



Olympic Legacy Supplementary Planning Guidance Development Capacity Methodology - Final Technical Report

Greater London Authority – July 2012

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1. Context

1.1 Introduction

The Mayor of London's Olympic Legacy Supplementary Planning Guidance (OLSPG) was published by the Mayor in July 2012 and sets out his strategic planning vision for the Queen Elizabeth Olympic Park and its surrounding area. It includes broad land uses and development capacity estimates for the OLSPG area as a whole and for each of its five Sub-areas (Olympic Park, Stratford, Southern Olympic Fringe, Hackney Wick and Fish Island, and Northern Olympic Fringe). These are shown on Map 5 below. These outputs are then used to generate population and child yield estimates, which in turn are used to generate broad social, community and cultural infrastructure requirements.

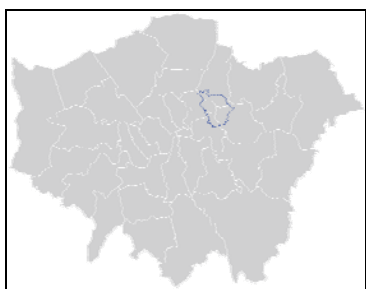
This Technical Report sets out the methodology the GLA used to arrive at these outputs which were developed through discussions with the OLSPG's Steering Group.¹

Three development capacity scenarios were developed and assessed; *Baseline*, *Emerging* and *Typology*, with the last - *Typology* - used to develop the OLSPG's preferred scenario that was used in the consultation draft OLSPG. This was then amended in light of consultation comments to produce Scenario 3a which in turn forms the basis of the published OLSPG.

The GLA commissioned a separate Infrastructure and Delivery Study to examine the impact of this potential growth on existing social and community infrastructure and on the approach and overall viability of the OLSPG's outcomes and ambitions. Its main findings are set out in Section 4 of the published OLSPG.

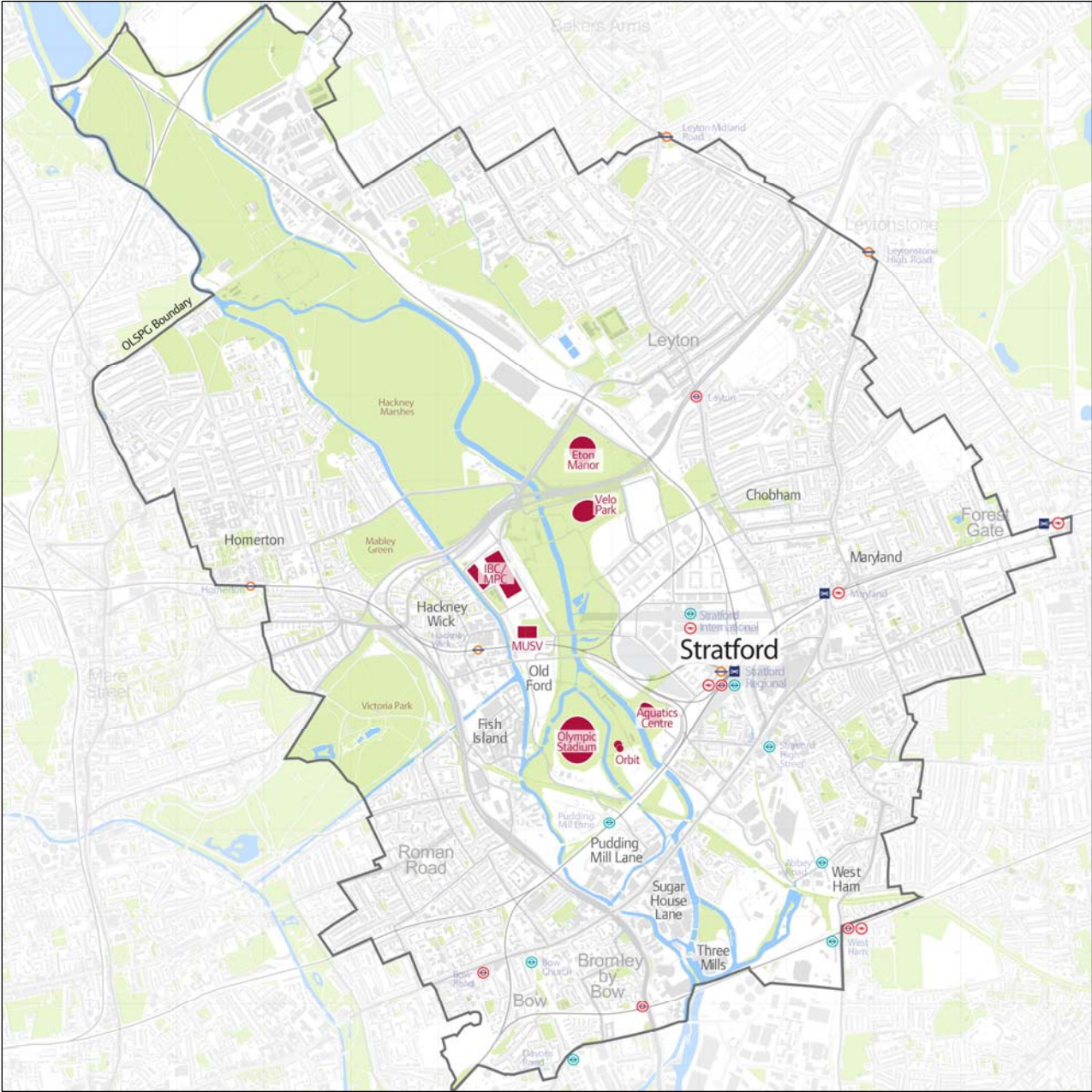
1.2 The OLSPG boundary

The OLSPG covers an area of approximately 2,000 hectares and straddles the administrative boundaries of Tower Hamlets, Hackney, Waltham Forest and Newham. The OLSPG area is roughly the same size as the London Borough of Hackney and is illustrated on Maps 1 and 2 below.



Map 1 - OLSPG boundary – London context

The boundary was based on the Inner Impact Area originally developed by the London Development Agency, which in turn represented a 20 minute walk from the edge of the main Olympic and Paralympic site at Stratford. Following discussions with the OLSPG's Steering Group, this boundary was adjusted to better align with emerging Development Plan documents and ward boundaries.

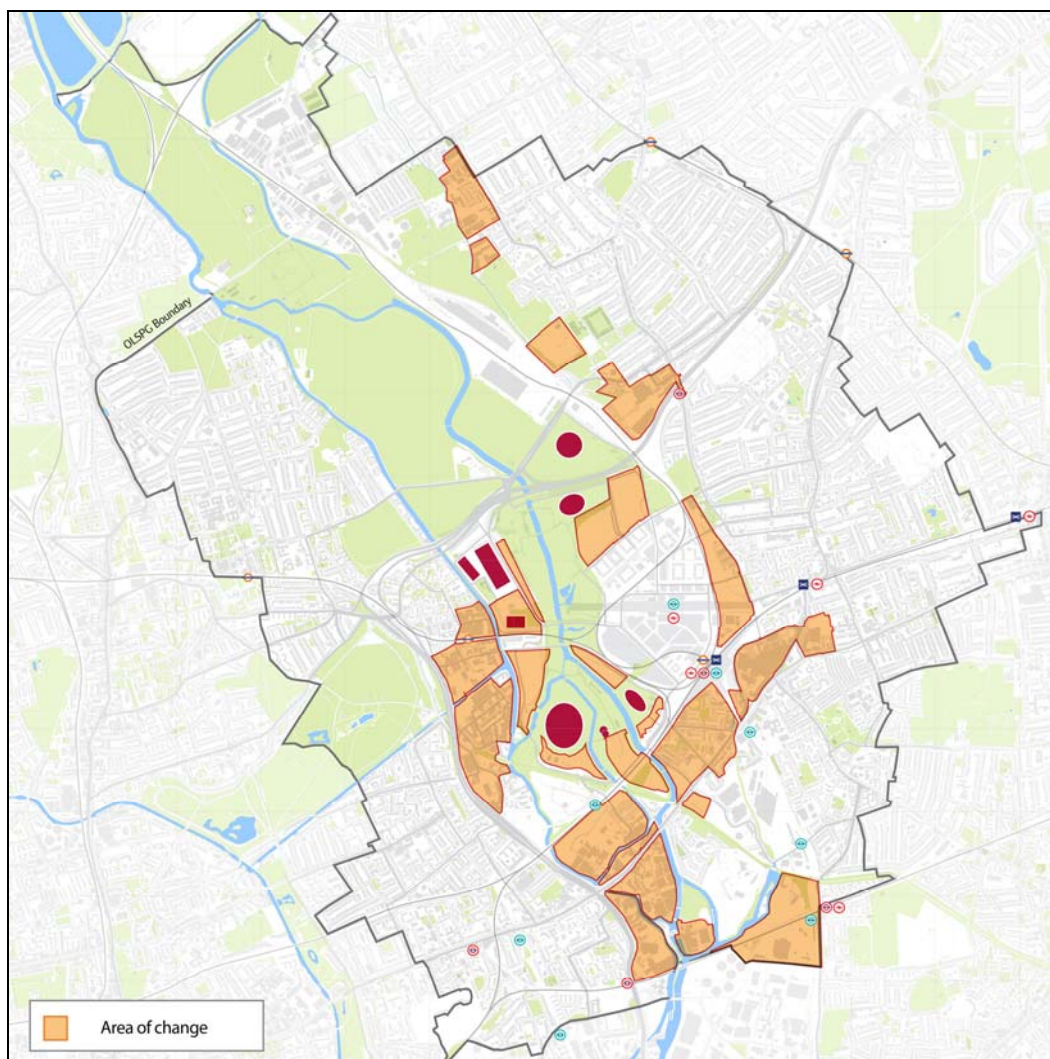


Map 2 - OLSPG boundary – local context

1.3 The OLSPG Areas of change

The main town planning constraints and fixes within and beyond the OLSPG area were mapped and analysed by the GLA in 2010 with a particular focus on protected employment areas, the land uses assumptions set out in the Mayor of London's 2007 Lower Lea Valley Opportunity Area Planning Framework, existing and proposed open spaces, and emerging masterplans and Local Development Plan documents. Consented and pipeline proposals were also mapped, as was public transport infrastructure and existing key connections into and across the area. Borough officer views on additional employment land release were also sought. Maps were then produced at borough and Neighbourhood area level which were discussed with the OLSPG's Steering Group.

