

OLD OAK COMMON, LONDON

'FUNDAMENTAL QUESTIONS'



Team 1: Understanding Density



Team 2: Rethinking Wormwood Scrubs



Team 3: Expanded Transportation Hub



Team 4: A New London Neighborhood

UC Berkeley + Cambridge University Workshop, Spring 2017

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Introduction

The work presented in this compendium is a collaboration between a graduate urban design studio in the Department of City and Regional Planning of UC Berkeley and a graduate team in the Department of Architecture of Cambridge University. The collaboration culminated in an intense, one week-long workshop during March 2017 at Cambridge with graduate students and faculty members from both universities, but greatly benefited from pre-workshop preparations and post-workshop refinement of design proposals, particularly in the UC Berkeley urban design studio. The workshop was supported by both universities and a group of senior academics and practitioners as guest lecturers and studio critics.

The subject matter of the collaboration and workshop is the planning and design of Old Oak Common, an emergent west London transit hub and one of the largest urban regeneration sites in London. The site has recently become part of the Old Oak Common and Park Royal Development Corporation (OPDC), a mayoral initiative that has the potential to reshape west London. The existing brief for the site is to build 24,000 dwellings and floorspace for 55,000 jobs around a new transit station and operation depot for the new Elizabeth Line (aka Crossrail) and a London hub station for the planned high speed rail line HS2 connecting London, Birmingham and the North of England.

The workshop challenge was to consider a number of fundamental questions from an interdisciplinary

perspective. As the participants explore the questions, they put forward alternative solutions to the ambitious development project brief set by the Greater London Authority.

The four fundamental questions were:

- Testing the implications of the densities proposed to accommodate 24,000 dwellings and 55,000 jobs.
- Exploring a land swap to build on part of Wormwood Scrubs in exchange for creating a new park on part of the Old Oak Common site.
- Enhancing the Old Oak Common transit hub by realigning and incorporating the two Overground lines in addition to building on the air rights over the new Crossrail depot.
- Modelling the character of a traditional London neighborhood such as Bloomsbury with its low rise scale.

Participating Graduate Students

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- Niki Xenia Alygizou (UC Berkeley)
- Cristina Bejarano (UC Berkeley)
- Martin Galindez (UC Berkeley)
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- Rihab Khalid (Cambridge University)
- Luke Kon (Cambridge University)
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- Wei Liao (Cambridge University)
- Haonan Lu (UC Berkeley)
- Martijn Lugten (Cambridge University)
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- Praveen Raj (UC Berkeley)
- Henry Ryu (UC Berkeley)
- Parisa Mir Sadeghi (UC Berkeley)
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- Chengjiao Wang (Cambridge University)
- Tianren Yang (Cambridge University)
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Guest Lecturers

- Bob Allies, Founding Partner, Allies and Morrison Urban Practitioners, London
- Jane Manning, Associate Director, Allies and Morrison Urban Practitioners, London
- Jeremy Newsum, Formerly Executive Trustee of the Grosvenor Estate, London
- Jonathan Rose, Principal, AECOM, London
- Jonathan FP Rose, CEO, Jonathan Rose Companies, New York
- Studio Critics
- Peter Carolin, Cambridge University
- Marcial Echenique, Cambridge University
- Francis Fawcett, Cooke Fawcett Architects, London
- Birkin Haward, Architect, London
- Jo van Heyningen, Architect, London
- Victoria Hills, CEO, ODPC
- Tom Holbrook, The 5th Studio, London and Cambridge
- Peter Howard, Architect, Milton Keynes
- Doug Kelbaugh, University of Michigan
- Sir Michael Marshall, Marshalls Group, Cambridge
- Francois Penz, Cambridge University
- Wendy Pullan, Cambridge University
- Jonathan Rose, AECOM, London
- John Sergeant, Cambridge University

University Faculty

John G. Ellis, UC Berkeley

Peter Bosselmann, UC Berkeley

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The workshop is supported by:

University of Cambridge

Head of Department of Architecture: Prof Wendy Pullan

Director of the Martin Centre for Architectural and Urban Studies: Prof Francois Penz

Principal Investigator for the Global Alliance Smart Design Project: Prof Koen Steemers

UC Berkeley

Dean of College of Environmental Design: Prof Jennifer Wolch

Co-Investigator for the Global Alliance Smart Design Project: Prof Paul Waddell

Prof Harrison Fraker

Prof Chris Calott

Malla Hadley

Leslie Huang

DCRP Support Staff

Sponsorship

The project was sponsored with funding from the Smart Urban Design Research Project under the Global University Alliance Programme (Principal Investigator: Professor Koen Steemers).

The workshop wishes to thank Victoria Hills, Eleanor Fawcett, Esther Everett and Shalini Ajoodha of OPDC for the help with background information on the project, and Ed Thomas, Community Manager at The Collective and his colleagues at the Old Oak Common building for providing the facilities for the site visit briefing and the opportunity to visit the communal spaces of the building.

The workshop wishes to thank the constant and enthusiastic support of the Dept administration staff, particularly:

Faculty Administrator: Andrew Bennett

Secretary of Department of Architecture: Sue Luxon

Faculty Graduate Team: Claire Hogg, Pilar Alonso

The Martin Centre: Anita Gunadi, Beau Brady

Faculty Custodian: Alan Baldwin, Craig Baldwin

Faculty IT and Model Workshop: Stan Finney, Marisa Grove, Clive Tubb

Faculty Admin Team: Neil Mayo, Julia Pettman

Faculty Library: Susanne Jennings, Tanya Zhimbiev

EXECUTIVE SUMMARY

This report covers work done as part of the week-long UC Berkeley / Cambridge University urban design workshop at Cambridge to study plans for the Old Oak Common site in West London. The work was sponsored by the Global University Alliance (UC Berkeley, Cambridge University and the National University of Singapore) as a sustainable urban design research project addressing the impact of major infrastructure investments on the configuration and development of cities.

A dozen graduate students from UC Berkeley's College of Environmental Design Department of City and Regional Planning and half a dozen Cambridge graduate students from the Department of Architecture worked together over the Spring Break to produce designs and research data on an important project in its early planning stages.

The London Plan and Old Oak Common

Old Oak Common is designated as a prime Opportunity Area in the GLA's 2016 version of The London Plan to accommodate a projected 1.5 million new residents in the metropolis by mid-century. The Old Oak and Park Royal Development Corporation (OPDC) was formed to implement the plan which when completed will be the UK's largest regeneration project. It will accommodate 24,000 dwellings (for as many as 60,000 people), 50% of which are to be affordable. Within the site boundaries up to 80 gross hectares (197 acres) are available for development. The site is adjacent to the Park Royal Industrial Area; Wormwood Scrubs Metropolitan Open Land and is next to some of the most deprived districts in West London. Old Oak Common is crisscrossed by different railway lines and bisected by the Grand Union Canal. Situated on the outskirts of Central London, the site has historically been the location for many of the less desirable land uses including railway facilities, prisons, cemeteries, recycling plants and industrial workshops.

Old Oak Common Transport Hub

The prime rationale for the development is to take advantage of the proposed transportation hub with a new station connecting Crossrail with HS2 the high speed line from London to Birmingham and the North. The proposed transport hub will dramatically reduce journey times to major destinations via Crossrail, such

as Heathrow Airport (in 8 minutes), London's West End, the City, Stratford, and Canary Wharf (in 25 minutes) in addition via HS2 to Birmingham (in 38 minutes).

When fully built out in 2026 the Old Oak Common station is expected to handle as many as 250,000 passengers a day making it the busiest station in London after Waterloo.

In addition the North London and West London lines, now part of the London Overground, cross the site and meet at Willesden Junction. New stations are proposed on both of these lines serving the new neighborhoods and providing access to London's extensive orbital railway network.

Case Studies

The UC Berkeley students prepared for the workshop by analyzing a number of relevant case studies of similar sites and mixed-use projects. These included sites in London such as King's Cross Lands, the Stratford Olympic Park and the 19th century Great Estate at Belgravia. In addition, they studied Olympic Villages in Barcelona and Vancouver, the new transit-oriented sustainable neighborhood at Hammarby Sjostad in Stockholm and the ongoing development in the Pearl District in Portland, Oregon. The case studies looked at the various patterns of urban form, the design of the public realm in street and block patterns, the range of residential densities and variety of building typologies

The Cambridge Workshop

The week-long workshop in Cambridge started with a visit to the Old Oak Common site, followed by visits to the Olympic Park in Stratford to see the legacy projects and the Stratford International Station on HS1, and the mixed-use development at King's Cross Lands. Back in Cambridge, our visits were followed by a series of presentations and lectures on the scope of the project, its background and challenges. These were given by some of the architectural and urban design consultant teams competing for the master plan, Cambridge faculty and others.

The students of both universities organized themselves into four combined teams to develop plans and proposals for a presentation to an invited jury on Friday, March 31., 2017.

Each team was assigned one of four questions to address the scope and scale of the project.

Question 1:

What are the implications of the proposed densities to accommodate 24,000 dwellings and 55,000 jobs on the Old Oak Common site?

Understanding Density

Team 1 focused on addressing the scale and urban form resulting from the proposed residential densities set by the GLA programme. The target of 24,000 dwellings together with the 15 million sq ft of commercial space needed for 55,000 jobs will result in net residential densities higher than anything ever built in London. The team measured the gross site area and then calculated the net residential area after excluding land for the transit-hub and land for commercial space, open space and other uses. The net result was that an average net density of over 550 dwelling units per hectare (240 dwelling units per acre). This is more akin to residential densities in Shanghai or Hong Kong than the densest parts of London. The proposed densities would result in every block having a high-rise tower. The team demonstrated the implications of such high densities in terms of sunlight access on streets and blocks as well as the impact on the surrounding neighborhoods. They recommended a 25% reduction in the overall number of units to 18,000 and a similar reduction in jobs in order to maintain the original jobs/housing balance. As a result the proposed development could be scaled to more closely match that of the surrounding neighborhoods.

Question 2:

Would it be possible to extend Wormwood Scrubs into the heart of Old Oak Common in return for partial development on Wormwood Scrubs eastern edge?

Rethinking Wormwood Scrubs

Team 2 explored the idea of undertaking a potentially controversial land swap. In exchange for building on parts of the Wormwood Scrubs open space, they proposed creating an additional amount of new public open space within the Old Oak Common site. By doing so, they demonstrated how the new Old Oak Common development and Wormwood Scrubs could be transformed and enhanced by having more park frontage. Comparisons with places in London, such as Nash's Regent's Park or Wandsworth and Clapham Commons, suggested how a reconfigured park layout could benefit the surrounding neighborhoods and enhance the urban form of the new development. The team proposed a 12% increase in the amount of open space resulting in a 186% increase in the amount of park frontage.

Question 3:

What are the benefits of realigning the two Overground railway lines on the site to create an expanded transit hub, and building on the air rights above the new Crossrail depot?

An Expanded Transit Hub

Team 3 proposed creating an enhanced Old Oak Common transit hub that not only connected the Crossrail, HS2 and Great Western Main Line services but also incorporated a realignment of the two Overground North and West London Lines that run across the site but are not currently integrated with the new station. The benefit would be to enable seamless transfers to the regional orbital services connecting various parts of outer London as well as the new Crossrail and HS2 lines. In addition, this team explored the implications of building on the air rights on a deck over the new Crossrail train depot that is currently occupying a substantial part of the Old Oak Common site. The depot was not designed with air rights development in mind and unless it is moved or reconfigured will be a major obstacle to achieving the overall development goals.

Question 4:

What would a sustainable development look like that matched the patterns of traditional London neighborhoods such as Bloomsbury?

A New London Neighborhood

Team 4 explored the idea of emulating the lessons from Bloomsbury, one of London's traditional neighborhoods as a precedent for the scale of its urban form, flexibility of building types, and compatibility with the adjoining neighborhoods. Bloomsbury's pattern of varied block sizes, public squares, and low building heights is an attractive prototype for a new London district. The team demonstrated how this could be achieved and the phasing and scale of development that would result.

John G. Ellis, AIA, RIBA, UC Berkeley

Peter Bosselmann, UC Berkeley

Ying Jin, Cambridge University

COLLABORATIVE DESIGN AS A KEY INSTRUMENT FOR UNDERSTANDING AND TESTING MAJOR URBAN PROJECTS

Many rich and prosperous cities in the world are finding themselves ensnared by a worsening mix of societal challenges: a widening gap between the rich and the poor, unaffordable housing and stagnant jobs for young workers, unsustainable use of natural resources, unacceptable levels of pollutants exposure, and the fact that, perhaps for the first time in their histories, the cities are running out of land that they are allowed to sprawl into, either within their boundaries or beyond.

There is a growing sense that the above challenges are coalescing, which is making all of them harder to deflect, even as new technologies come on line. According to OECD figures, per person output has hardly grown in the world's richest countries since 2007; the small amounts of growth that the UK and the US managed to get in the last decade came largely from longer working hours, and not from more productive working. The low growth trap we are in makes the predicament worse. Cities choked in this mix are of little help to spluttering economies and social discords today, and could trigger urban decline.

Unsurprisingly, students of urban design are confronted with more than a fair share of the challenges mentioned above, because their projects are conditioned by the state of the economy, social tensions, limits to natural resources and the environment, and ultimately, the

nature and quantity of land available to build on. For postgraduate students, it is appropriate that they are encouraged on occasions to pierce the academic bubble during their studies. But in that process they must be shown how to work with the raw realities so that the challenges stimulate rather than inhibit their imagination and intellectual rigour.

For making rapid progress with novel ideas, urban designers have long found it useful to hold workshop-cum-design-studio events in the form of a charrette, which implies an intense period of co-working among top experts and students – the work is so intense that few charrettes could last for more than a few days. In the past, urban design charrettes attracted particularly those who are focused on physical layouts of buildings, streets and public spaces. In the last few years, urban designers are reaching further out to other disciplines in response to growing complexities of their design brief, in order to start with the fundamental questions.

At Cambridge, we see real opportunities in postgraduate teaching to broaden the scope of the traditional charrette, in order to bring in expertise from a wide range of disciplines that have become essential for major urban projects. The resulting interdisciplinary workshops have evolved into our new, pop-up lab for understanding complex urban projects like the Old

Oak Common. The last few years have witnessed the momentum building up.

First, pop-up collaboration on complex topics has been emerging in practically all disciplines in one form or another. The spread of this practice is good news for urban designers who are reaching out. Rigorous quantification in economics, engineering and environmental sciences on the one hand and ethnographical insights in social, psychological and political studies on the other provide the necessary grounding for understanding present-day challenges. Collaboration brings mutual benefits: urban designers who actively engage with cutting-edge specialist insights are uniquely positioned and empowered to explore and test their design proposals; in return, the novel urban design ideas open new horizons for research and analysis in all related specialisms.

Secondly, universities turn out to be good incubators for this kind of interdisciplinary workshops. Through interdisciplinary research centres such as our own Martin Centre for Architectural and Urban Studies, Centre for Smart Infrastructure and Construction at Cambridge and global alliance programmes including that with Berkeley, latest findings in applied economics, engineering, social-cultural studies, business management and data science go straight into design

research. Our research gains because the design projects provide opportunities to test alternative briefs beyond conventional analysis. Furthermore, the ideas are visualised through design, such that experts and laymen alike can see what the alternatives look like, before they pass their own judgement.

