entered into with a view to taking the development forward. Following the pre-app feedback, Barts started work to identify potential development partners.

In July 2018, Barts Health NHS Trust announced that an ‘East London life sciences campus had moved a step closer to reality’. [28] Barts, the capital’s biggest NHS Trust, sold four surplus sites in Whitechapel to the Department of Health and Social Care (DHSC) for £77m to kick-start the development of a cutting edge research campus next to the Royal London Hospital.

Components of the cluster

At the heart of the cluster will be the proposed Whitechapel life science campus which would accommodate roughly 400,000 sq. ft of space for a range of commercial uses:

1. Incubator space: Catering for spinouts from QMUL and other universities. This space would be c 100,000 sq. ft.
2. Scale up businesses: Barts already have a number of companies in Whitechapel that are looking to expand into larger spaces.
3. Large organisations: This space would be targeted at big pharma and med-tech companies.

This model of 'incubator space – scale space – large anchors' is being followed by each of the clusters that we have explored in this report.

In the Brookings report, Katz and Wagner emphasise the importance of innovation districts not being considered 'cookie cutter developments' but instead leveraging the distinct economic strengths in each area. [29] For the Whitechapel cluster the strength that they will be seeking to leverage is the already mature tech cluster of East London.

In addition to having the tech, Whitechapel also hosts one of the most diverse populations ever to inhabit a single geographical area, with all ages, races and beliefs and at least 60 different languages spoken.

'This provides an unrivalled opportunity for scientists to use biological samples and patient data to cultivate new drugs, therapies and treatments. Barts Health will work closely with the London Borough of Tower Hamlets to bring these significant benefits to patients alongside the wider development of the Whitechapel area.' [30]

"Life sciences are going through a revolution. The NHS is finally making available the huge amounts of data that it has to inform innovations of the future. What makes Whitechapel an appealing location is that it's perfectly situated between London's tech hub, the City and the clinical expertise at Barts NHS Trust - one of the largest NHS Trusts in the UK. There is nowhere else in London that can offer this."

FELICITY SARTAIN PHD, LIFE SCIENCE ADVISOR, WHITECHAPEL DEVELOPMENT, BARTS NHS TRUST

“As you are accommodating SMEs you start to create something which is of even more interest to the multi nationals, because not only is there a research base but there is a business base — and the business model being used by most businesses at the moment is around collaboration.”

JONATHAN BURROUGHS, CEO, CREATIVE PLACES.

WHITECHAPEL

“Whitechapel hosts one of the most diverse populations ever to inhabit a single geographical area, with all ages, races and beliefs and at least 60 different languages spoken.”

BARTS NHS TRUST

Whitechapel
Challenges for the growth of this cluster

1

Speed

Relatively slow progress has been made on the life science campus which will form the nucleus of the cluster. Now that the Department of Health and Social Care is the sole landowner it is hoped that they can progress the project

2

Competition

As this report illustrates, there is significant competition from King’s Cross and Euston and White City for life science tenants.

Whitechapel
Opportunities for the property sector

Partnering
It is likely that at some stage the Department of Health and Social Care will look for a developer partner to bring forward the life science campus.

Cluster growth
If the life science campus moves forward there is the potential for the property sector to contribute to the growth of the cluster without needing to develop laboratory facilities. Because of the tech clusters around Whitechapel, the area could develop a ‘hub and spoke’ model in which the life science campus provides the majority of laboratory facilities (the hub) and the tech clusters operate as the spokes. Landowners with property in the area could strategically align their buildings with this model.

Recommendations

Key partners should work to bring the life science campus to market in the next five years. In the meantime, to build momentum before the campus is ready, the opportunity to create ‘mini hubs’ in existing buildings should be explored.

Partners should announce an updated vision and mission statement which is supported by a marketing launch as we have seen with the London Cancer Hub in Sutton.

4

SUTTON

FUTURE CLUSTER

The London Borough of Sutton, along with their partner the Institute of Cancer Research London (ICR) and supported by the Royal Marsden NHS Foundation Trust, have an ambition to create the London Cancer Hub. It will be the world's leading life science cluster, specialising in cancer research and treatment. The council will shortly begin marketing the first wave of the London Cancer Hub to developers.

The London Cancer Hub will be an interesting hybrid model between out-of-town science parks and urban Knowledge Clusters. Challenges for the cluster will include location, competition and its ability to grow as a cluster beyond the initial campus.

“We are now at the point where we are ready to go to market for a developer partner to bring forward the land within the council’s ownership. The council have made a significant financial investment in buying the land and in the New Year will be leading on the procurement of a developer partner.”

DANIEL DORIS, MAJOR SCHEMES PROGRAMME MANAGER,
THE LONDON BOROUGH OF SUTTON.

Cluster spread

The wider London Cancer Hub site is a total of 26 hectares and includes two world leading institutions, the ICR and Royal Marsden. Adjacent to these institutions is a mostly vacant, former hospital site, which is now largely within the council’s ownership. Sutton Town Centre is a 20-minute walk to the north. The ambition of the anchor institutes should be to extend the cluster between their site and the town centre.

How the cluster formed

In 2013 the London Borough of Sutton started a conversation with the world leading institutions in the borough, The ICR and The Royal Marsden, about how collectively they could create a new life science campus. The council and the ICR, supported by The Royal Marsden, then jointly funded a feasibility study into what a campus could look like and how it could be delivered. In 2015 a development framework was produced, which was endorsed by partners in 2016. Since 2016 the council has been acquiring land from Epsom St Helier University Hospitals NHS Trust, that owned the vacant hospital on the site, to bring forward the first wave of the London Cancer Hub.