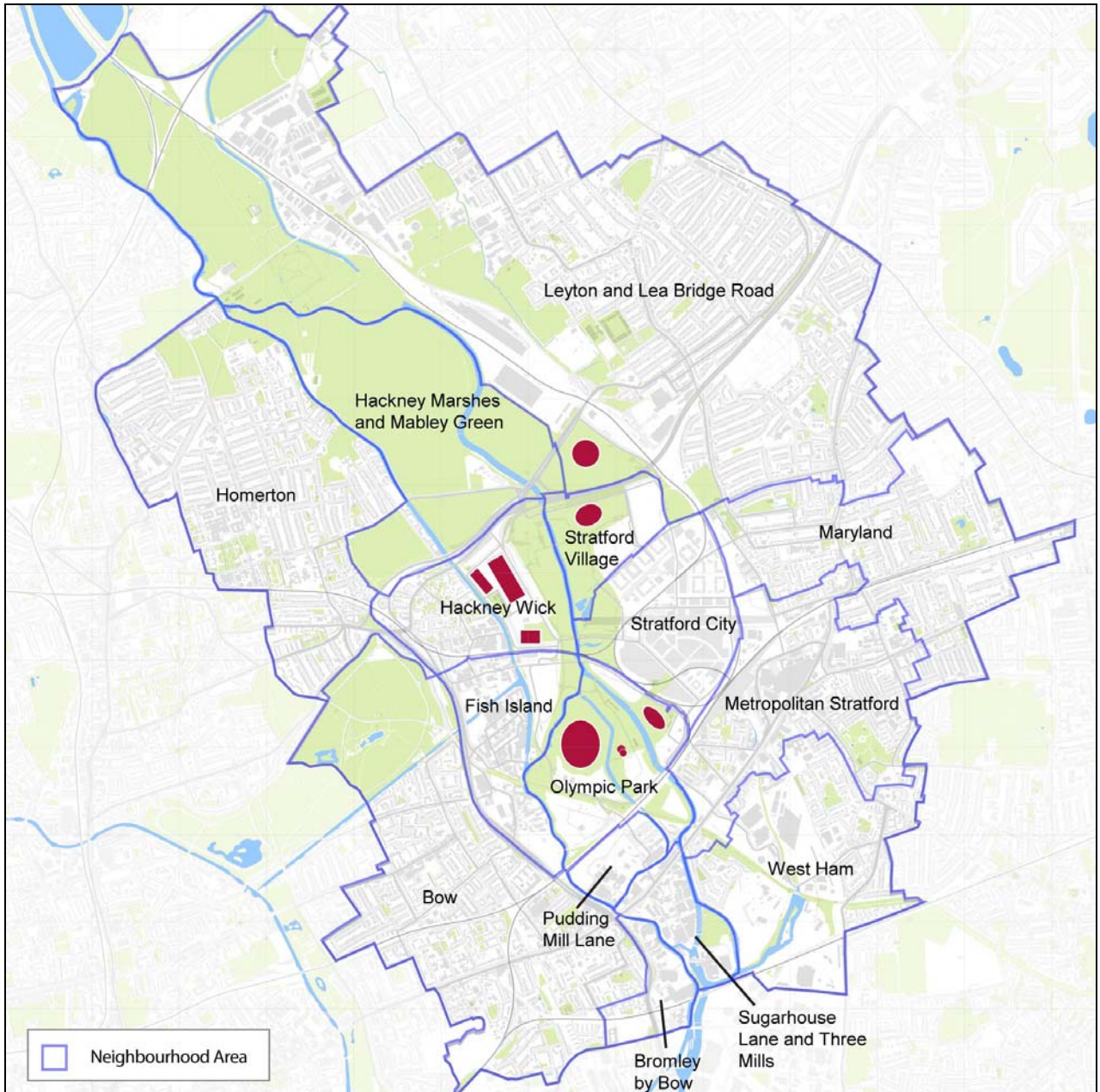
This process led to the identification of some 200 hectares of land where major development within the OLSPG area would be likely to be focussed. These 'Areas of Change' were then discussed with the Steering Group and local authority planning officers to check that all large parts of the OLSPG area that were likely to incorporate significant new development had been captured. Discussions also took place with the ODA and OPLC to seek to capture the most likely land parcels that would come forward for development in Stratford after the 2012 Olympic and Paralympic Games.



Map 3 – OLSPG Areas of change

1.4 The fifteen neighbourhoods

The GLA initially divided the OLSPG area into fifteen neighbourhoods to assess development capacity. These are shown in Map 4 below and were derived primarily from borough Development Plan documentation. They therefore reflect local administrative boundaries and allowed the GLA to assess the implications of different land uses and development typologies at a finer grain than the consultation draft or published OLSPG depicts.

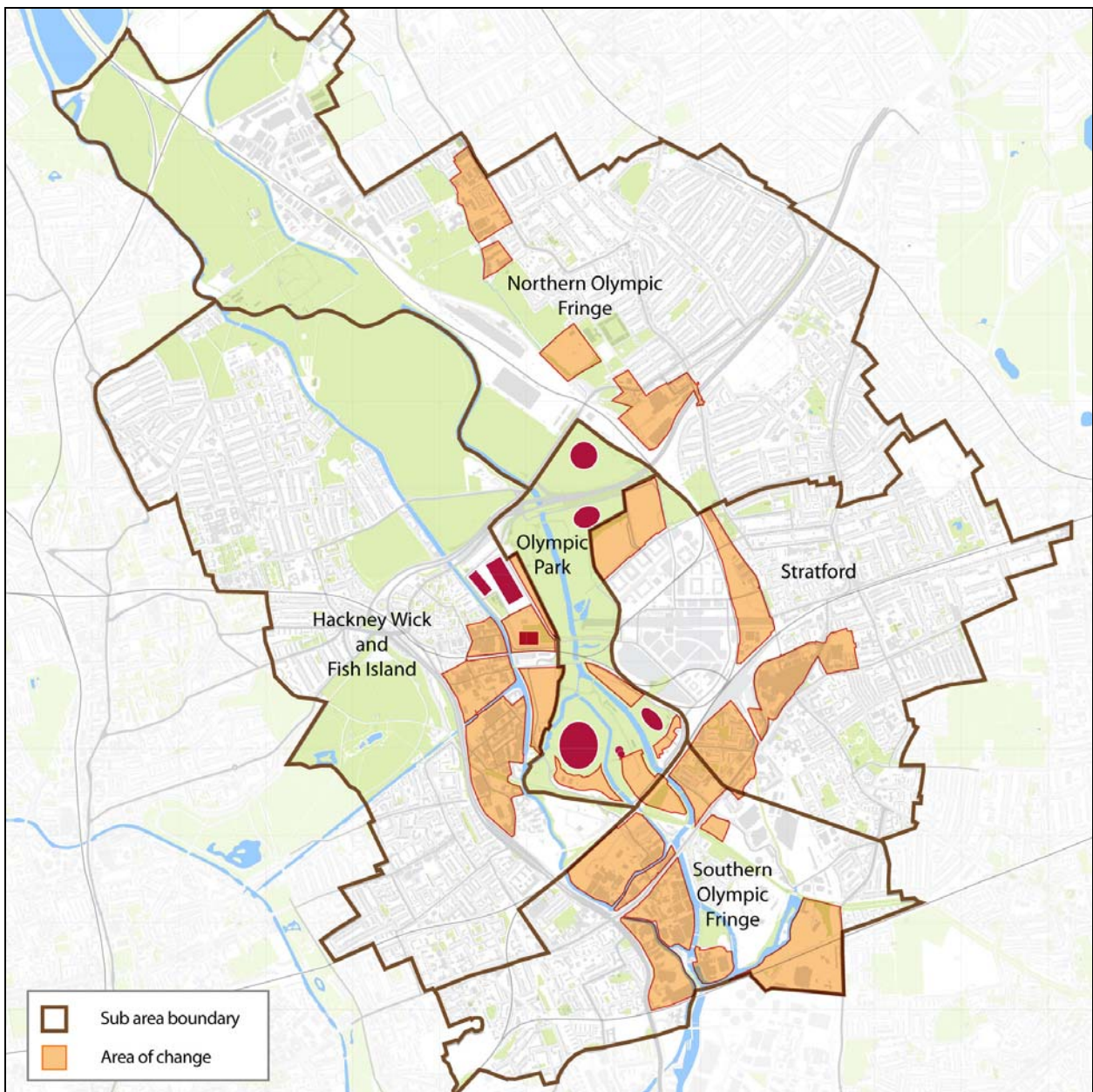


Map 4 - OLSPG Neighbourhoods

1.5 The five Sub-areas

Following discussions with the OLSPG's Steering Group on the appropriate level of analysis and detail the OLSPG should contain, the preferred scenario was selected and the fifteen neighbourhoods were amalgamated to create the five Sub-areas used in the OLSPG itself. These are depicted in Map 5 below and comprise:

- Olympic Park
- Stratford
- Southern Olympic Fringe
- Fish Island and Hackney Wick
- Northern Olympic Fringe



Map 5 - OLSPG Sub-areas and Areas of change

1.6 The OLSPG's development scenarios

Three development scenarios for the OLSPG area were developed and tested by GLA officers and discussed with the OLSPG's Steering Group. These were:

- Scenario 1 - The 2009 draft London Plan baseline estimate.
- Scenario 2 - Emerging capacity estimate.
- Scenario 3 - Typology estimate.