Thirdly, the stability of the postgraduate teaching programmes counterbalances the ephemeral nature of pop-up events. This is because the teaching programmes lend naturally to both pre-workshop planning and post-workshop de-briefing, so the workshop does not end up like a flash in the pan. Moreover, the teaching programmes build up a knowledge base from one year to the next. Our past efforts in building long term connections among key teaching staff, guest lecturers, advisors and critics have started to bear fruit. Our collaboration with the Berkeley team dates back to 2012 when John Ellis was our Visiting Professor of Sustainable Urban Design at Cambridge. Since then we have grown the research links with Berkeley, notably with Professor Peter Bosselmann and John Ellis at the Master's for Urban Design programme. Such connections help teams understand respective strengths and complementarities and dovetail for workshop teaching.

In sum, our experience shows that when creative design

is brought together with rigorous specialist research, there is a greater chance to find new, potentially win-win solutions for a wide group of stakeholders. Through this kind of collaboration, creative design pushes our imagination beyond mere projections of past and present trends. In turn, imaginative ideas prompt researchers from all specialisms to flesh out novel proposals with rigour and expertise, so that they grow into worthy alternatives to existing proposals.

It is heartening to see that interdisciplinary research has already spawned many ideas among students at this workshop. The four main design themes each consider a fundamental question for the Old Oak Common project: the explorations into residential and job density stem from the research into urban transformations at Berkeley and Cambridge; the green corridor with land swap is in part inspired by influential precedents such as those initiated in the Cambridge Futures project; the transportation hub integration has been an on-going collaboration between Cambridge and Berkeley across many disciplines. The comparison of alternative built form configurations and characters link to the founding research at the Martin Centre and much of the on-going work in Cambridge and Berkeley.

The outcome of this research-led approach is for all the readers to judge. At the charrette review session many

of the critics have been impressed by the outcomes of the weeklong workshop, not only that the designs were thought through and well resolved, but also that all the themes are cogent to big, strategic issues facing Old Oak Common.

As the Old Oak Common project enters a new phase of planning and development, we expect this charrette to be nothing but one of the earliest workshops. The site is so important to London and the UK that it deserves many more workshops involving an ever wider group of stakeholders. As the teaching Terms in Cambridge and Berkeley come to the yearly end, we remain grateful to all our guest lecturers, critics and institutions for supporting this event. We hope the approach and findings reported here will add to a collaborative, civic effort for Old Oak Common that grows in years to come.

Ying Jin, Director of Graduate Studies, Department of Architecture, University of Cambridge

Design as a Knowledge Producer

The work presented in this booklet is the product of a semester long urban design studio and a joint workshop between graduate students in UC Berkeley's Department of City and Regional Planning and Cambridge University Department of Architecture. The students include city planners, urban designers, architects and landscape designers. For them the involvement in a project of this scope raises complex questions about the merits of large scale masterplans like the one described here for the Old Oak Common project in London. For our students the design work itself produces knowledge that informs the approach a professional might take in addressing such a complex project. The effort is truly educational, first of all for our students, but, as we hoped, also for the Greater London Authority (GLA). At the time of our workshop, the GLA was ready to issue a contract for a masterplan; informative also, as we hoped, for the professionals who will offer their services to complete such a masterplan.

Outside design and planning schools it might not be commonly accepted that the process of design can be used to produce evidence. Drawings can be factual. There is much discussion about evidence based design; in fact the work presented here was sponsored by a global alliance between Cambridge University, the National University of Singapore and the University of California at Berkeley. The alliance is formed by an interest in bringing data to the fore to produce "smart city design".

From the beginning our objective was to use design not in an advocacy mode to promote a current or alternative visions for the future of Old Oak Common, but to test assumption about the future of Old Oak Common that have been made thus far. If there is any advocacy in our work, it is an advocacy for transparency in design/planning decision making. Universities like Cambridge and Berkeley are uniquely positioned to carry out such work through institutions such as the Martin Centre in Cambridge and the IURD in Berkeley.

After sifting through documentation available to us and background research on the history of London's western edge, the history of its transport infrastructure, the demographics of the surrounding areas and the environmental factors, the Berkeley team arrived in London for a site visit on March 26. On the previous day, I had made the 25 minute cycle ride on one of London's City Bikes from Paddington Station along the Grand Union Canal towards Old Oak Common. That experience was valuable in that it revealed the history of London's radial growth, but also Old Oak Common's strong disconnect despite its proximity to Central London.

Through our work we hope to have made a contribution in assessing the assumptions made thus far about the future of Old Oak Common in the context of The London Plan.

Peter Bosselmann, Professor of Urban Design
UC Berkeley



Grand Union Canal at Old Oak Common

Background to Project

Old Oak Common Crossrail and HS2 Station

The new station at Old Oak Common will be a major transport interchange between Crossrail, the Great Western Main Line and the new HS2 line.

Crossrail is one of the largest infrastructure projects in Europe with 13 miles of twin tunneling under Central London and connecting destinations such as Heathrow with the West End, the City, Canary Wharf and Stratford. Combined with a new station for HS2, the high speed line from London Euston on its way to Birmingham and the North, Old Oak Common will be one of the most important transport hubs in the country.

Crossrail’s tracks run on grade adjacent to the Great Western Main Line. The Crossrail / Great Western station will have eight platforms serving a variety of express and local services.

The HS2 station will be in a below-grade box located between the tunnels running east to Euston and west to the outskirts of London en route to Birmingham. The box will be similar to the HS1 station box at Stratford International. Excavated about 18m deep and up to 600m in length it will contain six platforms.

A concourse will link the two stations allowing easy movement for as many as 250,000 passengers a day when fully built out.

Other Lines

The two London Overground services, the North and West London lines that crisscross the site will not connect directly with the Old Oak Common Crossrail station. However in order to serve the new development two new local stations are proposed; Hythe Road on the West London line and Old Oak Common Lane on the North London line. These two stations will be within walking distance of the Old Oak Common station.

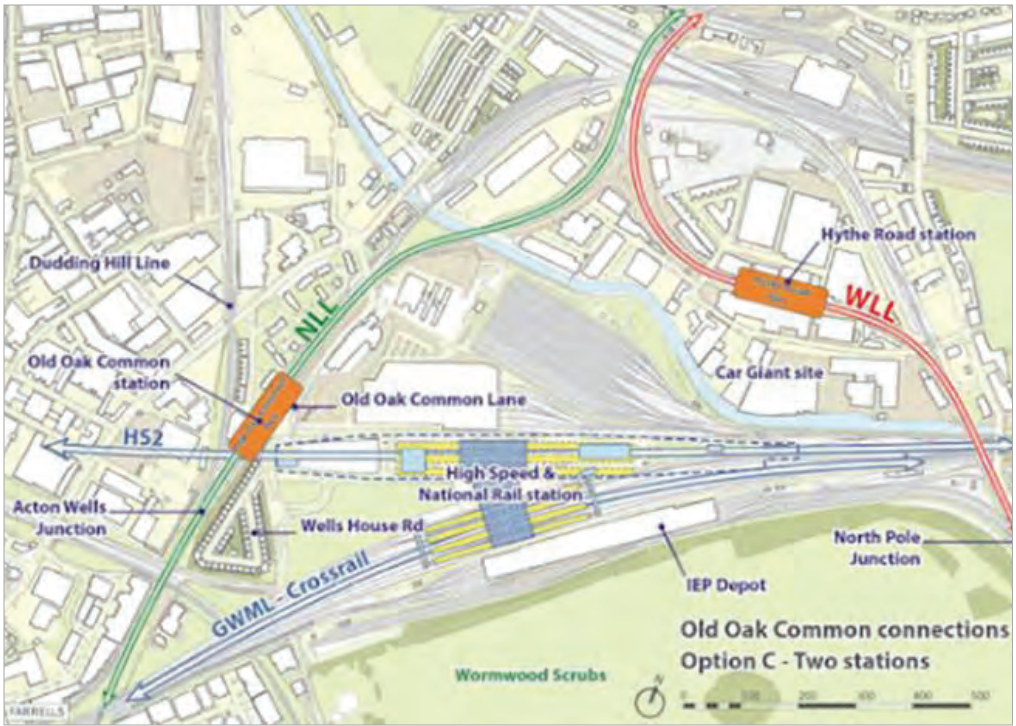
Improvements are proposed for Willesden Junction station providing access between the Overground lines and the Bakerloo line to the West End.

Future Connections

A future rail link from the Crossrail station to the West Coast Main Line is proposed with a spur connecting to the existing freight line northwest of the site. This will allow a diversion of services from destinations such as Watford and Milton Keynes to travel directly through into Central London and relieve congestion at Euston. It will also enhance Old Oak Common’s role as a transport hub allowing further choices of routes and destinations.



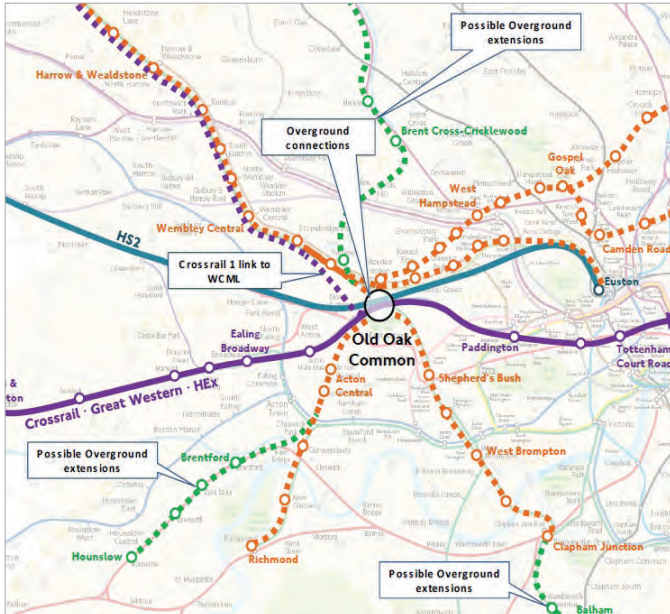
Aerial View of Old Oak Common/Park Royal