ICR The Institute of Cancer Research
Reception
ICR

Components of the cluster

“There is a unique opportunity for us to work in partnership with these two world class institutions and deliver the vision, to create the world’s leading life science cluster which specialises in cancer research and treatment. When complete, the London Cancer Hub will offer more than 3 million sq. ft of integrated life-science buildings, including facilities for cancer research, diagnosis, treatment, education and commercial collaboration.” Daniel Doris, Major Schemes Programme Manager, The London Borough of Sutton.

In the new year the council will begin the process of bringing on board a developer partner to help realise the vision of the London Cancer Hub.
“We know that life science led schemes have viability challenges, however we have worked hard to ensure we have a viable proposition to take to the market.
We want a partner who encourages return both financial and non-financial to the council, but also a return to themselves.
We have spoken to a range of developers who have a track record of having done similar projects but we are interested to hear from others who have delivered life science space and buy into our vision.” Daniel Doris

The council commissioned Creative Places to undertake demand analysis and that work helped inform the volume of space that is planned on site.

“You need to build the right amount of space at the right time and you need to build it a step at a time. In Sutton you are starting from a relatively low base so the 3m$^{sq\ ft}$ is what you work your way towards.”

JONATHAN BURROUGHS, CEO, CREATIVE PLACES

Sutton
Challenges for the growth of this cluster

1

Location

On one hand Sutton is conveniently located a 25-minute train journey into central London, easy access to the M25, Gatwick and Heathrow and in close proximity to the Surrey Hills. In addition to this the land prices are cheaper than central London and the cost for space will therefore be cheaper. On the other hand, the location does sit counter to the 'urbanisation of innovation'. It remains to be seen if location will attract or deter tenants.

2

Competition

In 2013 when the council and partners began the conversation about what was possible in Sutton, neither King's Cross and Euston or White City were the established and emerging Knowledge Clusters that they are now. This means that Sutton will be in competition with those clusters for tenants. The USP of the London Cancer Hub is that it is domain specific around cancer.

3

Growth

Once the London Cancer Hub is up and running a challenge will be how the ripple effect is enabled. The GLA is working with the council to look at the potential for Sutton to be an Opportunity and Intensification Area. If this were the case this activity should be strategically aligned to the London Cancer Hub.

Sutton
Opportunities for the property sector

Developer partner
There is an immediate opportunity for developers to respond to the Selection Questionnaire which the council will be releasing when they begin their search for a developer partner.

Medium – long term
There may be future opportunities to benefit from the ripple effect created by the London Cancer Hub, and if the GLA make the area an Opportunity and Intensification Area.

Recommendations

The London Borough of Sutton, and the London Cancer Hub partners, have created a strong and compelling vision supported by acquiring the land to make it possible. The challenge they now have is how to avoid their campus being a modern urbanised science park which fails to build a cluster beyond its perimeter edge. Part of the solution to this is to run a parallel project making Sutton the cheapest place for technology start-ups and scale ups in London. Genome sequencing will be the next trillion-dollar industry[31] and Sutton should be attracting the start-ups that want to play a part in that.

WHITECHAPEL

WHITE CITY

Conclusion

London has the potential to be a leading city for the knowledge economy. Based on the strengths of our universities, hospitals and research institutes we have the foundations to grow geographical locations in which the knowledge economy can flourish. These locations are London's Knowledge Clusters.

This report has identified four Knowledge Clusters at different stages of maturity, each with huge potential. In each of these Knowledge Clusters life science and technology have a pivotal role to play in their future.

The question for London's Knowledge Clusters is; how do they best realise their potential? We have concluded that each of the clusters need a clear strategy defining what the area will become and how it will be achieved. In order for these strategies to be realised three active stakeholders are needed:

1. Anchor institutes
   In each of the locations in this report the Knowledge Cluster is formed around one or more anchor institutes. These institutes are of the size and scale to be attractive to other organisations, but they also have the open and collaborative mind-set needed to be affective anchors. In London we will need to see anchor institutes:

   - Providing a pipeline of start-ups and scale-ups in the cluster
   - Providing laboratory incubator facilities for start-ups and scale-ups
   - Attracting large anchor corporates and VC investors to the location

2. Local councils and the GLA
   It has been very encouraging to find an active and supportive local council in each of the Knowledge Clusters. The council and the GLA have a key role to play.

   - Allowing flexibility in the use of buildings from B1 to D1 use
   - Where possible speeding up the planning process for new developments
   - Incentivising the development of space specific to the knowledge economy, as we have seen in New York and Barcelona

3. Property sector
   An active and engaged property sector is needed for each of London's Knowledge Clusters to develop further. In London we will need to see developers and landlords respond to the market demand for:

   - Developing 'lab enabled' buildings as part of new developments in key areas of a Knowledge Cluster
   - Re-furbishing existing buildings to provide laboratory space in key areas of clusters in the next 12 – 24 months
   - Providing affordable and flexible space for start-ups and scale-ups

Having these active stakeholders in place doesn't guarantee a successful Knowledge Cluster but without the anchor institute, the local council, the GLA and the property sector working together a Knowledge Cluster will not realise its full potential.

Appendix

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London Property Alliance is the umbrella name for the joint working of Westminster Property Association (WPA) and City Property Association (CPA). Together we represent the leading owners, investors, advisors and developers of real estate across Central London.

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