The next sections of this report set out how the OLSPG's development scenarios were constructed and how the GLA's initial preferred scenario was selected. This scenario was then used to estimate the additional population and jobs the Consultation Draft OLSPG's assumptions would be likely to lead to as well as the additional social, community and cultural infrastructure needs that would arise.

These outputs were adjusted following public consultation to construct Scenario 3a and are used within the published OLSPG.

2. Scenario 1 - The 2009 draft London Plan baseline estimate

2.1 Overview

Scenario 1 used the strategic land use assumptions set out in the Mayor's 2007 Lower Lea Valley Opportunity Area Planning Framework,² and is consistent with the population and transport assumptions behind the Mayor's 2009 draft replacement London Plan, and his 2009 draft Transport Strategy.³ The capacity assumptions it uses are also consistent with the land use and housing assumptions in the Mayor's 2009 Strategic Housing Land Availability Assessment (SHLAA),⁴ which in turn were agreed with the four Local Authorities and form the basis of the housing provision monitoring targets in the 2011 London Plan.⁵ As such it had a high degree of validity and provided a good indication of the OLSPG area's housing capacity under a "no-change" scenario at that time. It suggested that around 16,000 new homes could be built across the OLSPG area and did not generate a commercial floorspace estimate.

2.2 Methodology

The SHLAA housing capacity estimates for the OLSPG area used to develop this scenario were derived from 2 separate sources:

1. Large site housing capacity – which was derived from spatially explicit site capacity estimates for development sites in the OLSPG area above 0.25ha, and;
2. Small/non-conventional supply – which were housing capacity estimates from sites below 0.25ha and includes vacant homes returning to use, as well as non self-contained units becoming self-contained.

Large site housing capacity estimates were aggregated for the OLSPG area as a whole and for each of the OLSPG's 15 Neighbourhoods using a GIS spatial query. Small and non-conventional supply was then estimated for each of the 15 Neighbourhood areas by assigning an area proportion of each borough's total small/non-conventional supply. For example - if the proportion of Hackney within the OLSPG area was 15%, then 15% of the borough's small/non conventional supply was used to estimate housing growth from this source consistently across the OLSPG area.

2.3 Data

Land use – Lower Lea Valley Opportunity Area Planning Framework, Mayor of London, January 2007, <http://legacy.london.gov.uk/mayor/planning/docs/lowerleavalley-pt1.pdf>

SHLAA outputs - <http://www.london.gov.uk/sites/default/files/uploads/strategic-housing-land-study-09.pdf>

2.4 Scenario 1 outputs

Scenario 1				
Sub Area	Area of Change or SHLAA	SHLAA - Large (dwellings)	SHLAA - Small (dwellings)	Total - Scenario 1 (dwellings)
Hackney Wick/Fish Island	Fish Island	149	270	419
	Hackney Marshes and Mabley Green	0	0	0
	Hackney Wick	0	230	230
	Homerton	100	710	810
Northern Olympic Fringe	Leyton & Lea Bridge Rd	469	500	969
Olympic Park	Olympic Park	556	50	606
Southern Olympic Fringe	Bow	805	1,070	1,875
	Bridgewater Road	0	0	0
	Bromley by Bow	2,407	100	2,507
	Pudding Mill Lane	0	10	10
	Rick Roberts Way	0	0	0
	Sugarhouse Lane	799	20	819
	West Ham	119	82	201
Stratford	Maryland	299	100	399
	Metropolitan Stratford	1,404	90	1,494
	Stratford City	4,075	50	4,125
	Stratford Village	1,496	20	1,516
TOTAL		12,678	3,302	15,980

Table 1 - Scenario 1: The 2009 draft London Plan baseline estimate

3. Scenario 2 - Emerging capacity estimate

3.1 Overview

This scenario used the broad outputs and land use assumptions contained in emerging and extant borough planning documents and masterplans, the LDA's Legacy Masterplan Framework (Output C) ambitions for the main Olympic site at Stratford, and SHLAA housing estimates where no base information was available. Scenario 2 therefore represents the GLA's best understanding of the OLSPG area's anticipated development capacity in January 2010 - when the scenario was prepared - should borough plans have continued to evolve on their individual trajectories and the GLA had not prepared the OLSPG to assess and help shape the area as a whole. Scenario 2 suggested that some 38,000 new homes and 1,028,800 sq.m. of new or improved commercial floorspace across the OLSPG area and around 41,000 jobs.⁶

3.2 Methodology

The planning documents set out below were used by GLA officers to create a coherent picture of emerging capacity and land use assumptions for the OLSPG area. Where a local authority planning document existed, this was used, irrespective of its planning status, so as to best capture emerging policy thinking and local authority land use ambitions. This picture was augmented by data from the approved Stratford City scheme. SHLAA housing capacity estimates were used where no comparable or suitable base data was identified using the methodology described in Scenario 1.

3.3 Data

Bow Back Island, Initial Design Studies - August 2009, Sidell Gibson Architects.
Bromley by Bow Landuse and Design Brief (May 2009) - London Thames Gateway Development Corporation.
Draft Hackney Wick Fish Island Masterplan Draft (Jan 2009) - London Thames Gateway Development Corporation.
Hackney Marshes Masterplan Report (December 2009) - Camlin Lonsdale Landscape Architects.
Hackney Wick: Draft Phase 1 Area Action Plan (Nov 2009) - LBH.
Legacy Masterplan Framework Output C (December 2008) - LDA.
London Development Database - <http://ldd.london.gov.uk/LDD/LDD/welcome.do>
Northern Olympic Fringe (Nov 2009) - LBWF.
Stratford City Planning permissions - LBN and GLA LDD.
Stratford High Street Urban Design and Public Realm Strategy (Feb 2008) - LBN.
Sugar House Lane Master planning Exercise Draft (Nov 2008) - LTGDC.
The London Strategic Housing Land Availability Assessment and Housing Capacity Study 2009, Mayor of London, October 2009,
<http://www.london.gov.uk/sites/default/files/uploads/strategic-housing-land-study-09.pdf>
Three Mills Island (Landolt Brown and Urban Practitioners) (Dec 2009) commissioned by the LTGDC and LDA, in partnership with the GLA, DfL, LBN) English Heritage and Lee Valley Regional Park Authority.

3.4 Scenario 2 outputs

Scenario 2							
Sub Area	Area of Change or SHLAA	SHLAA	LMF/MPS	Planning Permission	Total Scenario 2 (dwellings)	Employment Floorspace (sq.m.)	Jobs
Hackney Wick/Fish Island	Fish Island		3,475		3,475	332,693	13,308
	Hackney Marshes and Mabley Green				0	0	0
	Hackney Wick		2,000		2,000	90,000	3,600
	Homerton	810			810	0	0
Northern Olympic Fringe	Leyton & Lea Bridge Rd	509	5,176		5,685	40,000	1,600
Olympic Park	Olympic Park		4,500		4,500	23,600	944
Southern Olympic Fringe	Bow	1,875			1,875	0	0
	Bridgewater road				0	0	0
	Bromley by Bow		1,900		1,900	0	0
	Pudding Mill Lane		1,080		1,080	37,460	1,498
	Rick Roberts Way				0	0	0
	Sugarhouse Lane		2,103		2,103	12,800	512
	West Ham	182			182	0	0
Stratford	Maryland	95	1,230		1,325	25,750	1,030
	Metropolitan Stratford	76	5,648		5,724	0	0
	Stratford City			6,000	6,000	460,000	18,400
	Stratford Village		1,500		1,500	5,500	220
TOTAL		3,547	28,612	6,000	38,159	1,027,803	41,112

Table 2 – Scenario 2: Emerging capacity estimate

4. Scenario 3 - Typology estimate

4.1 Overview

Scenario 3 took the emerging development assumptions in Scenario 2 and then assessed and adjusted the envisaged land uses, outputs and scale and form of development within a bespoke model developed by the GLA for this purpose. SHLAA estimates were used to assess housing capacity outside of the main areas of change. This allowed GLA officers to estimate and discuss development potential across the OLSPG area without prescribing particular urban design approaches, thereby addressing Steering Group concerns about the level of detail the OLSPG should assume or suggest. Scenario 3 suggests that some 29,000 new homes and 1,355,000 sq.m. of new or improved commercial floorspace could be built across the OLSPG area, which in turn could provide around 54,000 jobs.

The model was developed within Microsoft Excel and followed a six stage process.

1. Spatial and quantitative data gathering.
2. Typology construction and classification.
3. Urban grain analysis.
4. Model build.
5. Mixed use capability.
6. Model testing and consultation with stakeholders and Steering Group.

This approach removed the need to assess individual sites whilst still providing realistic capacity estimates that could be discussed with and key stakeholders, in particular local authority planning officers and the OPLC.

4.2 Data

SHLAA outputs - <http://www.london.gov.uk/sites/default/files/uploads/strategic-housing-land-study-09.pdf>

4.3 The typologies

A wide range of developments and established neighbourhoods across London were looked at to identify 21 development typologies that could be appropriate for the OLSPG area. These are set out in Appendix 1 of this report.