Site Map



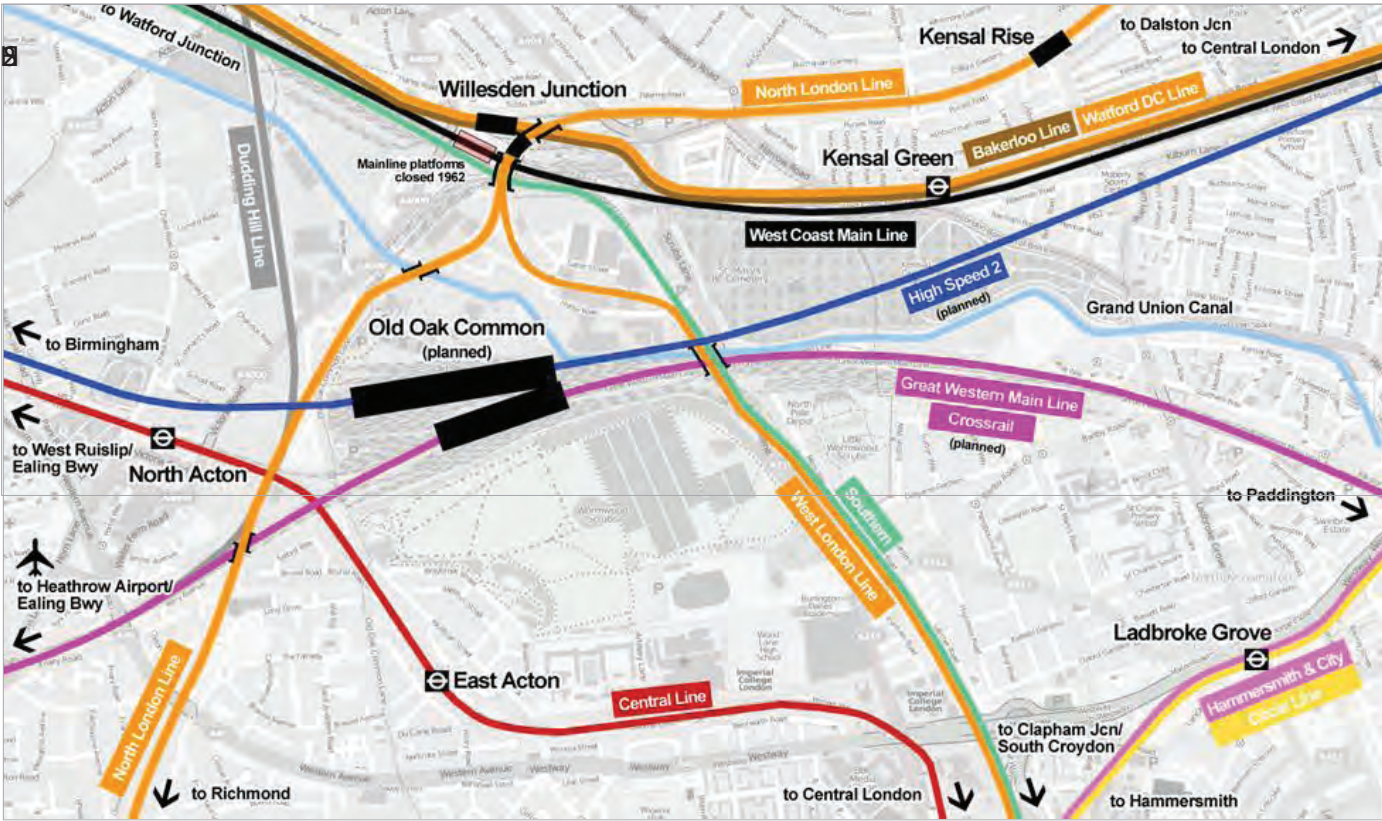
HS2



Overground Map



Crossrail



Old Oak Common Station



Aerial view of the site from the northwest

OLD OAK COMMON, LONDON



Team 1: Understanding Density



Team 2: Rethinking Wormwood Scrubs



Team 3: Expanded Transportation Hub



Team 4: A New London Neighborhood

Cristina Bejarano

Qingchun Li

Wei Liao

Ran Melanie Miao

Parisa Mir Sadeghi

Valentina Schmidt

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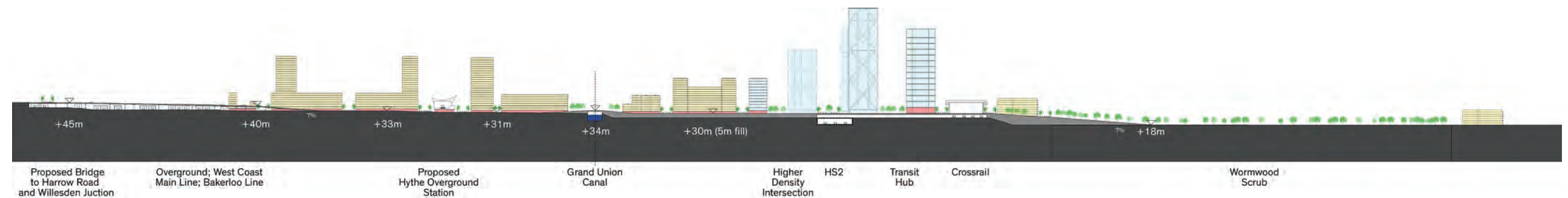
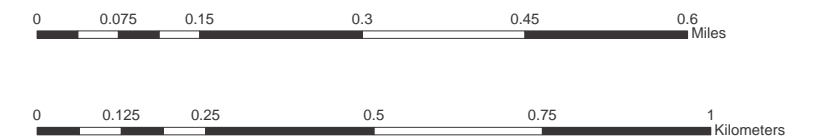
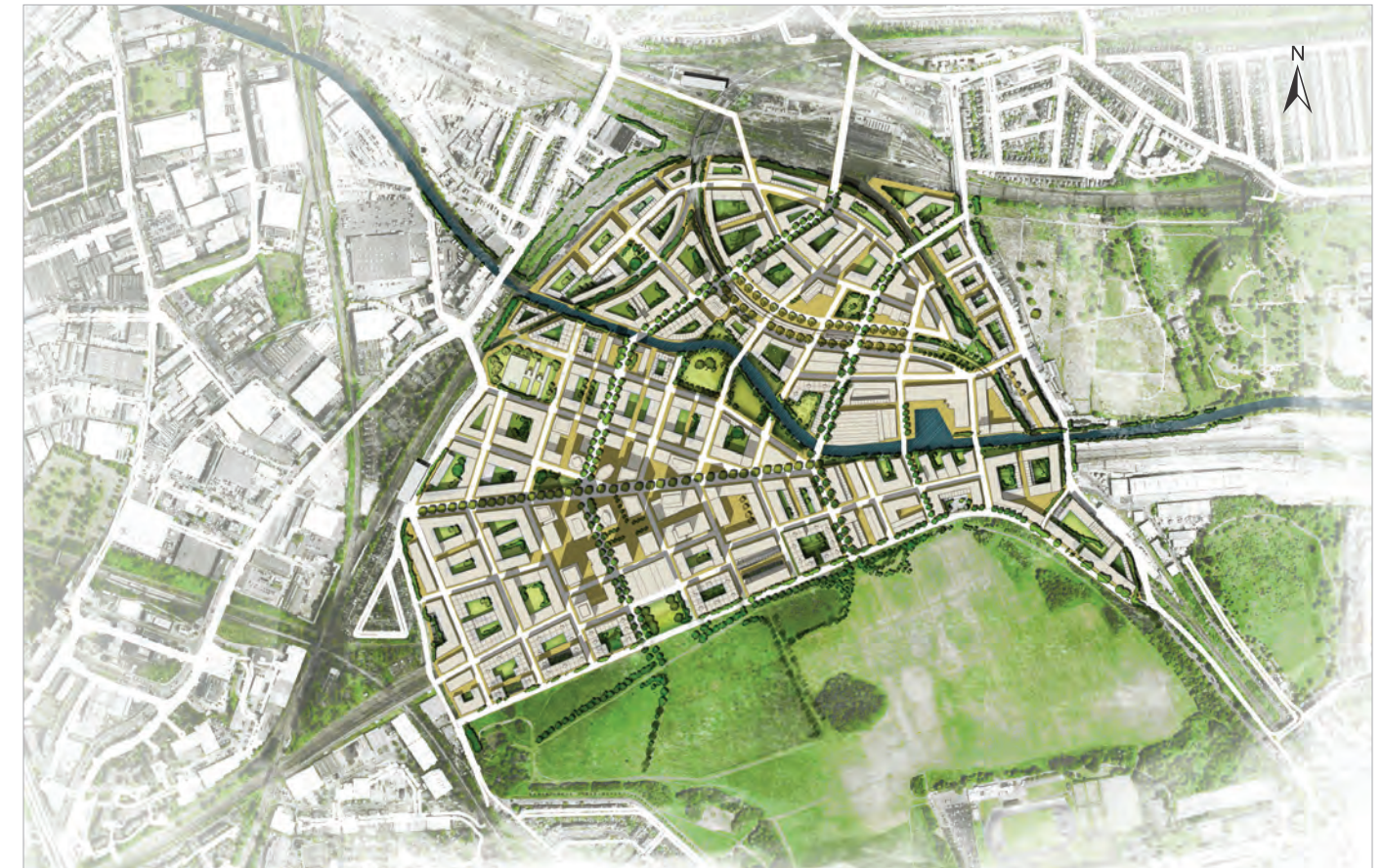
Understanding Density

Team 1 modeled three scenarios for the Old Oak Common site. The first scenario showed how a net area of 44 hectares was available for residential development after excluding land for streets, squares, open space, the various stations and land required for commercial use. 24,000 dwellings on 44 hectares would result in an average net density of 550 DU/Ha (240 DU/Ac). This first round of modeling revealed a very high net density, higher than anywhere else in London and more like the densities found in Asian cities like Shanghai and Hong Kong. When applied across the site it would result in every block needing to have a high rise tower.

In their second modeling scenario, the team showed how densities could be graded across the site so as to taper down towards the surrounding communities and be at their highest around the new transport hub. In their third modeling scenario, they also showed how a 25% reduction in residential density to 18,000 dwellings (with a similar percentage decrease to 42,000 jobs) would result in a more compatible urban design. There

would be significantly fewer high rise towers and the possibility of a wider range of building types including low rise townhouses and a preponderance of six-story stacked flat perimeter block buildings similar in scale to the densest parts of London. The results were tested with computer generated sunlight and shadow studies showing the improvement in sun access to both blocks and streets with a reduced density.

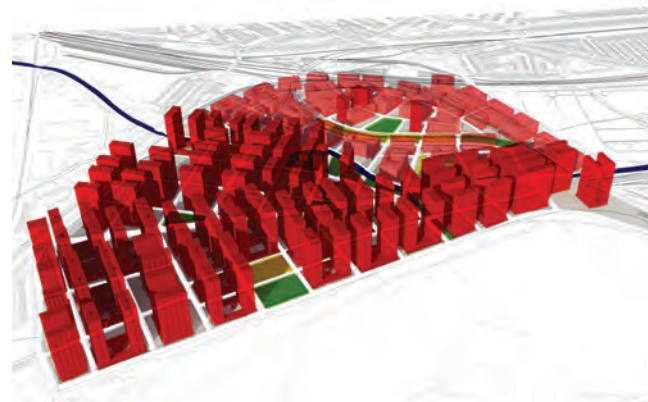
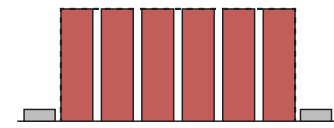
The reviewers favorably commented on the third round of modeling, especially that it produced partial sunlight to many streets even during the winter months. Civic spaces became possible and they could be designed with sufficient dimensions for public use for a still very sizeable population. Outside reviewers commented on the still very constrained transition spaces between the public and private realms along residential streets. In discussing the benefits of such an overall density reduction, reviewers suggested that the 6,000 displaced units could be built elsewhere, perhaps on part of the Park Royal site.





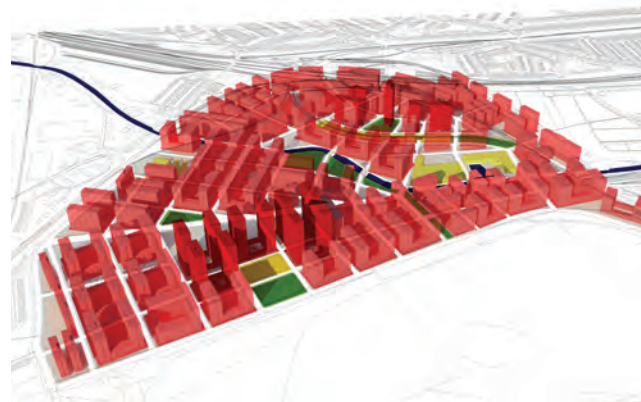
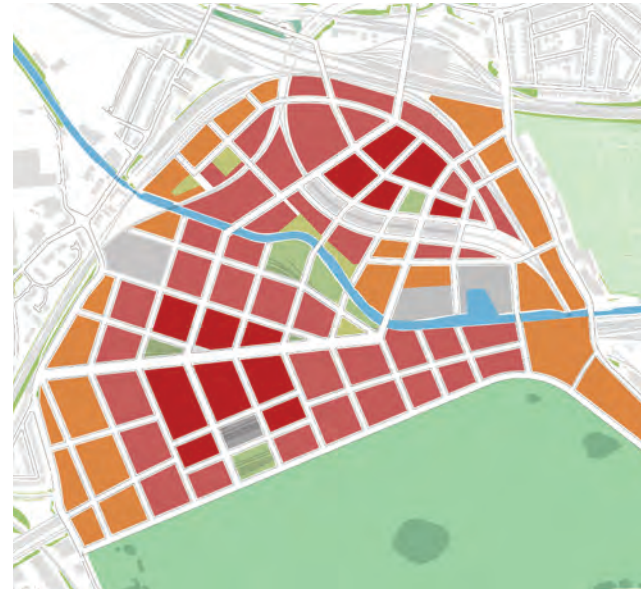
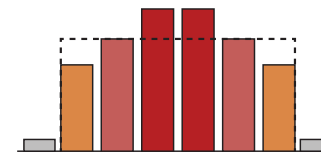
Aerial view of the proposed development with a 25% reduction in residential density, 18,000 dwellings, 42,000 jobs.

Density Strategy



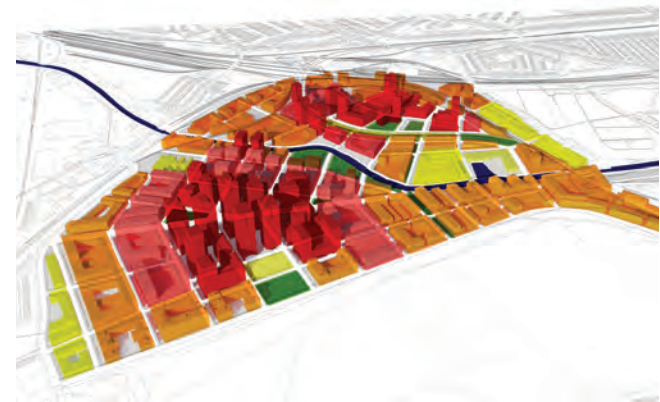
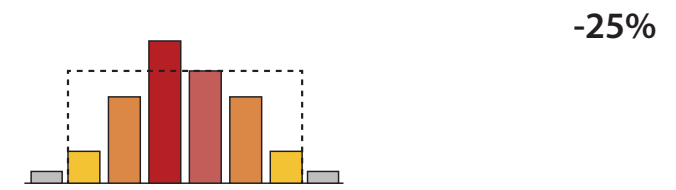
100% Density: Uniform Distribution

24,000 Homes
55,000 Jobs



100% Density: Hill Distribution

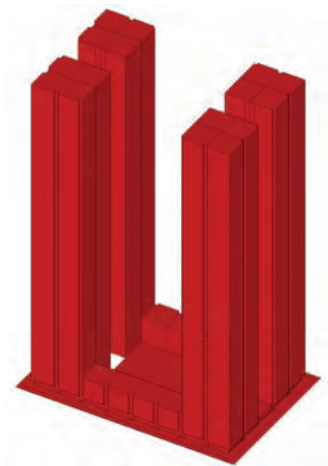
24,000 Homes
55,000 Jobs



75% Density: Hill Distribution

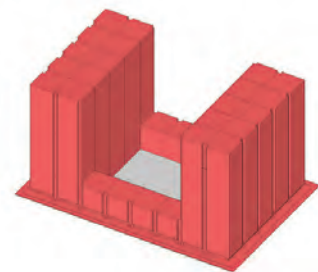
18,000 Homes
42,000 Jobs

**Commercial and
Higher Density Residential**



**1250 du/ha (520 du/ac)
8 - 36 stories**

**Medium High Density
Residential**



**750 du/ha (300 du/ac)
4 - 16 stories**

**Medium Density
Residential**

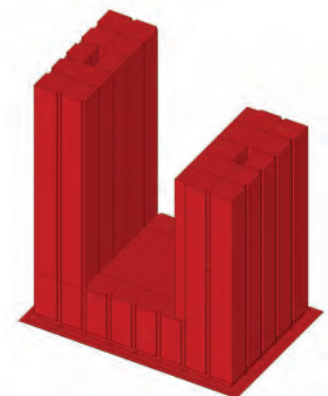


**350 du/ha (150 du/ac)
6 - 8 stories**

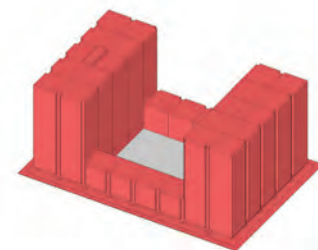
**Lower Density
Residential**

Block Types

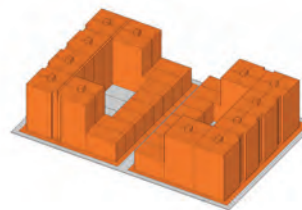
- Workplace
- Higher Density Residential
- Medium Density Residential
- Lower Density Residential
- Transit/Retail Space
- Open Space



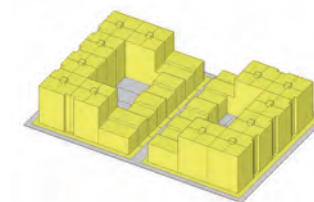
**1000 du/ha (400 du/ac)
8 - 25 stories**



**500 du/ha (200 du/ac)
4 - 12 stories**

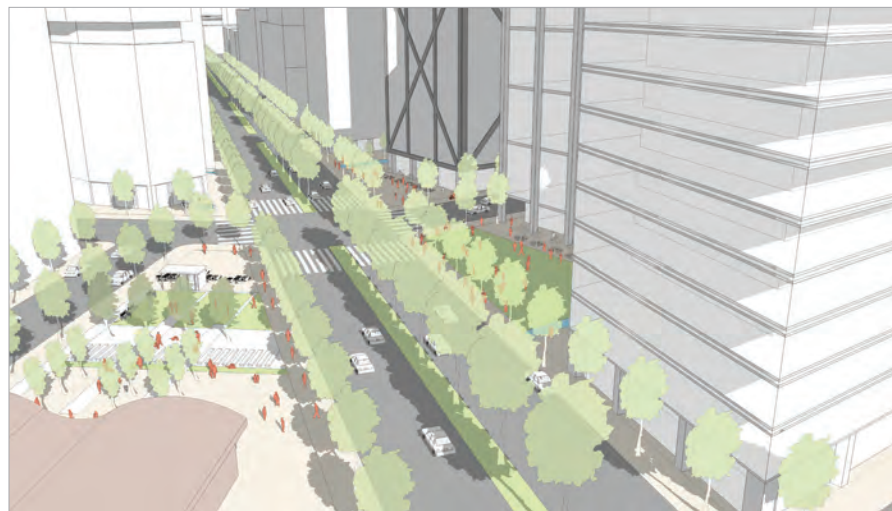
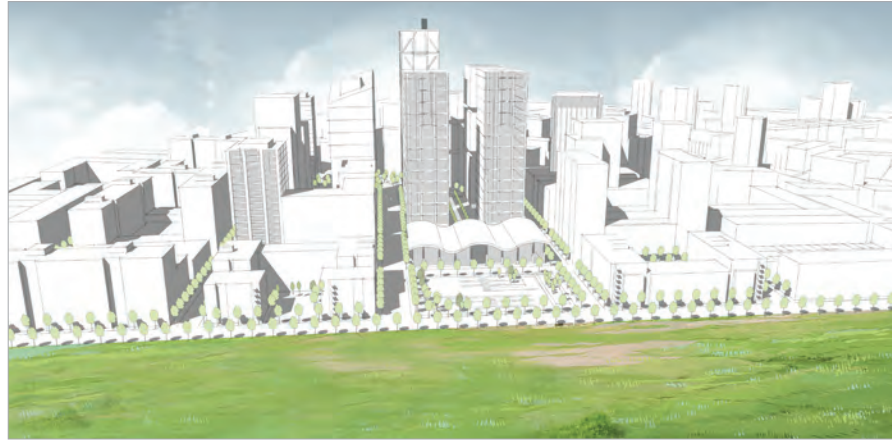


**300 du/ha (125 du/ac)
3 - 8 stories**



**250 du/ha (100 du/ac)
3 - 6 stories**

Neighborhoods



Old Oak Common South Neighborhood

A cluster of high rise commercial buildings around the new Crossrail/ HS2 station and mid-rise buildings facing Wormwood Scrubs. Two new plazas, one facing the park, the other facing the High Street.