Where planning permissions existed, this was used to determine typical building heights and footprints, housing numbers and mix, (in particular levels of family housing), densities and commercial and housing ratios. Census and OS MasterMap data used was used where planning permissions didn't exist - i.e. for the Noel Road, Tredegar Square and Oldfield Road typologies.

The 21 individual typology examples were then amalgamated into one of eight typology classifications depending on their densities and levels of family housing. These are listed below, and Table 3 depicts how each of the 21 typologies was assigned a classification within the OLSPG methodology. As set out above, the use of generalised typologies allowed an appropriate level of detail to be depicted whilst providing an indication of what such a scale and form of development might look like.

OLSPG typology classifications

- Terraced
- Low density - high family housing
- Medium density - high family housing
- Medium density - medium family housing
- Medium density - low family housing
- High density - medium family housing
- Super high density - low family housing
- Commercial

Density	Super High 500+ Units/Ha	Merchant Square Pan Peninsula Strata Tower		
	High 500 -300 Units/Ha		Hayes Goodsyrd Indecon Court	
	Medium 300 -100 Units/Ha	Adelaide Wharf Kings Wharf St Lukes Tabard Square Tequila Wharf	St Andrews Canning Town, Area 3	Dalston Lane South Raines Dairy
	Low 100 -40 Units/Ha			IROKO Noel Road Tredegar sq
			Low (0-14%)	Medium (14-40%)
Family Housing				
Commercial		BBC Media Village Aldersmanbury Square Uxbridge Road, 79-89	Terraced	Oldfield Road

Table 3 – Typology classifications

4.4 Urban structure

The GLA's analysis also looked at the wider area within which each typology example was located to understand how much of that area contained housing or commercial uses and how much contained infrastructure such as roads, canals and railways, and community facilities such as schools and open spaces. This provided an indication of the area's structure or grain and a means to measure the proportion of that area that the principle use occupied and the proportion of the area that provided important ancillary uses and activities.

This was achieved by using GIS modelling to generate 500 m. quadrants around each scheme or neighbourhood and then using Cities Revealed™ data to calculate the amount of built form within that quadrant that was in either residential or commercial. The remainder therefore being ancillary uses and activities.

The 21 schemes were located across London, (see Map 5 below), and from this analysis it was concluded that there were 2 main urban structures - a *Central grain* within major centres and central London - where around 39% of land is occupied by the predominant land use, and an *Urban grain* - where this was around 24%. It was therefore assumed that the capacity of an 'Area of Change' within 800m of Stratford Town Centre should be modelled assuming a central grain of 39% and all other Areas of change an urban grain of 24%.

This is depicted in Figure 1 below where building footprints are shown in grey and the additional land required for auxiliary uses in shown in white.

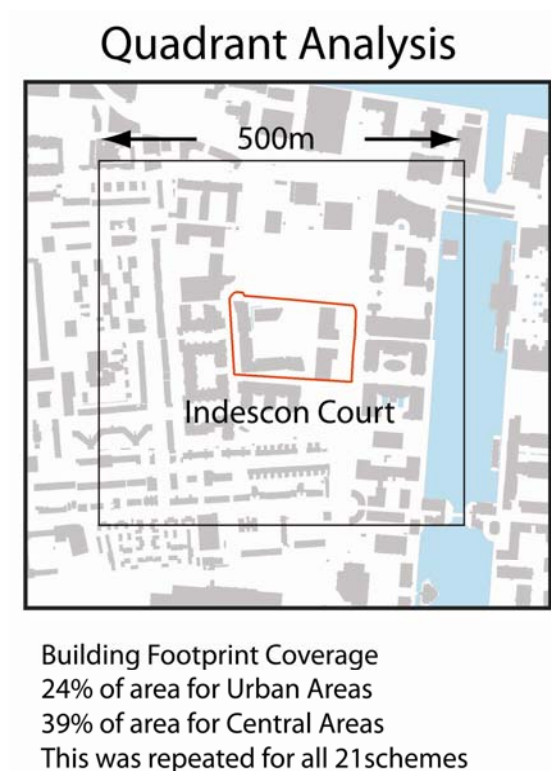
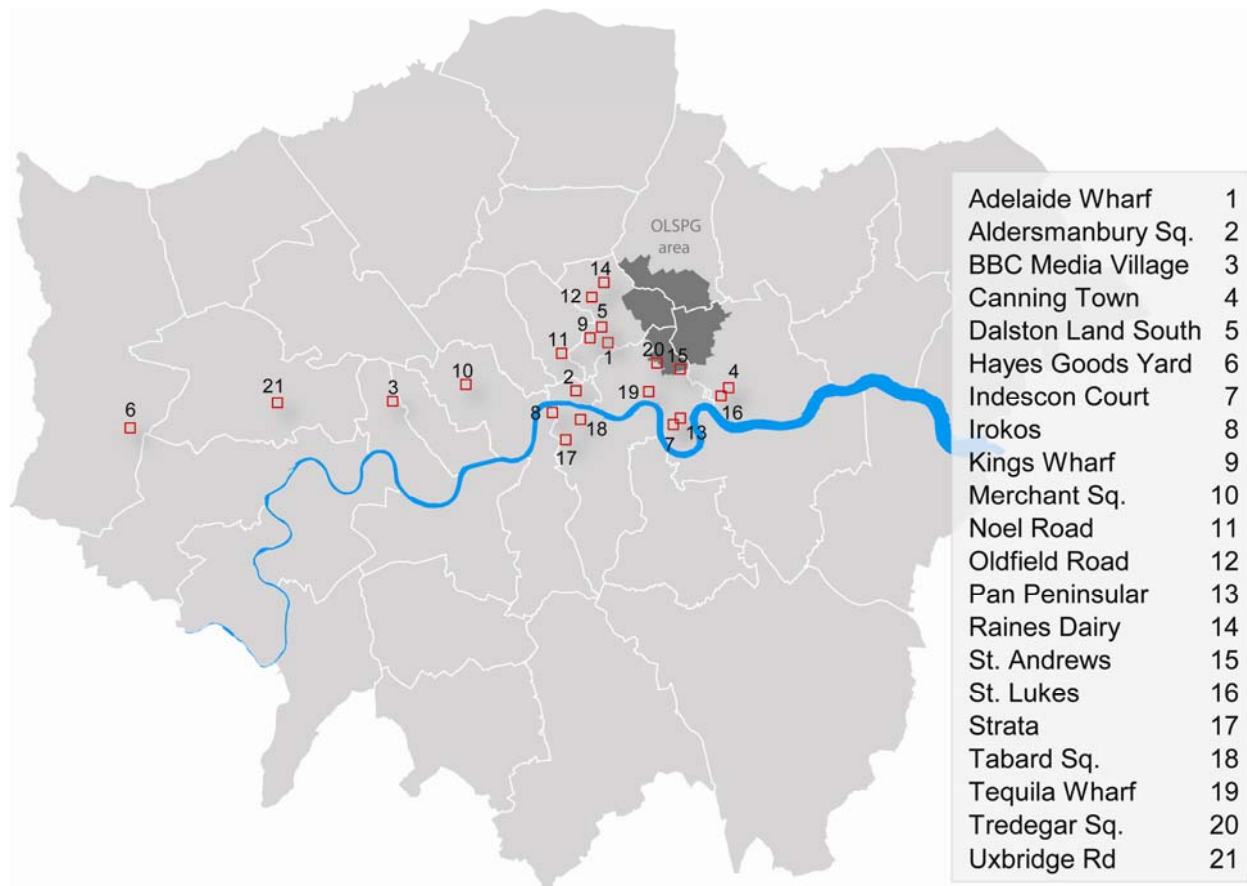


Figure 1 – Urban structure analysis



Map 6 – Location of OLSPG typologies and urban structure quadrants

4.5 Capacity calculation

Once the urban structure for each ‘Area of Change’ had been assigned it was possible to estimate the number of housing units and amount of commercial floorspace that would be expected to come forward from each area if a particular typology was assumed. For example, if an ‘Area of Change’ was 10 ha and assigned an urban grain, the assumed developable area would be 24% of 10 ha, i.e. 2.4 ha. If a typology was applied to this developable area that resulted in 100 units per 0.6ha of developable area, and 2,000 sq.m. of commercial floorspace, then the ‘Area of Change’ would be expected to generate 400 units and 8,000 sq.m. of commercial floorspace. This is illustrated in Figure 2 below.

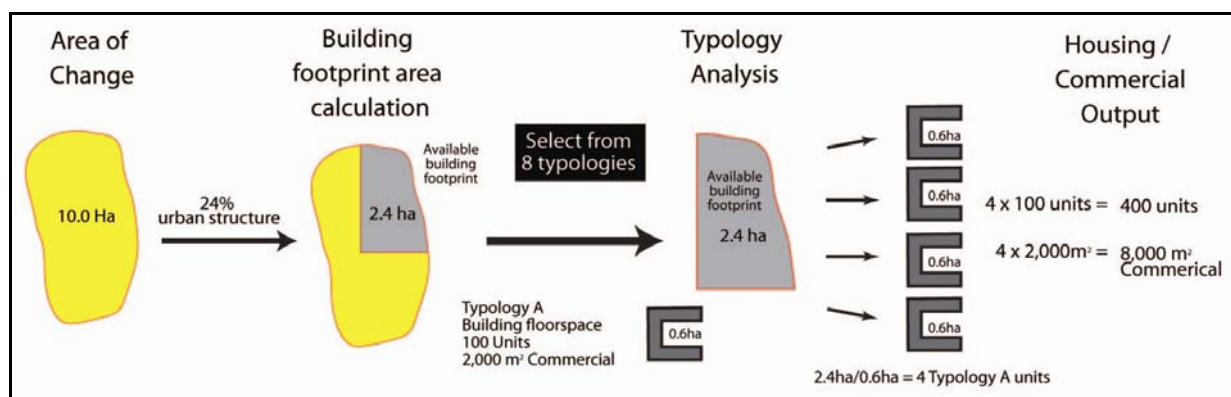


Figure 2 – Capacity calculation

4.6 Mixed use

Finally, the GLA model was adapted to accommodate a mixed use calculation. Depending where within the OLSPG area the site was, the appropriate central or urban grain reduction was used to arrive at the proportion of an 'Area of Change' that should be assumed would be developed. This then allowed a typical building height to be manually entered based on the local character of the area and the scale of existing and proposed developments. A total floorspace is then generated by multiplying the assumed built form by the number of floors, which is in turn reduced by 20% to provide an approximate net floorspace. This floorspace is then assigned a percentage mix between housing and commercial, and as set out below, the resultant residential floorspace divided by 82 sq.m. to provide the likely number of residential units that would result. This is illustrated in Figure 3 below. Employment figures are based on 1 job per 25 sq.m. of commercial floorspace.⁷

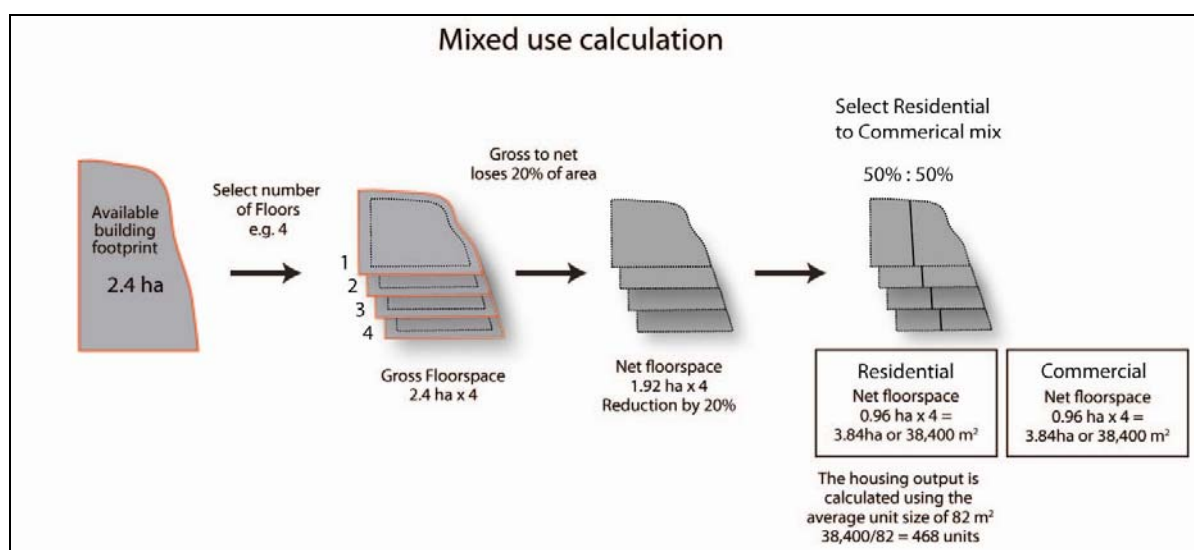


Figure 3 – Mixed use calculation

4.7 Unit calculation from floorspace

Unit sizes (sq.m.) are then generated by applying the minimum space standards for new development set out in Table 3.3 of the London Plan⁹ averaged across each of the gross internal area for each unit size and increased by 10%, as the OLSPG is prompting exemplar development standards. This leads to an average unit size of 82 sq. m. shown in Table 4 below.

Unit size	Average unit size plus 10%	Assumed Unit size proportion mix (%)	Size (m ²) for proportion of 100 units
1 bed	Ave(50)+10%= 55	30	1650
2 bed	Ave(63+70+83)+10%= 79	30	2370
3 bed	Ave(74+86+95+87+96+102)+10%= 99	25	2475
4+ bed	Ave(90+99+100+107+106+113)+10%= 112	15	1680
Unit average		100	8175
			82 sq.m. (81.75)

Table 4 – Housing mix percentages

4.8 Phasing and timescale

The OLSPG is supplementary guidance to the London Plan and covers the same time frame - 2011-2031. Given the complexity and scale of development it anticipates, it does not predict when within that period individual developments might come forward.

4.9 Floorspace calculation for OLSPG Energy Study

The OLSPG Energy Study required floorspace from both residential and commercial uses to estimate heat and energy loads for the new development the OLSPG envisages.⁸ The mixed use methodology supplies floorspace directly from the calculation, whereas the typology methodology requires use of assumptions to calculate residential floorspace from housing mix - unit numbers, size and type. Commercial floorspace is derived from the typology and mixed use estimates.

New and Improved Commercial Floorspace	
Sub area	Sub Area total (sq.m.)
Hackney Wick/Fish Island	176,000
Northern Olympic Fringe	19,000
Olympic Park	42,000
Southern Olympic Fringe	206,000
Stratford	915,000
Grand Total	1,358,000

Table 5 – Unit size by Sub-area

4.10 Residential floorspace estimates

The OLSPG development capacity model generates a housing mix of unit size, type, for each typology. Assumptions on the gross internal areas for each unit of a particular size and type were taken from Table 3.3 of the London Plan, thereby calculating an average floorspace per unit for each typology

Using the total unit output for each 'Area of Change' the floorspace for that 'Area of Change' was calculated and then aggregated to Sub-area level. Each individual 'Area of Change' had only one typology applied to it.

Typology	1 Bed	2 Bed	3 Bed	4 Bed +	Total Floorspace	Average Total units	Floorspace per unit
Terraced	550	1,552	4,831	4,440	11,373	114	100
Low density - high family	3,548	6,417	8,067	12,289	30,320	291	104
Medium density - high family	2,228	4,431	3,319	1,143	11,121	149	75
Medium density - medium family	17,463	21,615	15,381	2,547	57,005	807	71
Medium density - low family	7,513	5,894	1,309	229	14,944	235	64
High density - medium family	20,928	14,050	13,464	2,443	50,884	743	68
Super high density - low family	15,015	16,331	5,298	3,049	39,694	586	68

Table 6 – Typology unit floorspace calculation

The 'Floorspace per unit' as shown in the Table 6, above were applied to each Area of Change and aggregated to Sub-area level as shown in Table 7 below. Floorspace coming forward from non-Areas of Change of SHLAA housing figures were calculated using the same average floorspace per unit of 82 sq.m. as used in the Mixed Use housing calculation.

Residential Floorspace	
Sub area	Sub Area total (sq.m.)
Hackney Wick/Fish Island	467,000
Northern Olympic Fringe	280,000
Olympic Park	230,000
Southern Olympic Fringe	800,000
Stratford	538,000
Total	2,315,000

Table 7 – Residential floorspace by Sub-area

4.11 Refinement

The model allowed any of the eight OLSPG typology classifications to be assigned to each of the 56 Areas of change and to generate an output that included SHLAA housing outputs at different levels of aggregation. Initial typology selection was informed by existing and emerging planning documentation and factors such as proximity to public transport, urban form, emerging land uses and PTALs. These were then discussed with borough planning officers and the Steering Group to allow the GLA's assumptions to be tested against borough ambitions and their more detailed local plans and knowledge.

4.12 Scenario selection

Scenario 3 was then generated and chosen by the GLA as the preferred scenario to assess in the Draft IAA as it was considered to represent the most likely land use and development outcome, provided an appropriate balance between housing, commercial uses and jobs and best represented emerging borough local development plan thinking. It was then used to derive the land uses, outcomes and form of development set out in the Consultation Draft OLSPG.

4.13 Scenario 3 outputs

Scenario 3				
Sub Area	Area of Change / SHLAA	Homes (Units)	Employment Floorspace (sq.m.)	Jobs
Hackney Wick/Fish Island	Fish Island	2,584	125,230	5,009
	Hackney Marshes and Mabley Green	0	0	0
	Hackney Wick	562	47,423	1,897
	Homerton	0	0	0
	SHLAA Housing Figs	2,711	0	0
Northern Olympic Fringe	Leyton & Lea Bridge Road	2,201	19,139	766
	SHLAA Housing Figs	1,016	0	0
Olympic Park	Olympic Park	3,078	42,336	1,693
	SHLAA Housing Figs	0	0	0
Southern Olympic Fringe	Bow	0	0	0
	Bridgewater road	573	460	18
	Bromley by Bow	1,376	12,597	504
	Pudding Mill Lane	1,721	30,113	1,205
	Rick Roberts Way	482	22,525	901
	Sugarhouse Lane	1,633	83,772	3,351
	West Ham	1,178	56,373	2,255
	SHLAA Housing Figs	2,642	0	0
Stratford	Maryland	937	6,616	265
	Metropolitan Stratford	4,982	339,242	13,570
	Stratford City	0	563,761	22,550
	Stratford Village	1,022	5,101	204
	SHLAA Housing Figs	462	0	0
TOTAL		29,160	1,354,688	54,188

Table 8 - Scenario 3 Typology estimate

5. Scenario 3a – Published OLSPG estimate

5.1 Overview and estimate

As a result of consultation comments - in particular concerns about population and child yields and some of the land use assumptions the OLSPG put forward, GLA officers revised Scenario 3 to create Scenario 3a which is used in the published OLSPG. This scenario suggests that the OLSPG area could accommodate around 32,000 homes, 1.324 million sq. m. of new and improved commercial floorspace and 53,000 jobs. We refined the approach to small site capacity using historic data available from the London Development Database (LDD). There was an extrapolation of the average annual figure for years 2004-2010 for sites under 0.25ha which could be located within each of the sub-areas. The precise nature of the data available from the LDD led to a locally specific estimation of future capacity for this component.