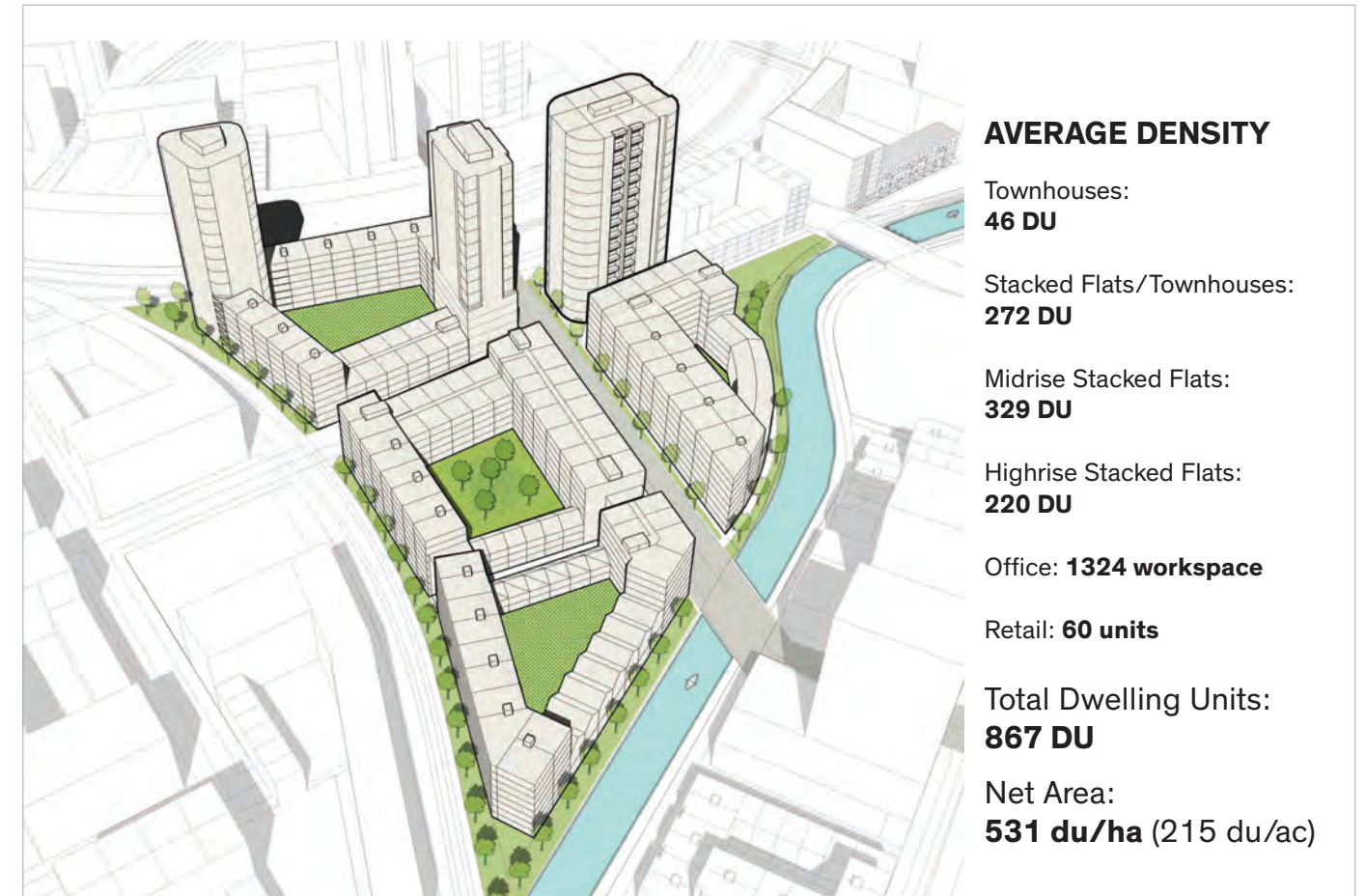
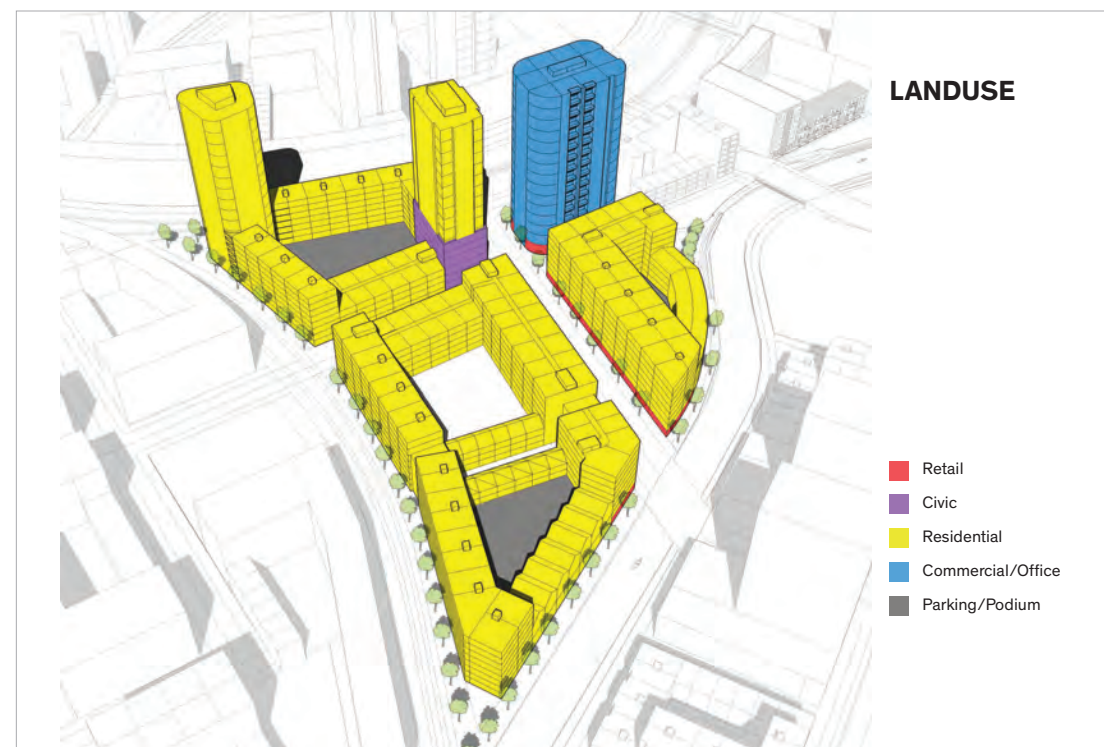
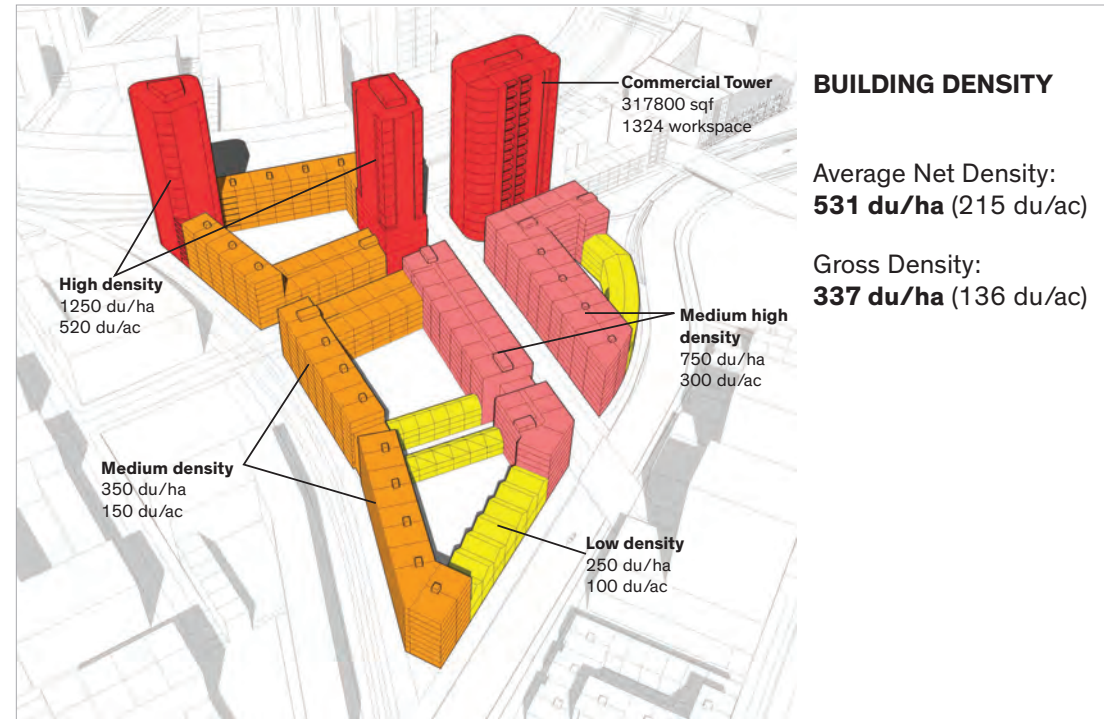
Hythe Road Neighborhood

A new mixed use neighborhood built alongside the Grand Union Canal and the Overground railway viaduct with the new Hythe Road station.

Old Oak Common North Neighborhood

The new park alongside the canal and the new High Street bridge connecting the different neighborhoods.

Typical Block Building Typologies



Typical block Building Typologies

A range of building types from townhouses to mid-rise and high-rise apartment towers. Parking at a 0.2 : 1 ratio is accommodated in podium garages under the midblock courtyards.

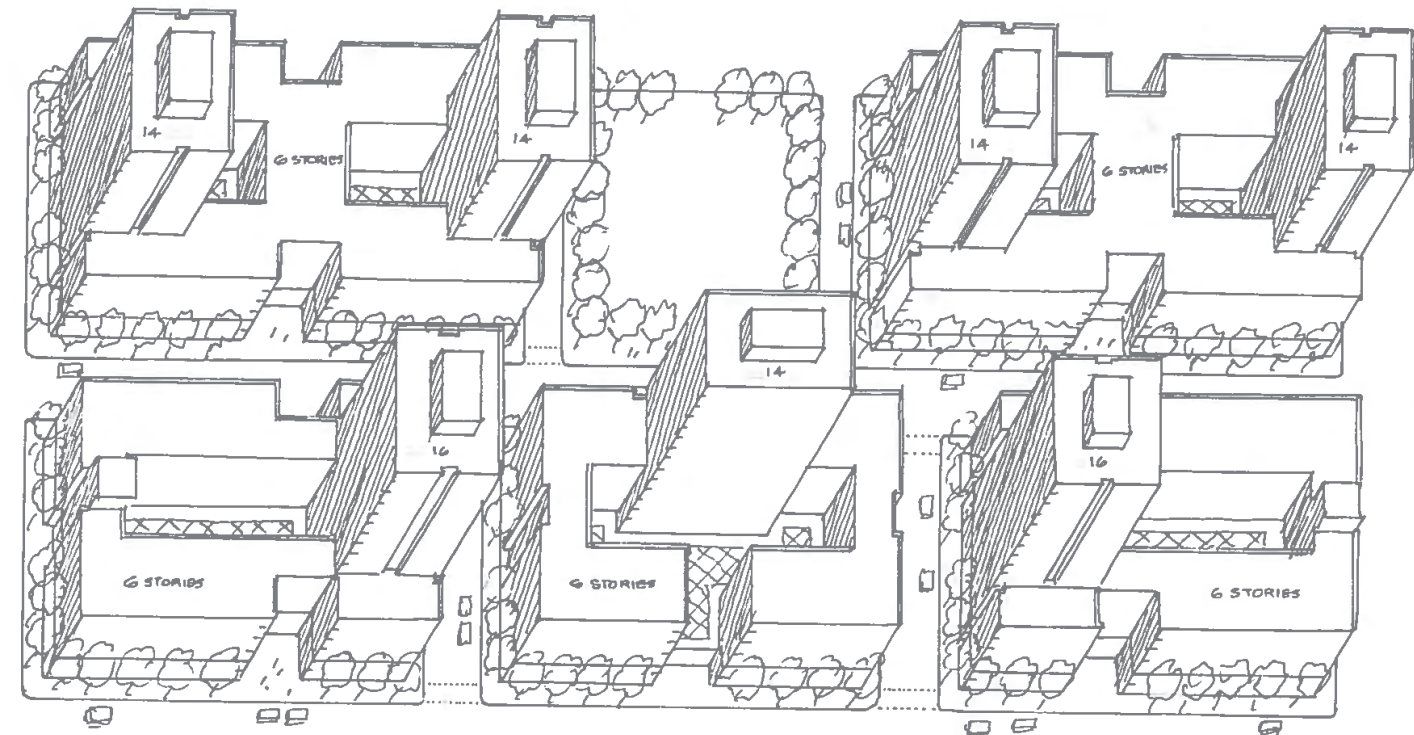
Old Oak Common Density

The GLA program calls for 24,000 dwellings and employment for 55,000 workers on the 80 gross hectare (197 Ac) Old Oak Common site.

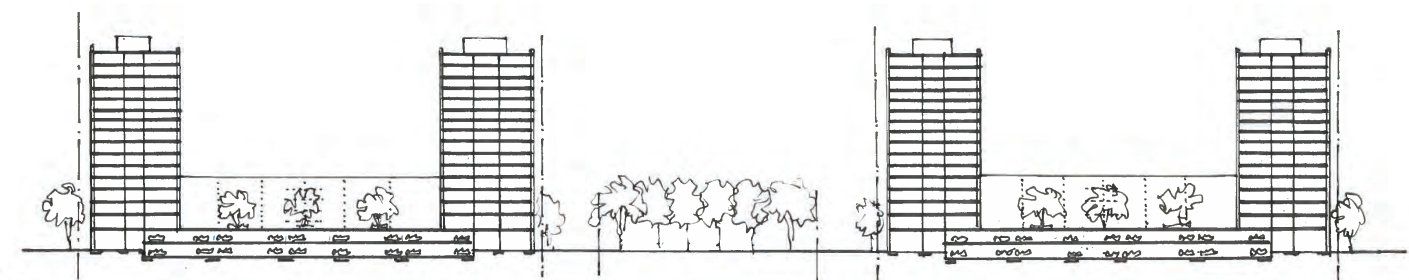
After excluding land for streets and squares, area for the various stations and commercial development this leaves 44 net hectares (108 Ac) for residential development.