Of particular importance is the number of children such a scale and form of development might lead to, which rises from 15,700 to 18,000. This in turn reinforces the need for additional school places and social infrastructure as set out in Section 4 of the published OLSPG.

Scenario 3a				
Sub Area	Area of Change / SHLAA	Homes (Units)	Employment Floorspace (sq.m.)	Jobs
Hackney Wick/Fish Island	Fish Island	2,926	124,253	4,970
	Hackney Marshes and Mabley Green	0	0	0
	Hackney Wick	1,282	39,648	1,586
	Homerton	0	0	0
	SHLAA Housing Figs	1,824	n/a	0
Northern Olympic Fringe	Leyton & Lea Bridge Road	2,344	111,581	4,463
	SHLAA Housing Figs	653	n/a	0
Olympic Park	Olympic Park	2,154	50,773	2,031
	SHLAA Housing Figs	0	n/a	0
Southern Olympic Fringe	Bow	0	0	0
	Bridgewater road	934	10,481	419
	Bromley by Bow	1,427	30,116	1,205
	Pudding Mill Lane	2,498	82,437	3,297
	Metropolitan Stratford (Part)	786	6,650	266
	Rick Roberts Way	482	22,525	901
	Sugarhouse Lane	1,926	50,047	2,002
	West Ham	636	96,795	3,872
SHLAA Housing Figs	259	n/a	0	
Stratford	Maryland	1,153	9,758	390
	Metropolitan Stratford	3,828	297,560	11,902
	Stratford City	3,900	384,000	15,360
	Stratford Village	1,105	9,356	374
	SHLAA Housing Figs	1,906	n/a	0
TOTAL		32,023	1,325,978	53,039

Table 9 - Scenario 3a Typology estimate

6. Consultation Draft OLSPG population estimates

6.1 Introduction

The GLA's initial preferred scenario, (Scenario 3 – Typology analysis), suggested that the OLSPG area could accommodate around 29,000 new homes, 60,000 new people and 54,000 new jobs under the land use and development assumptions it presented. This section of the report sets out how the GLA constructed its population estimates for this scenario, which were in turn used to generate the indication of likely social, community and cultural infrastructure needs that were used in the Consultation Draft OLSPG.

The GLA's OLSPG Infrastructure and Delivery Study reviewed this approach and together with new information provided by GLA Intelligence set out in Appendix 2 of this Report, allowed the GLA to develop a more locally specific assessment of child yield that is used in the published OLSPG as set out in Section 7 of this report.

6.2 Assumptions

The OLSPG's initial population estimate as used in the Consultation Draft OLSPG was based on the following assumptions:

Tenure

That 60% of new homes across the OLSPG area will be market housing and 40% affordable, and that 60% of the affordable housing would be social housing and 40% intermediate.⁹

Unit size

The typologies used to develop Scenario 3 generate the following unit mix for the OLSPG area.

Tenure	1 bed	2 bed	3 bed	4+ bed	Total homes
Market	5,521	5,817	4,090	2,068	17,496
Intermediate	1,472	1,551	1,091	551	4,665
Social	2,208	2,327	1,636	827	6,998
Total	9,202	9,694	6,817	3,447	29,159

Table 10 - Consultation Draft OLSPG unit size

6.3 Adult population estimate

The GLA used the following sources to generate adult population yields for the OLSPG area.

- 2009/10 CORE letting data for Social rented units which looked at the number of adults per bedroom in lettings to new council and housing association homes in Hackney, Newham, Tower Hamlets and Waltham Forest.
- 2009/10 CORE sales data for intermediate and private units which looked at the number of adults per bedroom in sales of new housing association homes across London.

This led to the following adult occupancy and population estimates.

Adult yield	1 bed	2 bed	3 bed	4+ bed
Market housing	1.14	1.45	1.85	1.94
Intermediate	1.14	1.45	1.85	1.94
Social rented	1.05	1.37	1.92	2.48

Table 11 – Consultation Draft OLSPG adult population yields

Tenure	1 bed	2 bed	3 bed	4+ bed	Adult population
Market	6,294	8,434	7,567	4,012	26,306
Intermediate	1,678	2,249	2,018	1,070	7,015
Social rented	2,319	3,187	3,141	2,051	10,699
Total	10,291	13,871	12,726	7,133	44,020

Table 12 – Consultation Draft OLSPG adult population estimate

6.4 Child population estimate

The GLA assessed child occupancy or ‘child yield’ based on the Wandsworth child occupancy methodology as set out in the GLA’s 2005 DMAG Briefing¹⁰.

Child yield	1 bed	2 bed	3 bed	4+ bed
Market	0.11	0.11	0.48	0.98
Intermediate	0.20	1.00	2.00	3.50
Social rented	0.11	0.11	0.48	0.98

Table 13 – Consultation Draft OLSPG child population yields

This led to the following child population estimate.

Tenure	1 bed	2 bed	3 bed	4+ bed	Child population
Market	607	640	1,963	2,027	5,237
Intermediate	162	171	524	540	1,397
Social rented	442	2,327	3,272	2,895	8,936
Total	1,211	3,137	5,759	5,462	15,569

Table 14 – Consultation Draft OLSPG child population estimate

6.5 Total Consultation Draft OLSPG population estimate

When adult and child population estimates are combined a total population for the OLSPG area of 59,500 resulted.

Tenure	1 bed	2 bed	3 bed	4+ bed	Total population
Market	6,901	9,074	9,530	6,038	31,543
Intermediate	1,840	2,420	2,541	1,610	8,412
Social rented	2,760	5,514	6,413	4,947	19,634
Total	11,502	17,008	18,484	12,595	59,589

Table 15 - Total Consultation Draft OLSPG population estimate

7. Published OLSPG population and education requirement estimates

7.1 Introduction

As set out above, the GLA's OLSPG Infrastructure and Delivery Study reviewed the approach and outputs used by the GLA in the Consultation Draft OLSPG. In addition, new information was provided by GLA Intelligence that allowed the GLA to develop a more locally specific assessment of population and child yields based on specific data from Lea Bridge Ward in Hackney which was considered to be more representative of the likely population that would occupy the new housing the OLSPG anticipates. The methodology and detail behind this approach is set out in Appendix 2 of this Report and was used to estimate school place requirements in the published OLSPG.

7.2 OLSPG population and housing estimates

Sub Area	1 Bed	2 Bed	3 Bed	4+ Bed	Total
Hackney Wick Fish Island	1,761	2,018	1,489	767	6,035
Northern Olympic Fringe	827	976	731	463	2,997
Olympic Park	967	685	434	67	2,154
Southern Olympic Fringe	3,496	2,926	1,875	651	8,948
Stratford	3,882	3,885	2,748	1,378	11,892
Total	9,358	9,305	6,484	2,928	32,027

Table 16 - OLSPG housing estimate

Sub Area	1 Bed	2 Bed	3 Bed	4+ Bed	Total
Hackney Wick Fish Island	2,796	4,644	4,585	2,902	14,928
Northern Olympic Fringe	1,313	2,245	2,251	1,753	7,562
Olympic Park	1,536	1,575	1,337	255	4,704
Southern Olympic Fringe	5,551	6,733	5,774	2,462	20,520
Stratford	6,164	8,940	8,461	5,212	28,777
Total	17,361	24,138	22,409	12,584	76,491

Table 17 - OLSPG population estimate

7.3 Education estimates

Sub Area	0-3 years	4-10 years	11-15 years	16-17 years	Child Total	18+ Years	Total
Hackney Wick Fish Island	1,070	1,480	865	236	3,651	11,274	14,925
Northern Olympic Fringe	547	773	459	124	1,904	5,657	7,561
Olympic Park	303	378	207	58	946	3,757	4,703
Southern Olympic Fringe	1,382	1,804	1,022	284	4,490	16,026	20,517
Stratford	2,021	2,767	1,611	440	6,839	21,933	28,772
Total	5,323	7,202	4,164	1,142	17,831	58,647	76,478

Table 18 - OLSPG child estimate

7.4 School form entry estimate

Form Entry per Year	0-3 years	4-10 years	11-15 years	16-17 years
Hackney Wick Fish Island	n/a	8	7	5
Northern Olympic Fringe	n/a	4	4	2
Olympic Park	n/a	2	2	1
Southern Olympic Fringe	n/a	10	8	5
Stratford	n/a	15	12	7
Total	0	40	32	20

Table 19 - OLSPG school form entry estimate

8. Published OLSPG social, community and cultural infrastructure estimates

8.1 Introduction

Policy 2.4 of the Mayor of London’s London Plan confirms that the Mayor will prepare planning guidance for the Olympic Park and the surrounding areas that will consider social, community and cultural infrastructure requirements.

This section of this report sets out the assumptions the GLA has used to arrive at broad social, community and cultural infrastructure requirements for the OLSPG area under the published OLSPG’s preferred scenario (Scenario 3a). They are by definition strategic estimates and should not be seen as minimum standards or absolute requirements, rather as a starting point for infrastructure providers, boroughs and local planning authorities to assess the scale of provision that the new population and communities the OLSPG promotes will need and can reasonably expect and to thereby to assist plan future investment. The OLSPG’s associated Infrastructure and Delivery Study provides additional information physical infrastructure.

The social, community and cultural infrastructure estimates are based on the following population estimates set out in Section 7 of this report:

Sub-area	Children	Adults	Total Population
Hackney Wick Fish Island	3,651	11,274	14,925
Northern Olympic Fringe	1,904	5,657	7,561
Olympic Park	946	3,757	4,703
Southern Olympic Fringe	4,490	16,026	20,517
Stratford	6,839	21,933	28,772
Total	17,831	58,647	76,478

Table 20 – OLSPG population profile by Sub-area

8.2 OLSPG health facilities estimate

The draft OLSPG’s estimates for GP provision are derived the NHS’ HUDU model assumption of 1 GP per 1,800 people.¹¹ This leads to the following estimate of new GP provision across the five Sub-areas.