Taking a typical 80m x 120m city block (200' x 300') the net results would be as follows:

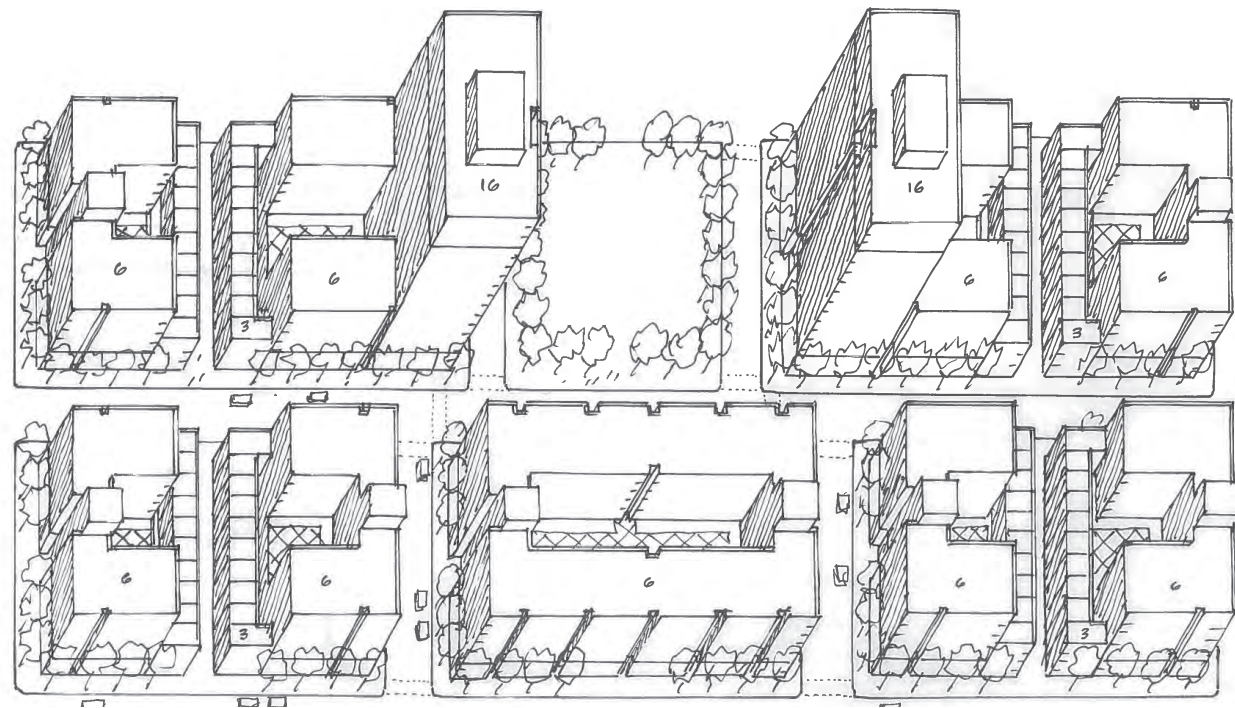
- A 550 Du/Ha (240 DU/Ac) net density results in a tower block up to sixteen stories for every city block combined with low rise six story perimeter buildings of stacked flats. This would be necessary to achieve the target of 24,000 dwellings
- A 25% reduction to 450 Du/Ha (180 Du/Ac) net density results in a limited number of high rise tower blocks, and a combination of low rise six story perimeter blocks of stacked flats and mid-block lanes lined with three story terrace houses. This would reduce the overall number of dwellings to 18,000.
- A 40% reduction to 350 Du/Ha (140 DU/Ac) net density results in a combination of perimeter block six story stacked flat buildings and three story terrace houses. This would reduce the overall number of dwellings to 14,000.



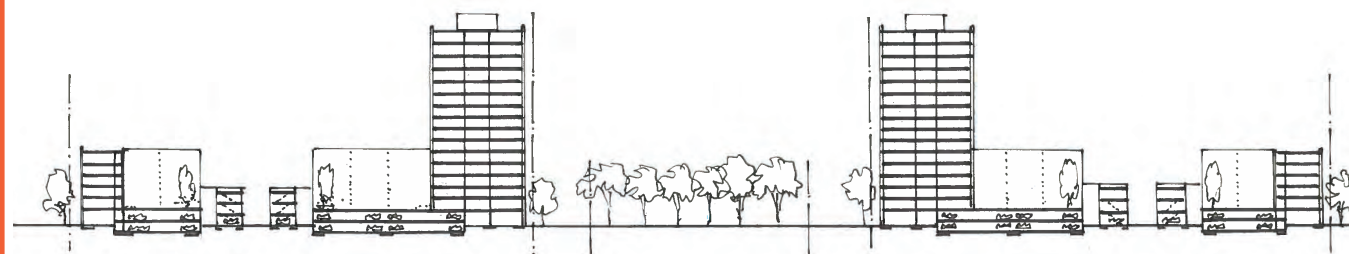
240 DU/AC NET (550 DU/HA)



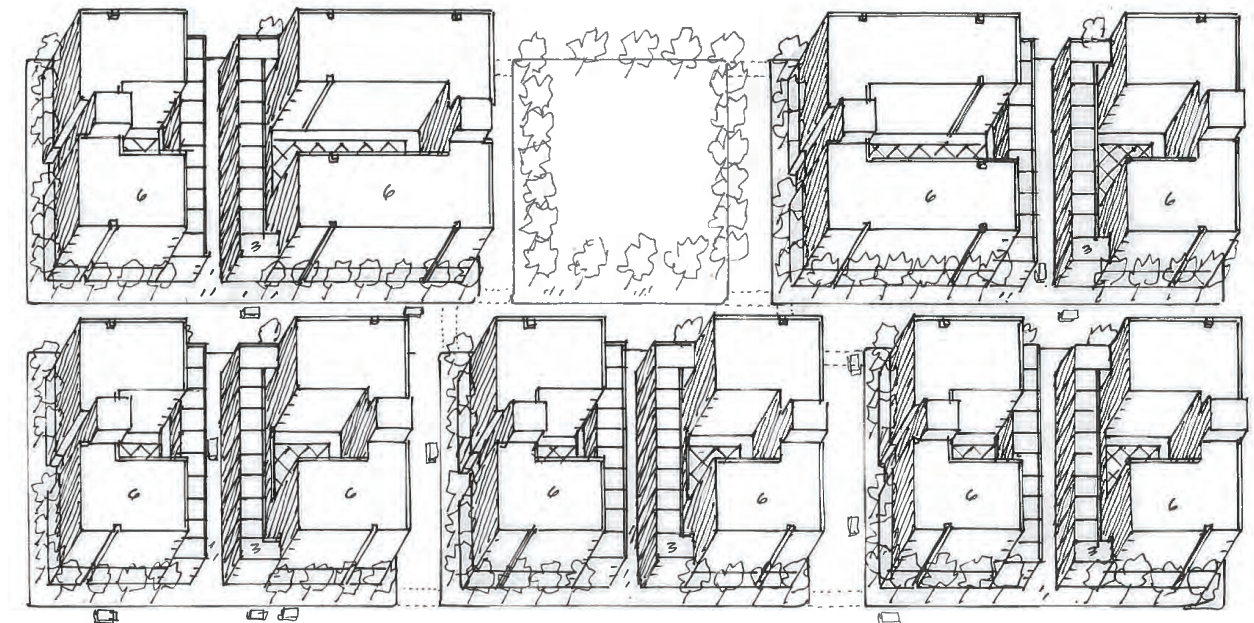
Section



180 DU/AC NET (450 DU/HA)



Section



140 DU/AC NET (350 DU/HA)



Section

OLD OAK COMMON, LONDON



Team 1: Understanding Density



Team 2: Rethinking Wormwood Scrubs



Team 3: Expanded Transportation Hub



Team 4: A New London Neighborhood

Hasti Afkham

Martin Galindez

Luke Kon

Catherine Schiltz

Tianren Yang

UC Berkeley + Cambridge University Workshop, Spring 2017

Rethinking Wormwood Scrubs

Team 2 showed the results of a possible extension of Wormwood Scrubs into the Old Oak Common site in exchange for building on a northern and eastern portion of Wormwood Scrubs. Wormwood Scrubs is a vast open space and unlike many of London's popular parks and commons it has limited access and building frontage on three sides. The current Old Oak Common site boundary allows only a narrow band of development along the north limited by the dimensions of the existing railway maintenance yards alongside the Great Western Main Line.

The team proposed building on two portions of Wormwood Scrubs open space. On the north they proposed expanding the area of development further into the park and on the east they proposed a separate new residential neighborhood along the length of Scrubs Lane. In exchange they proposed creating a large new open space along the Grand Union Canal as the heart of the Old Oak Common site. Given the potentially strong opposition to such a trade and to make the land swap acceptable, they proposed a 12% increase in the overall area of open space resulting in a 186% increase in the amount of park frontage.

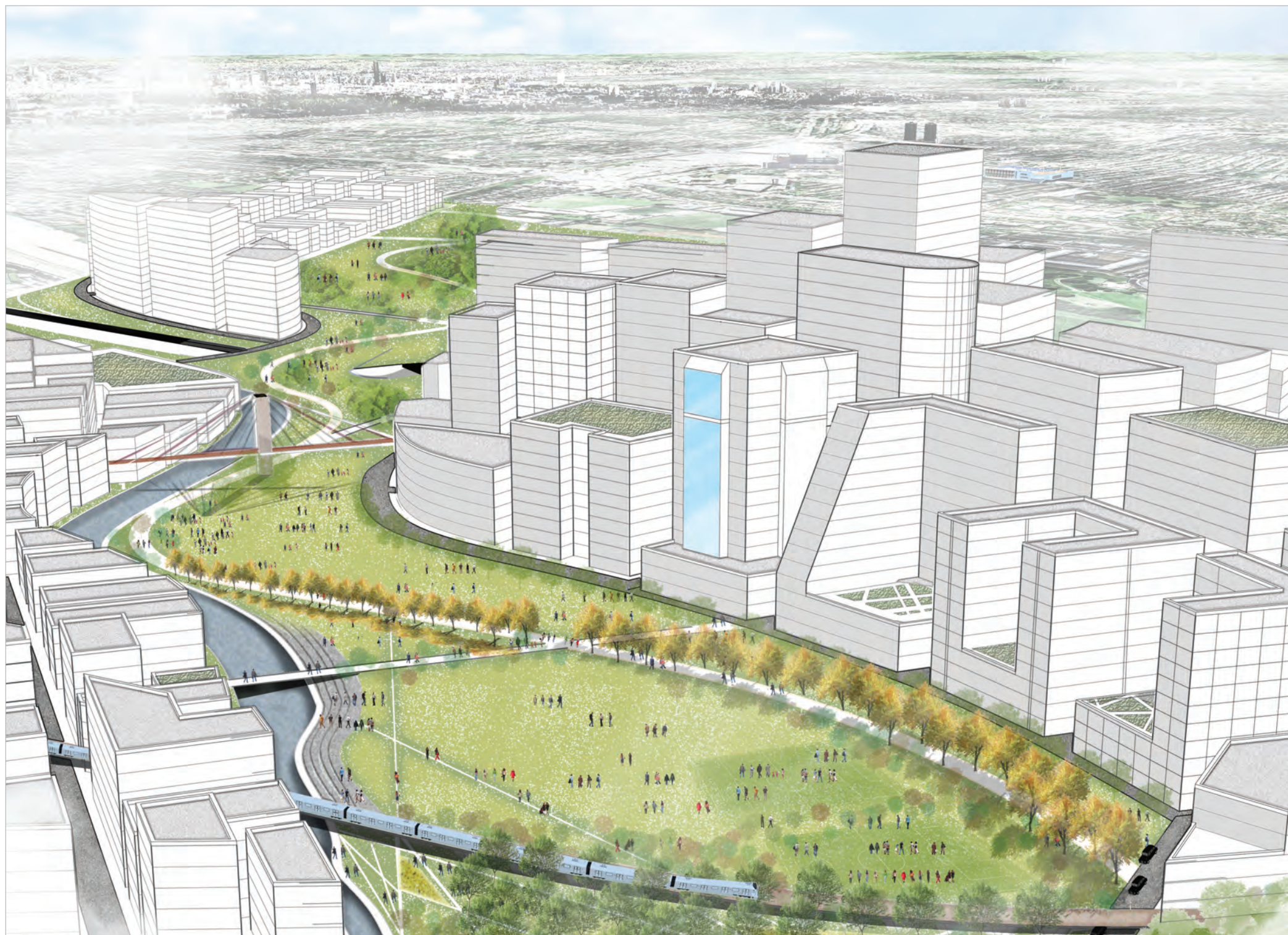
The reviewers discussed the merits and challenges of such a proposal. Reviewers commented favorably on the improved connection of Old Oak Common Development to the White City Tube Station. They accepted the political difficulties since Wormwood Scrubs comes under the Metropolitan Land open space acts and would require extensive parliamentary approvals.



Land Swap: 12% additional open space on Old Oak Common site in exchange for building on part of Wormwood Scrubs



Aerial view showing the results of buildings on parts of Wormwood Scrubs in exchange for a new park in the heart of the Old Oak Common site.



Aerial View of the New Old Oak Common Park

This view shows the new park in the heart of Old Oak Common as a result of the Land Swap. The view from the northwest shows the new park bordering the canal and faced with a cluster of high rise commercial buildings adjacent to the Old Oak Common transport hub.

New vehicular and pedestrian bridges cross the canal linking the new neighborhoods.

The rail line in the foreground is the North London Overground line from Richmond to Willesden Junction.

Park Precedents



Barrier Park, Silvertown, London



Central Park, New York City



Chester Terrace and Regents Park, London

OLD OAK COMMON, LONDON



Team 1: Understanding Density



Team 2: Rethinking Wormwood Scrubs



Team 3: Expanded Transportation Hub



Team 4: A New London Neighborhood

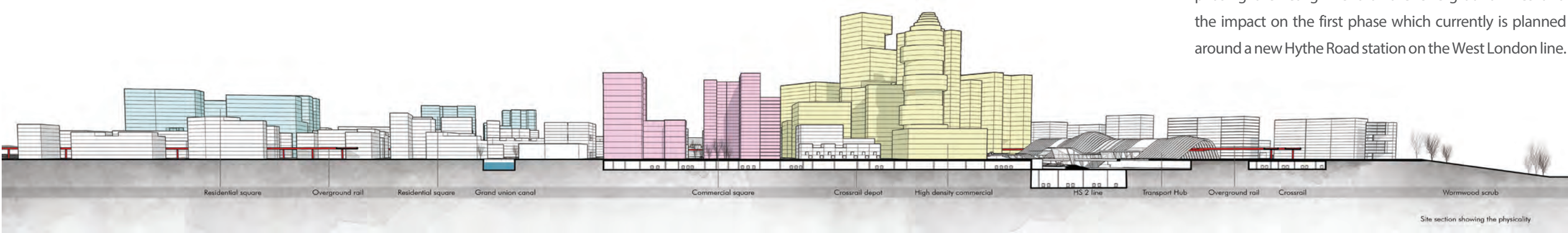
Thomas Gonzalez

Praveen Raj

Chengjiao Wang

Chelsea Zhou

UC Berkeley + Cambridge University Workshop, Spring 2017



Consolidating an Expanded Transport Hub

Team 3 showed the implications of building over the air rights above the recently constructed Crossrail depot that currently occupies a large portion of the rail yards adjacent to the proposed Old Oak Common transport hub. If the depot is to remain it would need to be rebuilt to allow for a grid of structural columns to support the air rights deck above. Precedents include the blocks around New York’s Grand Central Terminal and new development over the West Side rail yards next to Penn Station, and in Paris over the yards adjacent to Gare d’Austerlitz.

The team also proposed realigning the two North and West London Overground lines that crisscross the site and currently do not connect with the new Old Oak Common station. The result would be a transport hub that connected all the various rail services in one location allowing multiple connections across London.

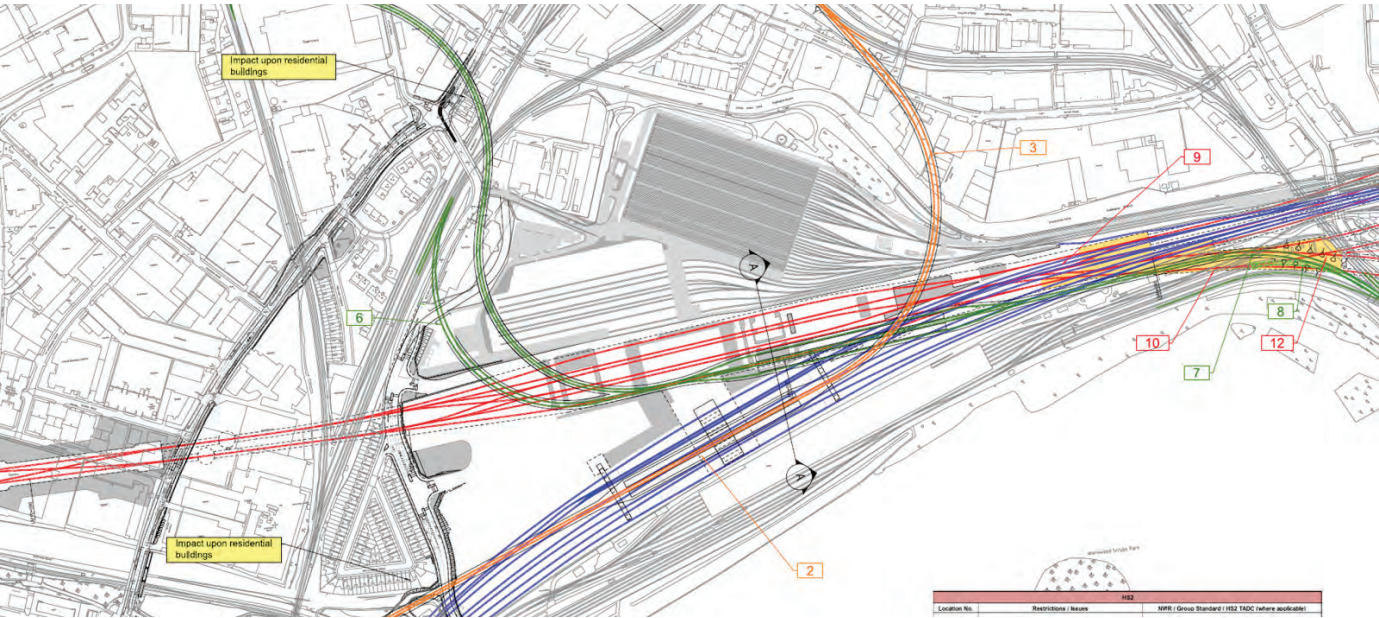
The reviewers discussed the designs and appreciated the logic of integrating all the various lines into a single transport hub. However they noted the challenge of phasing the realignment of the Overground lines and the impact on the first phase which currently is planned around a new Hythe Road station on the West London line.

Gross Area: 74.4 ha / 184 ac
Net Developable Area: 44.7ha / 111ac
Streets: 20.9ha / 51.5ac
Parks: 5.1 ha / 12.7 ac
Station / Other: 3.7 ha / 9.1 ac

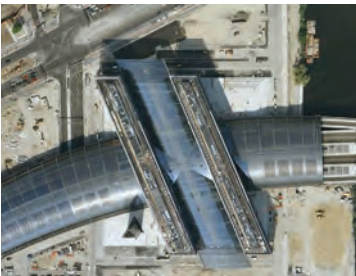


Aerial view showing the relocation of the two overground lines into the Old Oak Common station.

Transit Hub Precedents



Realigned Overground Lines



Hauptbahnhof, Berlin



West Side Yards

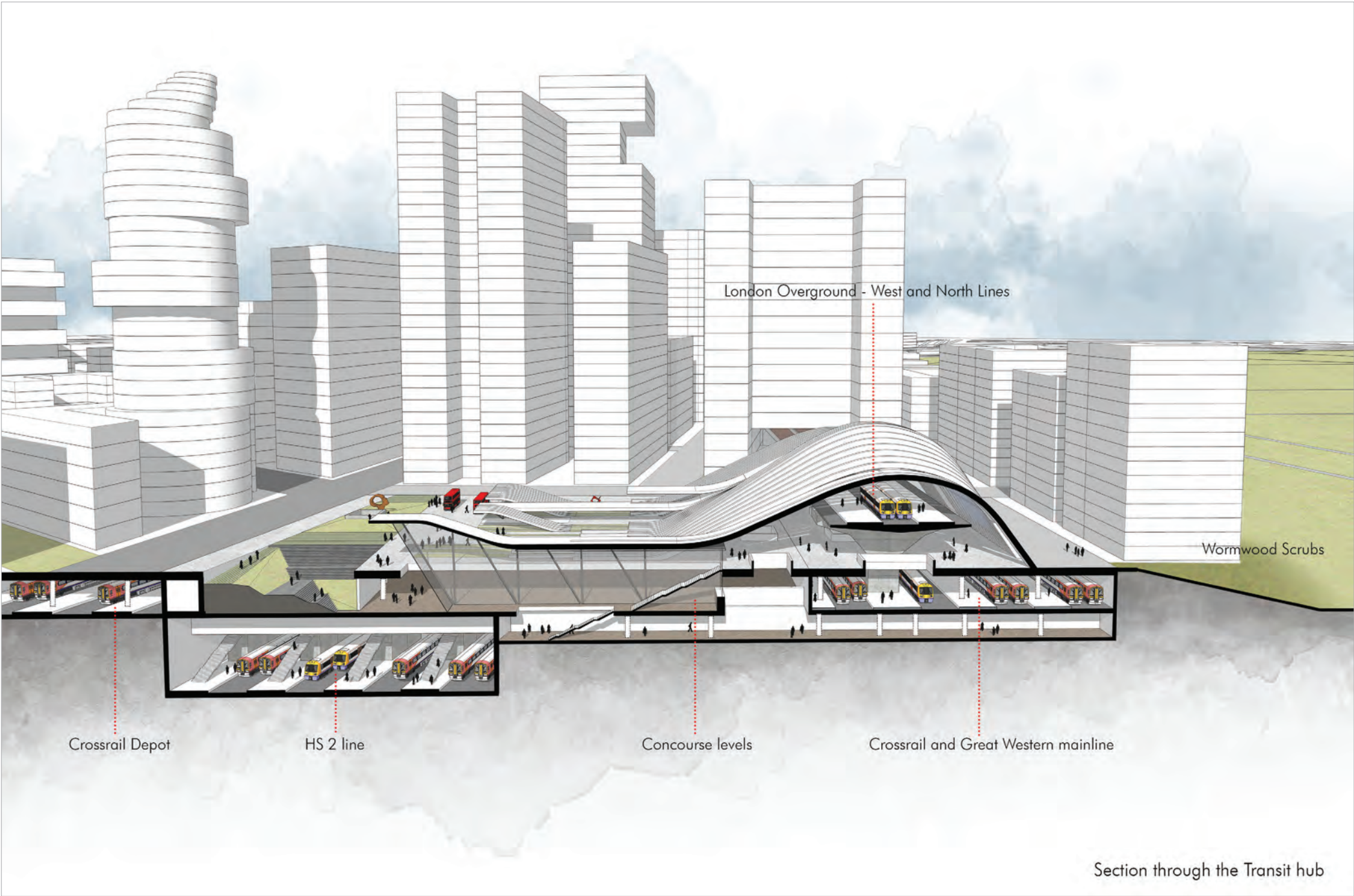


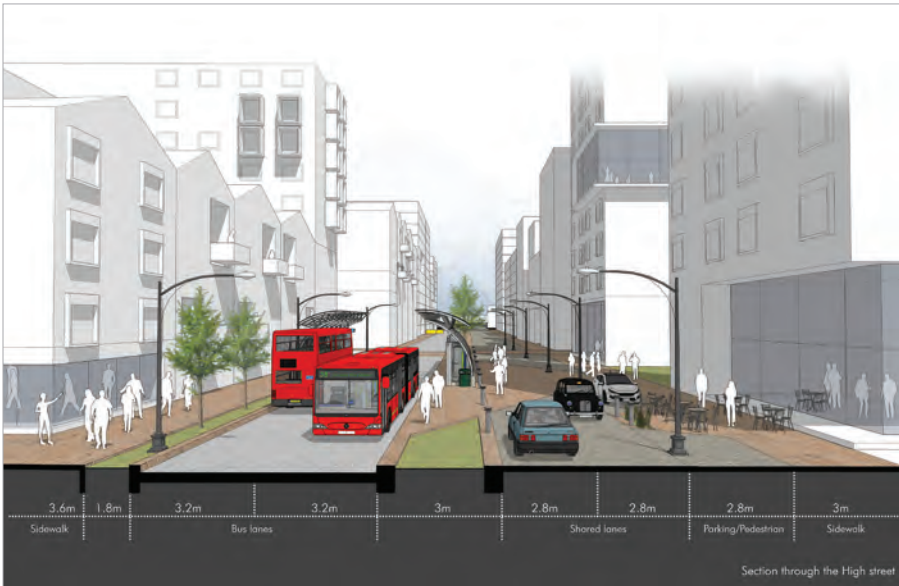
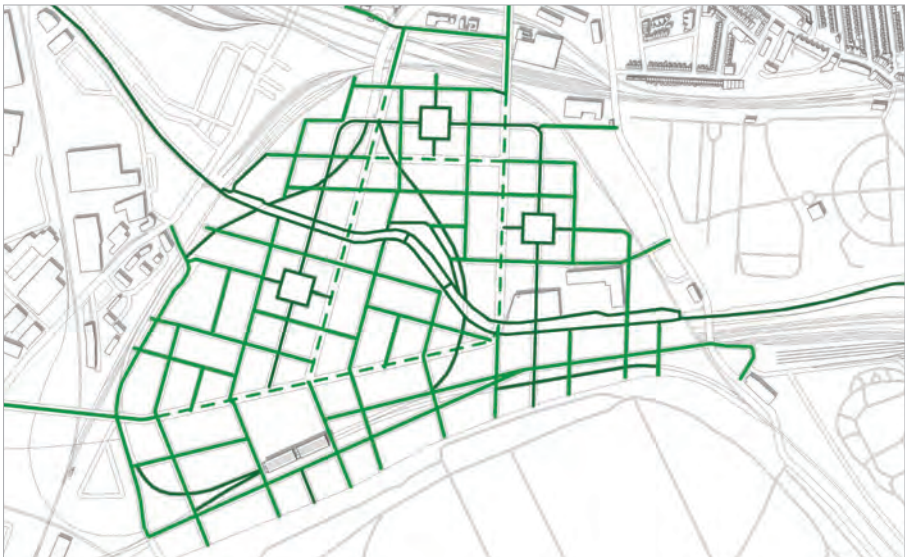
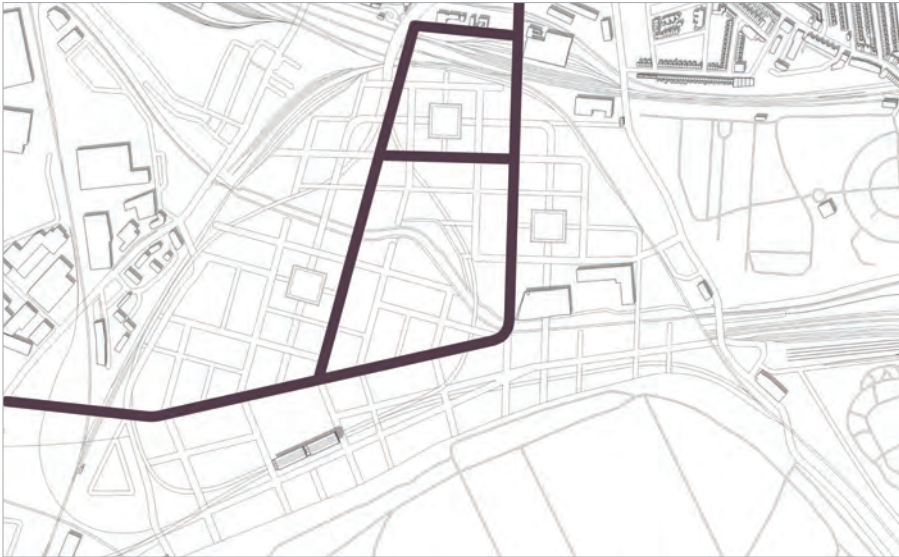
West Side Yards, New York — Air Rights Development

Old Oak Common Transport Hub

These images show the potential for a signature station building combining the various rail services.

A dramatic sweeping roof covers the various platforms creating a dramatic profile and connecting the various parts of the station complex. A concourse level below grade connects the lower level HS2 platforms with the ongrade Crossrail and Great Western platforms and provides access to the elevated Overground platforms.