Sub Area	Population	GPs	Primary healthcare floorspace (sq. m.)
Hackney Wick Fish Island	14,925	8	1,368
Northern Olympic Fringe	7,561	4	693
Olympic Park	4,703	3	431
Southern Olympic Fringe	20,517	11	1,881
Stratford	28,772	16	2,637
Total	76,478	42	7,010

Table 21 – Health provision by Sub-area

8.3 Other community infrastructure estimates

The published OLSPG does not include estimates for social and community facilities, but the following standards provide an indication of the scale of provision that the OLSPG’s additional population may require. They do not take account of deficiencies or surpluses that may currently exist in the OLSPG area, new models of service provision being developed by Government and local authorities and further information is included in the OLSPG’s associated Infrastructure and Delivery Study.

The GLA has used Sport England’s Sports Facilities Calculator (SFC) to estimate the amount of demand for key community sports facilities (swimming pool, sport halls and synthetic turf pitches) the population from the new housing the OLSPG proposes will create which does not take account any existing facilities.¹²

Type	Standard	Source
Library space	30 square metres per 1,000 population	Public Libraries, Archives and New Development: A Standard Charge Approach, May 2010, MLA. ¹³
Archives	6 square metres per 1,000 population	Public Libraries, Archives and New Development: A Standard Charge Approach, May 2010, MLA. ⁸
Museums	28 square metres per 1,000 population	Arts, Museums and New Development: A Standard Charge Approach, June 2010, MLA. ⁸
Arts	45 square metres per 1,000 population	Arts, Museums and New Development: A Standard Charge Approach, June 2010, MLA. ⁸
Community Space	0.0610 square metres per person	LLV regeneration strategy - SES - Social Infrastructure Paper. ¹⁴
Children's play space	10 m ² of play space per child	GLA SPG on Providing for children and young people's play and informal recreation, 2008. ¹⁵

Table 22 – Community infrastructure provision assumptions and sources

When these assumptions are applied to the OLSPG’s predicted population, the following broad estimates of community infrastructure results.

Sub Area	Population	Community Space (sq. m.)	Library Space (sq. m.)	Archives (sq. m.)	Museum (sq. m.)	Arts Provision (sq. m.)
Hackney Wick Fish Island	14,928	911	448	90	418	672
Northern Olympic Fringe	7,562	461	227	45	212	340
Olympic Park	4,704	287	141	28	132	212
Southern Olympic Fringe	20,520	1,252	616	123	575	923
Stratford	28,777	1,755	863	173	806	1,295
Total	76,491	4,666	2,295	459	2,142	3,442

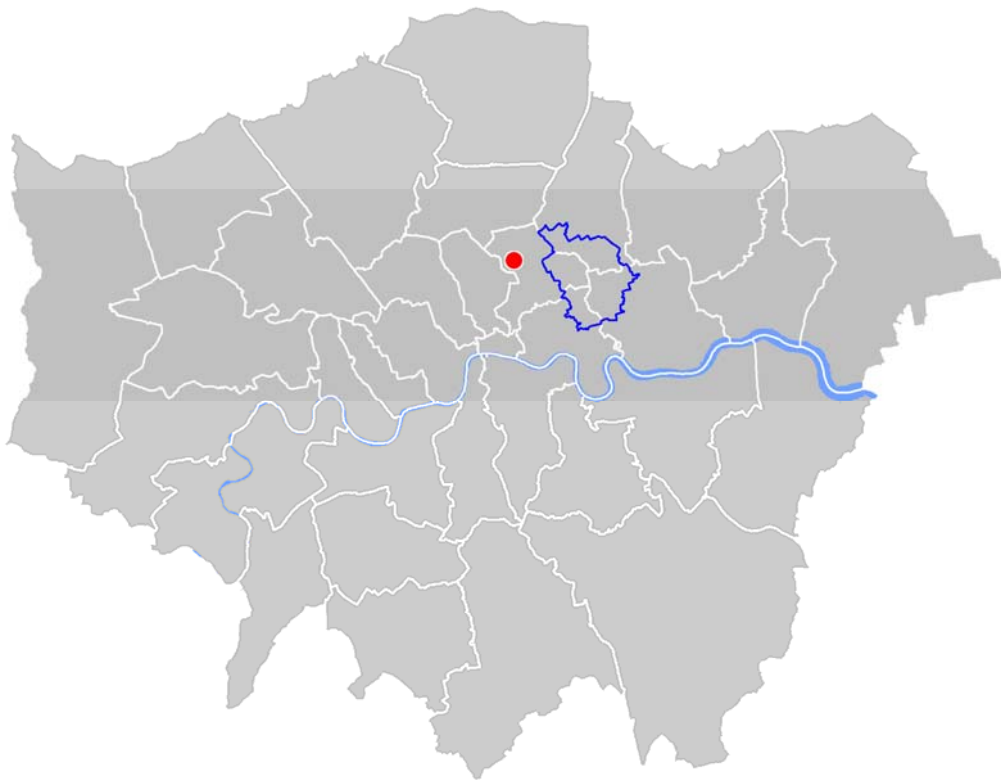
Table 23 – Community infrastructure estimate (1)


Sub Area	Population	Swimming pools (sq. m.)	Open Space (sq. m.)	Allotments (sq. m.)	Total Children	Children's Play space m ²
Hackney Wick Fish Island	14,928	167	451,561	37,319	3,651	36,511
Northern Olympic Fringe	7,562	85	120,992	18,905	1,904	19,038
Olympic Park	4,704	53	51,743	11,760	946	9,462
Southern Olympic Fringe	20,520	230	246,240	51,300	4,490	44,905
Stratford	28,777	322	316,549	71,943	6,839	68,392
Total	76,491	857	1,187,086	191,227	17,831	178,307

Table 24 – Community infrastructure estimate (2)


Appendix 1 - Development typologies

<h2>Oldfield Road</h2> <p>Stoke Newington Hackney</p>		
Development Characteristics		
Site Area (ha)	1.621	
Density (dwellings/ha)	70	
Residential (units)	114	
Commercial (sq.m.)	0	
Predominant height (storey)	2	
Building footprint	6,029	
Bedroom sizes		
1 Bedroom	10	
2 Bedroom	17	
3 Bedroom	48	
4 plus Bedroom	39	
Typology grouping	Terraced	




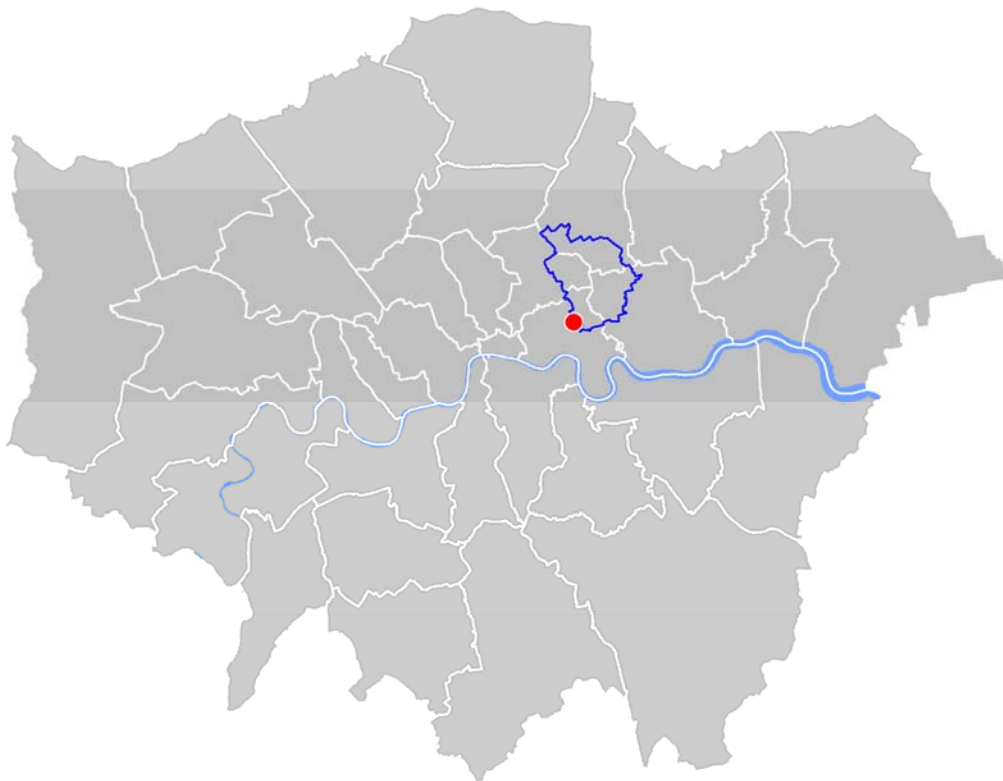
<p>IROKO Coin Street Lambeth</p>		
Development Characteristics		
Site Area (ha)		0.82
Density (dwellings/ha)		74
Residential (units)		59
Commercial (sq.m.)		0
Predominant height (storey)		4
Building footprint		2,344
Bedroom sizes		
1 Bedroom		10
2 Bedroom		11
3 Bedroom		6
4 plus Bedroom		32
Typology grouping		Lower Density - High Family