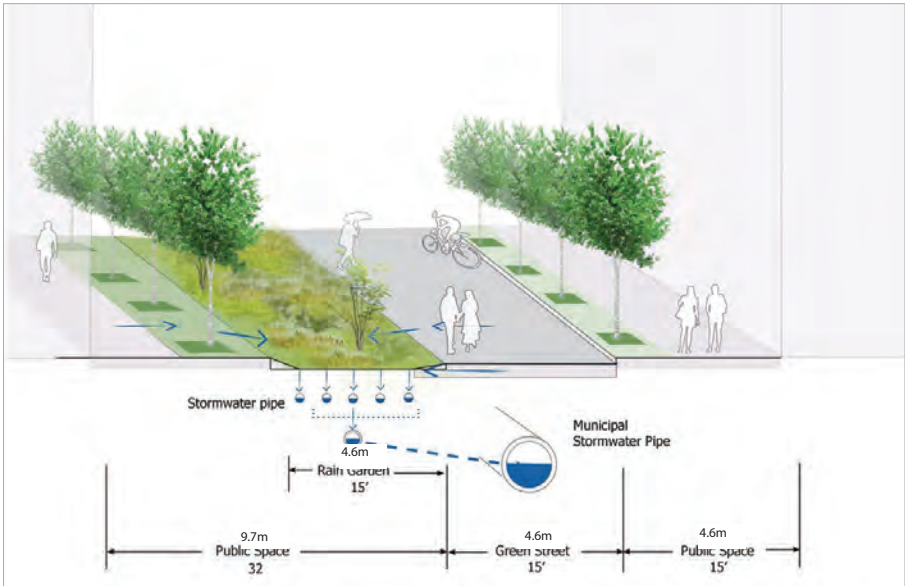




High Streets



Medium/Small Streets



Green Streets

Embrace Industrial Heritage

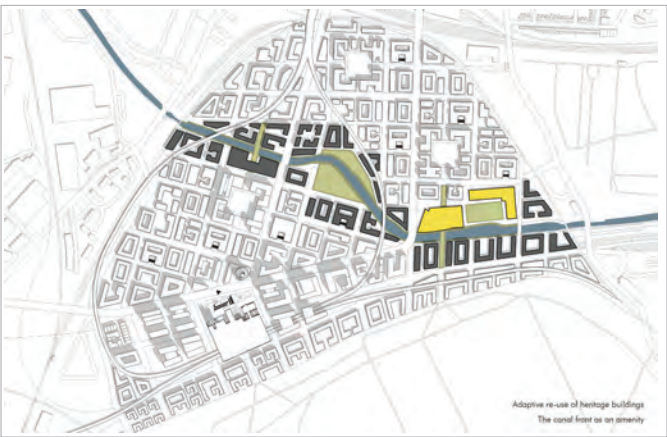
Embrace the industrial Heritage of the Site

Some of the 19th Century brick warehouses lining the canal can be reused as residential lofts or light industrial buildings. New buildings can be designed to respond to their scale and match materials.

Retaining older buildings keeps alive memories of the history of the site and its transformation from an industrial district to its new status.



Team 3: Expanded Transportation Hub



OLD OAK COMMON, LONDON



Team 1: Understanding Density



Team 2: Rethinking Wormwood Scrubs



Team 3: Expanded Transportation Hub



Team 4: A New London Neighborhood

Niki Xenia Alygizou

Irene Ho

Haonan Lu

Martijn Lugten

Rihab Khalid

Henry Ryu

UC Berkeley + Cambridge University Workshop, Spring 2017



Designing a New London Neighborhood

Team 4 started with the hypothesis of emulating a traditional London neighborhood such as Bloomsbury, one of the 18th Century Great Estates. Bloomsbury's pattern of a variety of block sizes is interspersed with park squares and has a range of street widths. Coupled with low-rise mixed use development in building types that have responded to changing land uses over the years Bloomsbury offers many lessons for Old Oak Common.

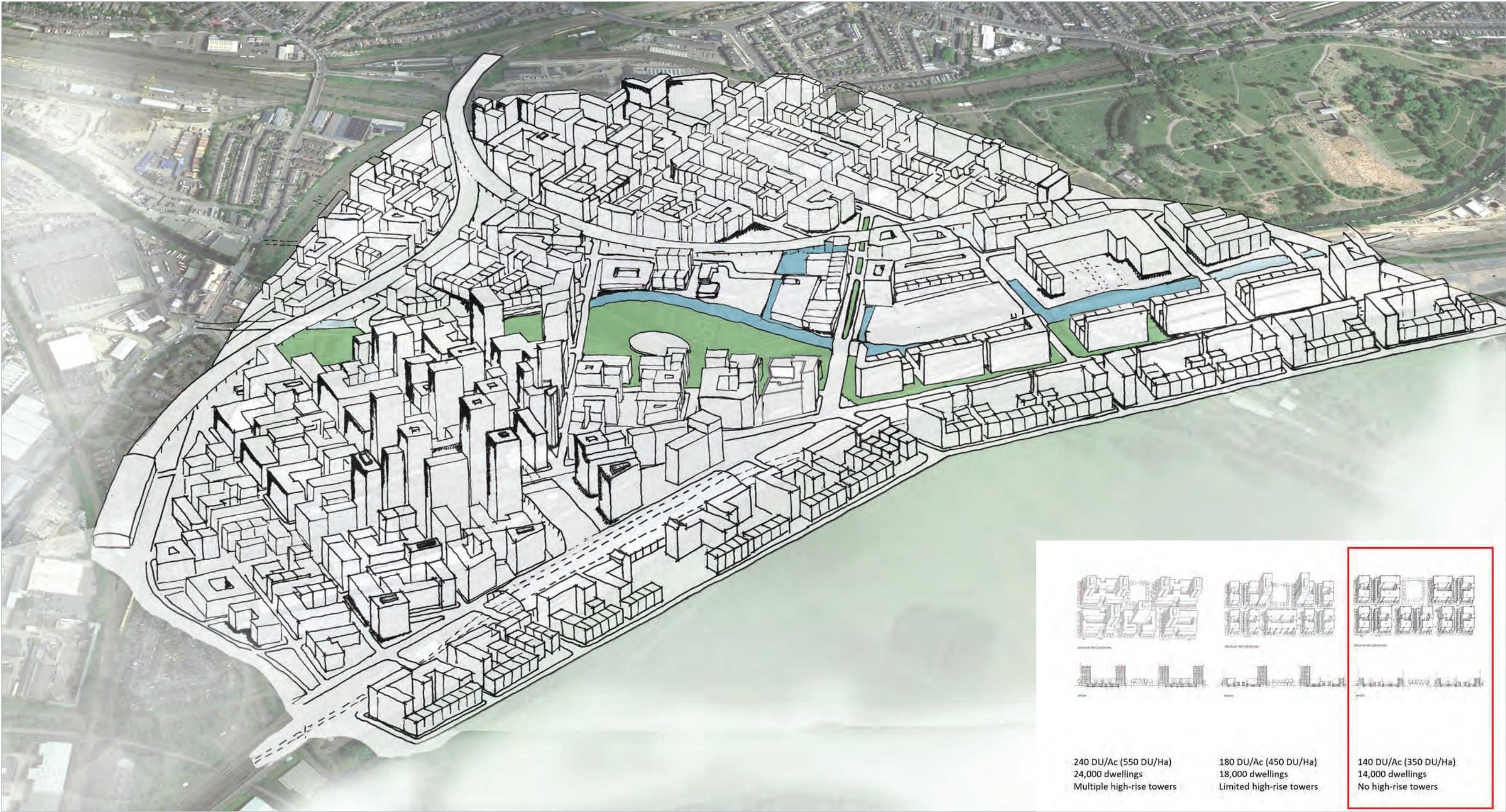
The team laid out a street and block pattern to accommodate a mix of building types and land uses. The result would be a reduction in the overall density to 16,000 dwellings but a plan that would be much more compatible with the surrounding low rise districts. The number of high-rise towers would be reduced significantly and most residential neighborhoods would consist of low-rise buildings.

The reviewers discussed the merits of such a proposal and the benefits it would offer to the residents and its compatibility with the rest of London.

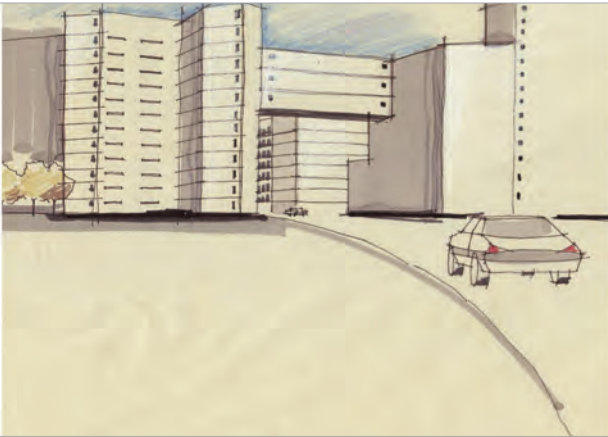
Among the topics our work did not address by any of our four teams are the vehicular connections to Old Oak Common. Reviewers rightly commented that such connections will be deficient, if a jobs-housing balance cannot be achieved and if a substantial number of workers expect to commute by car.



Bloomsbury, London



Aerial view of Old Oak Common showing the results of scaling down the development to match the surrounding context.



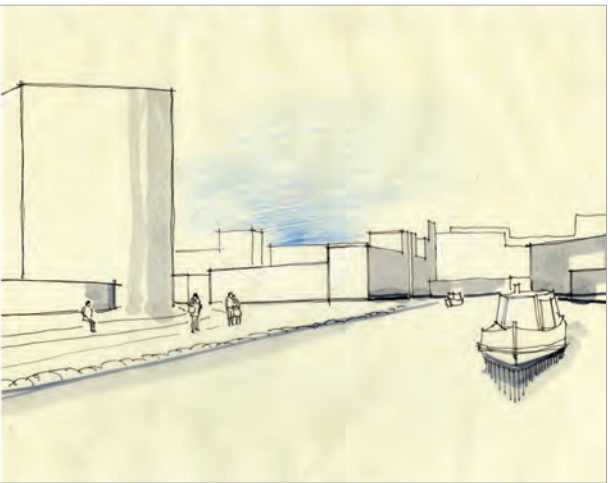
Northern Perimeter: 11-13 Floors



Residential: 8-11 Floors



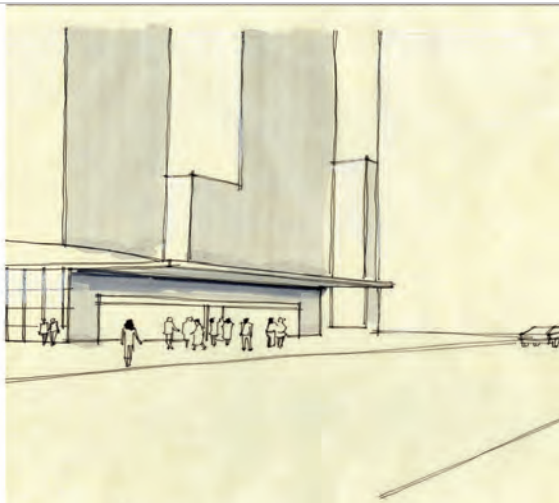
Meeting Point



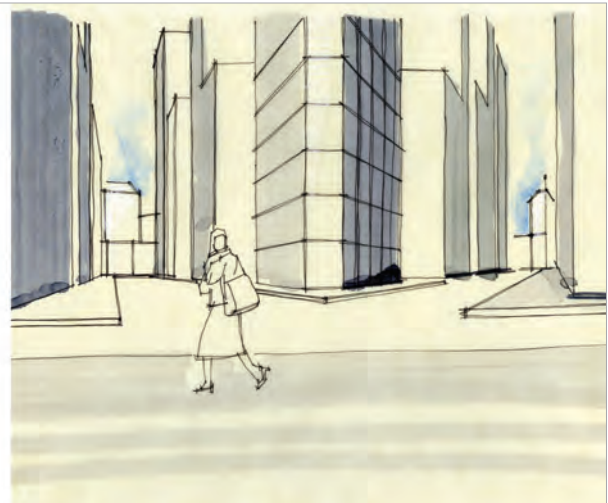
Canal and Public Buildings



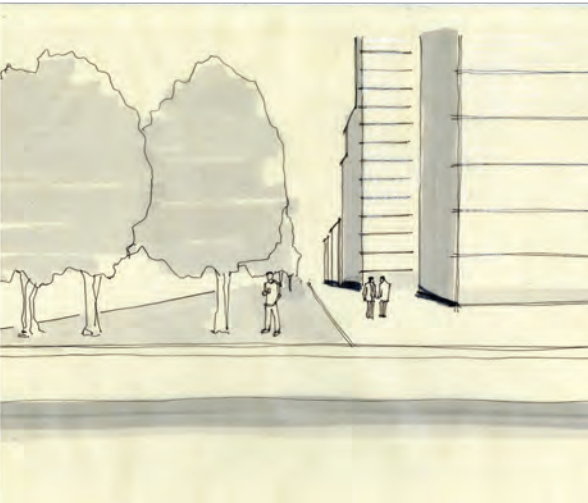
Office Buildings: 20-35 Floors



Train Station



Train Station: View Corridor



Train Station: Looking West



5 min Walking Distance



Green Space



Street Hierarchies and Connections



Land Use



Building Heights



Public Space and Pedestrian



Street Frontage



Green Space and Publicity



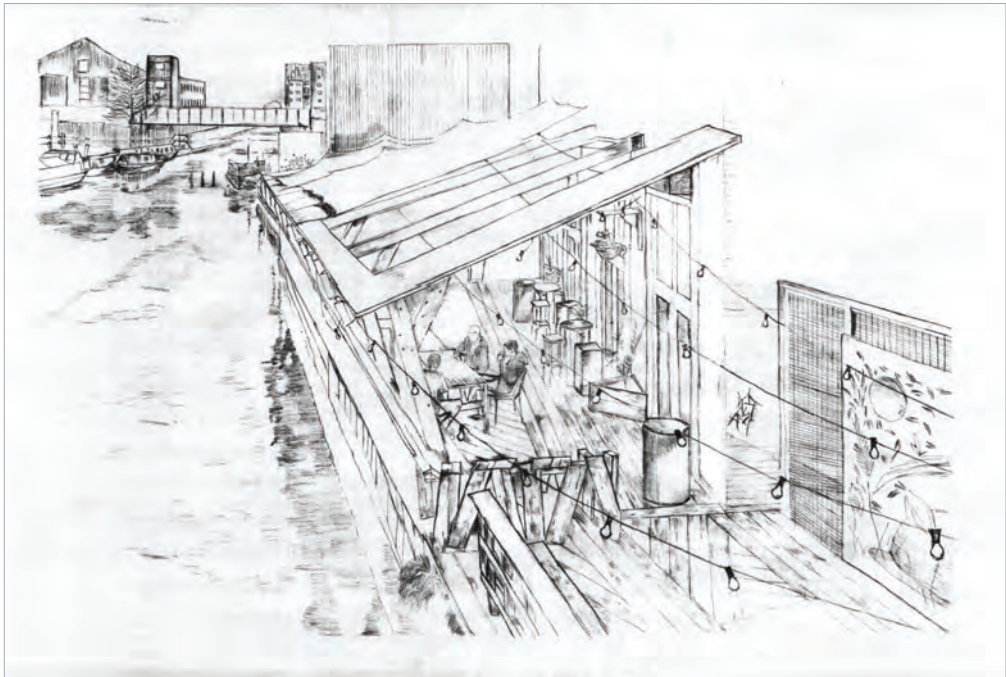
Integration of Neighborhoods

Tracing the history of the site

Sketches of the existing conditions along the canal and of some of the existing industrial buildings as well as places visited on some of the site tours such as Hackney Wick and Canary Wharf.



Grand Union Canal, Old Oak Common



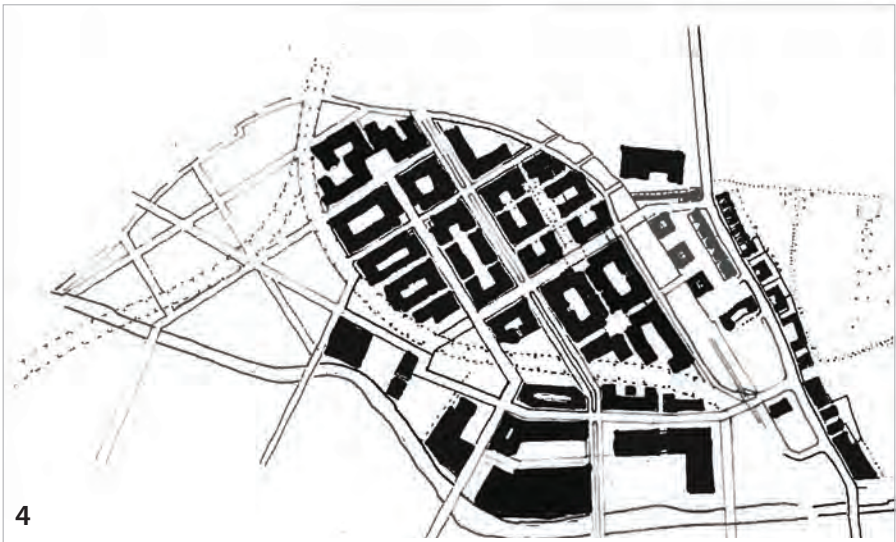
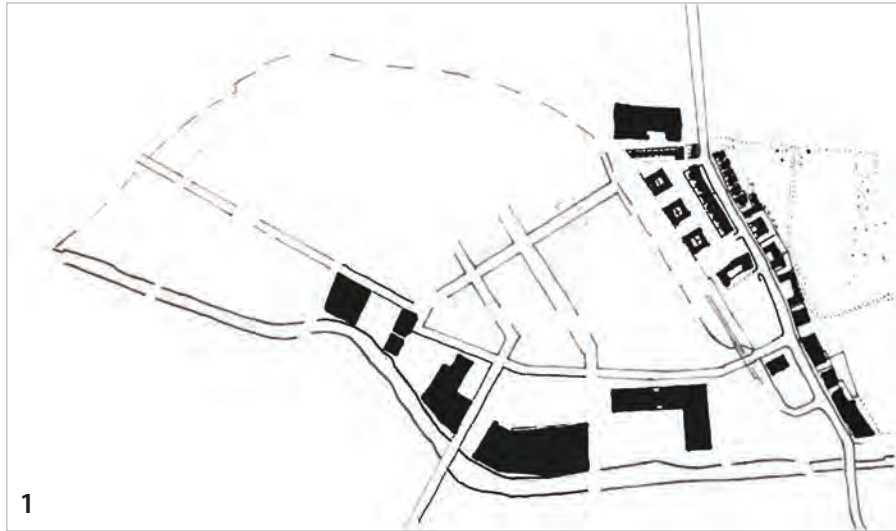
Hackney Wick



Canalside Warehouses



Canary Wharf



Importance of Phasing

These diagrams show the potential evolution of the Old Oak Common North neighborhood around the proposed Hythe Road Overground Station and how development can be phased over time.

Establishing a sense of place at the outset is critical to the success of creating a new neighborhood.

CASE STUDIES



King's Cross Lands, London



Stratford Olympic Park, London



Olympic Village, Vancouver



Pearl District, Portland

King's Cross Lands

The large scale mixed-use regeneration project for London's King's Cross Lands offers many lessons for development at Old Oak Common. The 195 ac brownfield site between King's Cross and St Pancras stations is similarly well served by a multitude of transit lines and is bisected by the Grand Union Canal. The former goods rail yards are being transformed into new neighborhood with a mix of both employment and housing. The old Great Northern Railway Granary Building now houses the Central St Martin's Art School, Google is planning to build a 1m sf office building and Pancras Square now houses four major office buildings. When complete the neighborhood will contain 2,500 housing units.

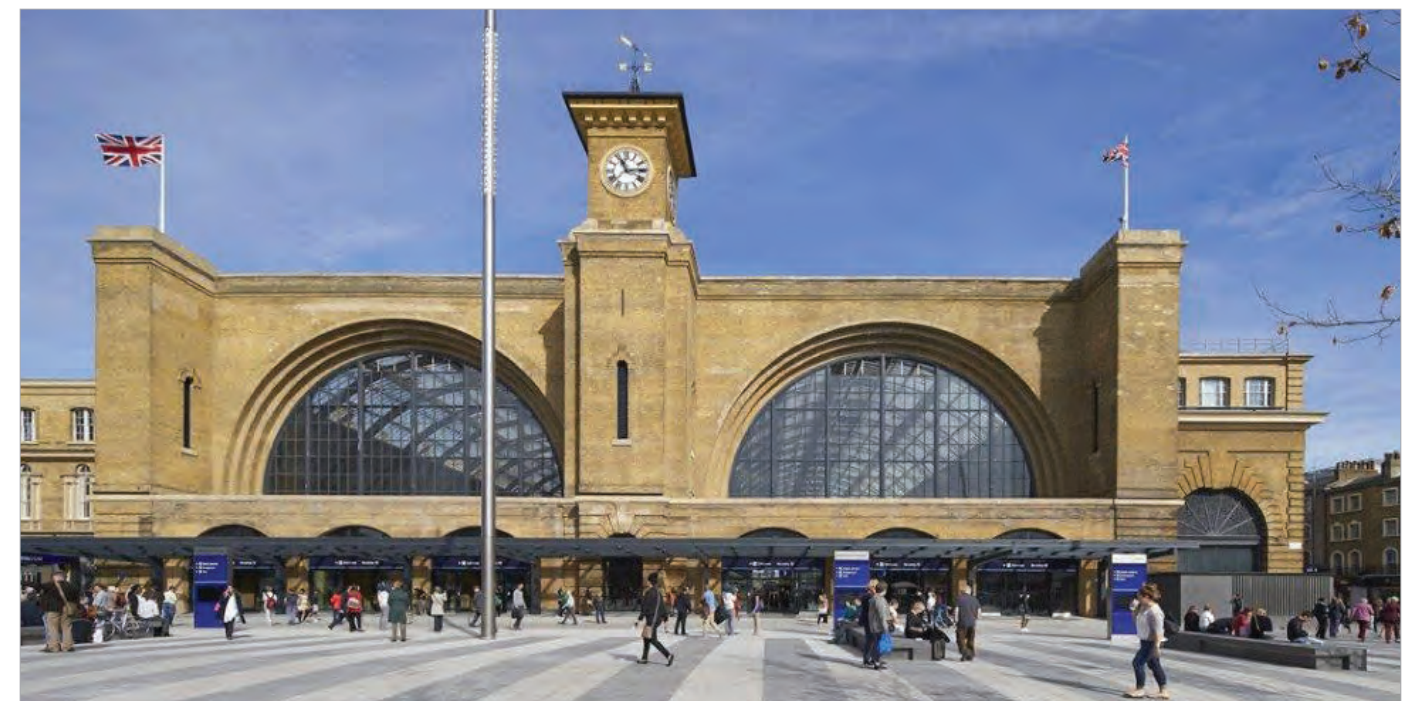
Lessons learned include the importance of creating a strong first phase and investing in the initial public infrastructure before later phases are built. Arguably the developers built Granary Square and the new Grand Union Canal terracing at the outset which when combined with the College of Art created a new urban place filled with students and young people which in turn attracted other early facilities. Housing will have a mix of market rate and affordable and a range of building types and architectural styles.



Granary Square



King's Cross Lands



King's Cross Station

Stratford Olympic Legacy Project

Stratford offers different lessons. Built to accommodate the 2012 Olympic Games the Olympic Village created one of London’s largest new housing developments. Designed as a grid of high-rise perimeter block housing adjacent to the Stratford International station the village offers a lesson in master planning and place-making. The net residential densities are close to those that will be built at Old Oak Common. A mix of townhouses, mid-rise and high-rise development is creating a new neighborhood together with a new high school, a health center and retail. Efforts are being made to integrate the development into the adjoining low-rise neighborhoods. When built-out this will be one of several new neighborhoods adjoining the new Queen Elizabeth Park and focused on the remaining sports facilities from the Games.

The excavated station box for HS1 is similar to that which will be built for HS2 at Old Oak Common. At Stratford a 600m long, 30m wide, 30m deep trench with 4 platforms linked at either end to the tunnels was excavated to accommodate the HS1 station. At present Eurostar trains to the Continent do not stop here only the Javelin trains to Kent. A larger station will be necessary at Old Oak Common to provide as many as 6 platforms since unlike Stratford International all trains to and from Birmingham and the North of England are expected to stop there.



Stratford International Station



Olympic Village



Station Box

Olympic Village, Vancouver

The Olympic Village for the 2010 Winter Olympics in Vancouver was built on a 18 ha (45 ac) brownfield site on the south shore of False Creek near to Downtown Vancouver. The intent from the outset was to create a legacy project that could be part of a new residential neighborhood. The urban design consists of a grid of narrow streets and small city blocks alongside a new waterfront park. A new xx ac public plaza lined with neighborhood retail is built around an existing warehouse building that has been transformed into a community center. The new residential buildings range from three-story townhouses facing mid-block courts and lanes to six and twelve-story apartment buildings. Each block is subdivided into several separate parcels resulting in a variety of building heights and types and a diversity of architectural styles. In this regard Vancouver's Olympic Village differs from those in Stratford or Barcelona. It looks and feels more like a traditional neighborhood.

The Olympic Village is close to an existing Sky Train station and within walking distance of Vancouver's mainline railway station with services across Canada and across the border to Seattle.

Average net densities of 240 DU/Ha (100 DU/Ac)

Lessons for Old Oak Common: development seen as a long-term legacy project from the outset; variety of building types; compact phased development that can grow over time.



Mid-rise Apartments



Streetscape



Village Square



Aerial View

Pearl District, Portland

The Pearl District in Portland is an example of the transformation of a former brownfield site consisting of rail yards and industrial buildings into a vibrant new high density, mixed-use neighborhood. Located just north of downtown Portland the Pearl District has a pedestrian scale with a fine grained pattern of small city blocks and narrow streets. Portland has the smallest blocks of any major US city measuring 80m x 80m (200' x 200') with narrow 18m (60') streets.

The Pearl District is well served by a combination of streetcars and light rail and as a consequence required residential parking ratios are low or at zero.

Development has occurred in the form of extending the city's street grid over former industrial sites. Several new public parks were created including Jamison Square and Tanner Spring Square each occupying a city block in the heart of the district. A variety of building types has been built ranging from two and three-story row houses to eight story mid-rise and twenty-plus story high-rise residential towers containing flats or lofts. Affordable housing and ground floor retail is interspersed creating a mixed-use, mixed income neighborhood.

Average net density of 275 DU/Ha (120 DU/Ac).

Lessons for Old Oak Common: small city blocks; pedestrian scale; streetcars; low to zero residential parking ratios; mixed-income housing; numerous public squares.



Streetcar



'Go By Streetcar' Building



Pearl District, Portland

There are many lessons that London’s Crossrail project and the proposed development at Old Oak Common can offer to the Bay Area. California’s High Speed Rail project is a similar scale of infrastructure investment to Britain’s HS2 and London’s Crossrail projects. The California project initiated by ballot in 2008 will when built provide high speed rail service between San Francisco and Los Angeles and the cities of the Central Valley. With a \$68bn price tag it is the largest public works project in the State’s history. When complete in 2029 it will provide 2 hour 40 minute service between downtown San Francisco and downtown Los Angeles, comparable with current air travel city center to city center.

California is expected to increase its population to over 50 million from its current 38 million by mid-century. To address the challenges of climate change and avoid continuing sprawl, especially in the Central Valley, the State has embarked on an ambitious plan to redirect growth into existing urban centers, provide alternatives to car driving and at the same time bring opportunities to the less prosperous regions of the State. The Bay Area’s choked highways are not capable of handling a million more drivers. ‘Plan Bay Area’ like ‘The London Plan’ proposes that growth be directed to Priority Development Areas (PDAs) similar to London’s ‘Opportunity Areas’. These would be transit-oriented districts and the reuse of brownfield sites within existing urban boundaries.

The Bay Area like Greater London is growing rapidly with a booming high tech economy and facing similar challenges in terms of affordable housing,

gentrification and income inequality. BART, the Bay Area Rapid Transit system, is at capacity and in need of rebuilding and expansion. The system links San Francisco with Oakland and the East Bay communities, the two major airports (SFO and Oakland International) and is extending to San Jose. Planned in the 1970’s to carry 250,000 passengers a day it now regularly exceeds 400,000 but will not be able to accommodate the projected 650,000 passengers a day by mid-century.

Plans are under way to study building a second Transbay crossing to relieve pressure on the most congested portion of the system. The plan is to propose a new two-level tunnel between San Francisco and Oakland that would not only carry BART trains (which have a broad 5’-6” gauge) but could also provide standard gauge tracks linking the Caltrain line from the Peninsula with the Capitol Corridor line in the East Bay. This would enable a regional network to be created allowing trains to run from Berkeley to Palo Alto, or Redwood City to Richmond without needing to transfer. Such a network would respond to the regional employment patterns as well as offer opportunities for access to more affordable housing areas.

‘Plan Bay Area’ estimates over 100,000 new jobs are projected in San Francisco’s burgeoning South of Market and Mission Bay districts. They will be served by the new downtown Transit Center, the electrified Caltrain service to San Jose and California’s High Speed Rail service. Access from the East Bay would be on the second BART tube. Similar to Old Oak Common brownfield sites such as the 500 acre former Alameda

Naval Air Station on Alameda Island, which have their development potential severely limited because of poor transit, will benefit from these proposed new infrastructure investments.



The Review

The workshop review took place in Cambridge on Friday March 31 before an invited jury of architects, academics and planners. The four teams presented their work responding to the four questions.

Conclusions

The reviewers discussed the merits of the different teams' work and the challenges these represented to the GLA's ambitious programme for Old Oak Common.

- *The reduced density to 18,000 units proposed by Team 1 could result in a more compatible and sustainable development but would require a transfer of 6,000 units elsewhere.*
- *Building on a portion of Wormwood Scrubs could enable an early phase to be started along Scrubs Lane and with a land swap could create a new and more accessible park space in the heart of Old Oak Common.*
- *An enhanced transport hub combining the Overground lines with Crossrail and HS2 has a lot of merit but would require costly realignment of existing lines and potentially delay a first phase.*
- *The low-rise London neighborhood option would further reduce the density while being the most compatible with the surrounding context.*

The review provoked questions about the how a project of this scale and magnitude could evolve in a post-Brexit environment. Canary Wharf, King's Cross Lands and Stratford are all the products of a booming global economy fed by London's position as a diverse multi-cultural city.

- *Will London's population continue to increase at the same rate as over the last 35 years?*
- *What are the economic engines that will generate development at Old Oak Common?*
- *Should Old Oak Common have any housing or should it be solely a commercial site taking advantage of its strategic location between Heathrow Airport and Central London?*
- *Should Old Oak Common be the location for major sporting facilities or a major exhibit and convention centre?*
- *What is the appropriate scale and density for Old Oak Common to be compatible with other London neighborhoods?*
- *What percentage of housing should be ground related as opposed to mid-rise and high-rise?*
- *How should public open space such as Wormwood Scrubs be treated and how can it be integrated into the new development?*



Marcial Echenique



Ying Jin and Tania Sharmin



Jeremy Newsum



Jonathan Rose, AECOM



Victoria Hills, Joanna van Heyningen, John Sergeant