<h2>Noel Road</h2> <p>Islington</p>	
Development Characteristics	
Site Area (ha)	1.519
Density (dwellings/ha)	78
Residential (units)	119
Commercial (sq.m.)	0
Predominant height (storey)	4
Building footprint	4,218
Bedroom sizes	
1 Bedroom	32
2 Bedroom	31.9
3 Bedroom	29.1
4 plus Bedroom	26
Typology grouping	Lower density - high family



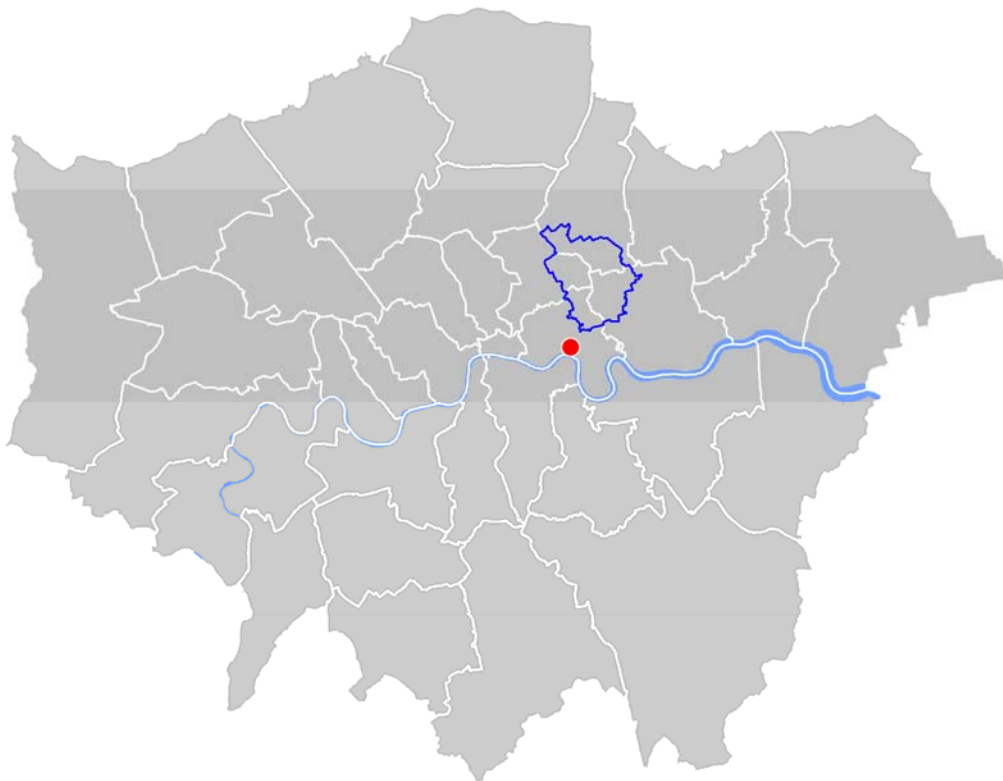
<h2>Tredegar Sq</h2> <p>Tower Hamlets</p>		
Development Characteristics		
Site Area (ha)	3.543	
Density (dwellings/ha)	38	
Residential (units)	133	
Commercial (sq.m.)	0	
Predominant height (storey)	4	
Building footprint	8,044	
Bedroom sizes		
1 Bedroom	22.5	
2 Bedroom	29.7	
3 Bedroom	37.8	
4 plus Bedroom	43	
Typology grouping	Lower density - high family	



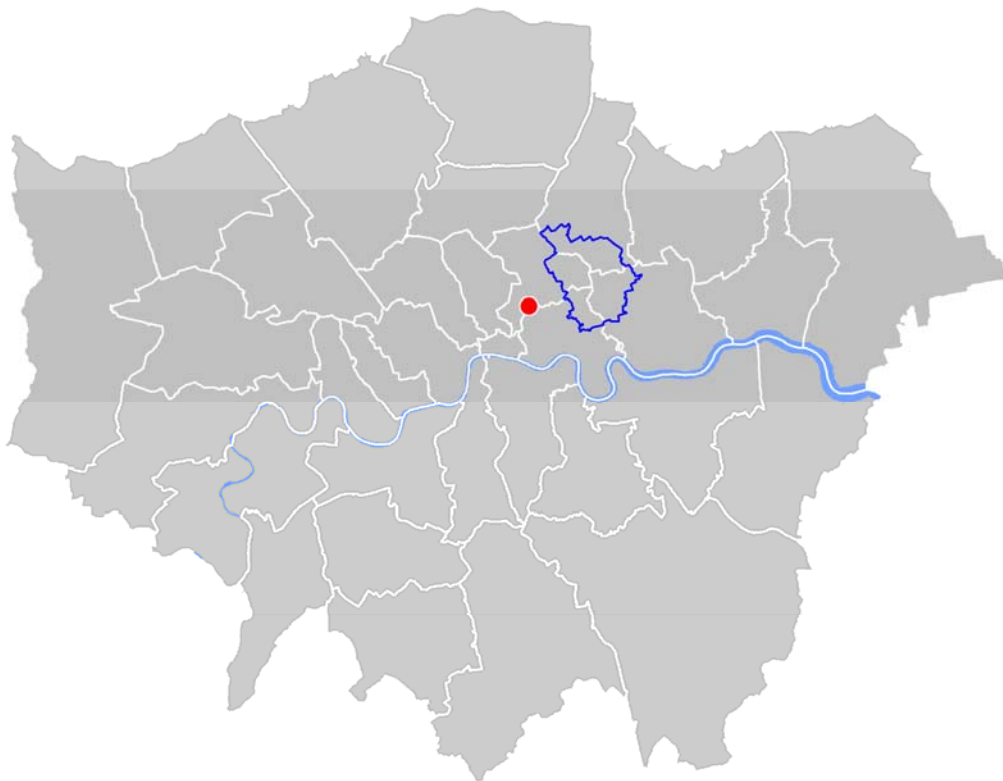
<h2 style="margin: 0;">Kings Wharf</h2> <p style="margin: 0;">Kingsland Road Hackney</p>	
Development Characteristics	
Site Area (ha)	0.192
Density (dwellings/ha)	328
Residential (units)	57
Commercial (sq.m.)	550
Predominant height (storey)	5
Building footprint	1,028
Bedroom sizes	
1 Bedroom	57
2 Bedroom	
3 Bedroom	
4 plus Bedroom	
Typology grouping	Medium density - low family housing



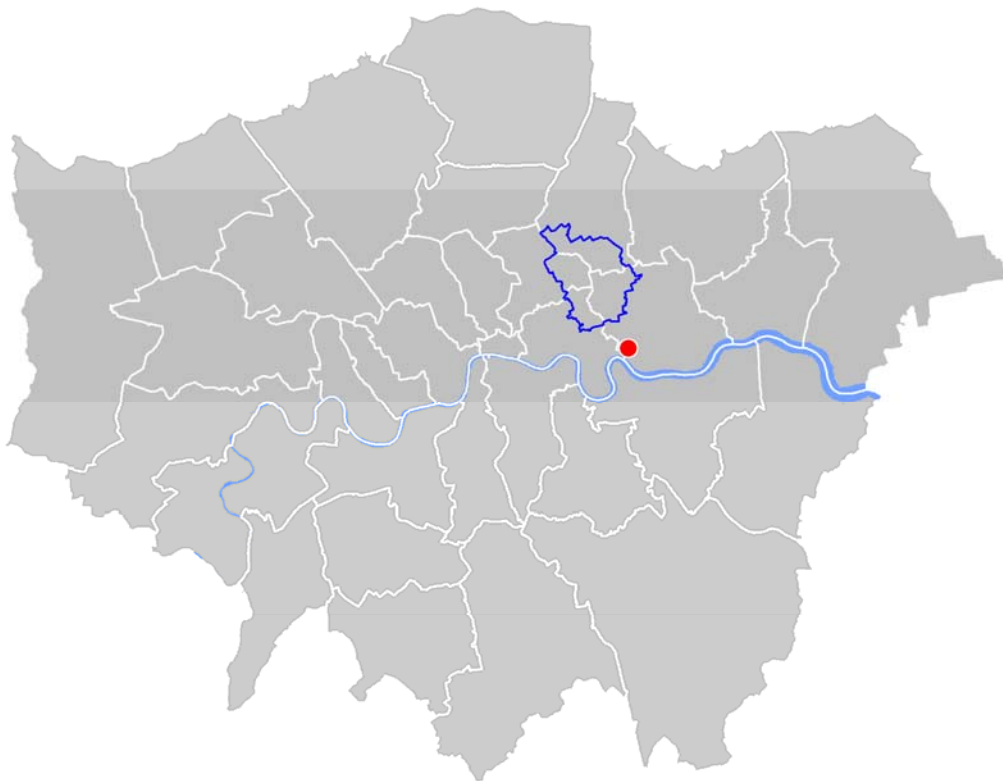
<h2>Tequila Wharf</h2> <p>Commercial Road Tower Hamlets</p>	
Development Characteristics	
Site Area (ha)	0.773
Density (dwellings/ha)	317
Residential (units)	185
Commercial (sq.m.)	0
Predominant height (storey)	6
Building footprint	3,425
Bedroom sizes	
1 Bedroom	87
2 Bedroom	81
3 Bedroom	6
4 plus Bedroom	11
Typology grouping	Medium density - low family housing




<h2 style="margin: 0;">Adelaide Wharf</h2> <p style="margin: 0;">Whiston Road Hackney</p>		
Development Characteristics		
Site Area (ha)		0.431
Density (dwellings/ha)		501
Residential (units)		216
Commercial (sq.m.)		794
Predominant height (storey)		6
Building footprint		2,414
Bedroom sizes		
1 Bedroom		144
2 Bedroom		58
3 Bedroom		14
4 plus Bedroom		0
Typology grouping		Medium density - low family housing




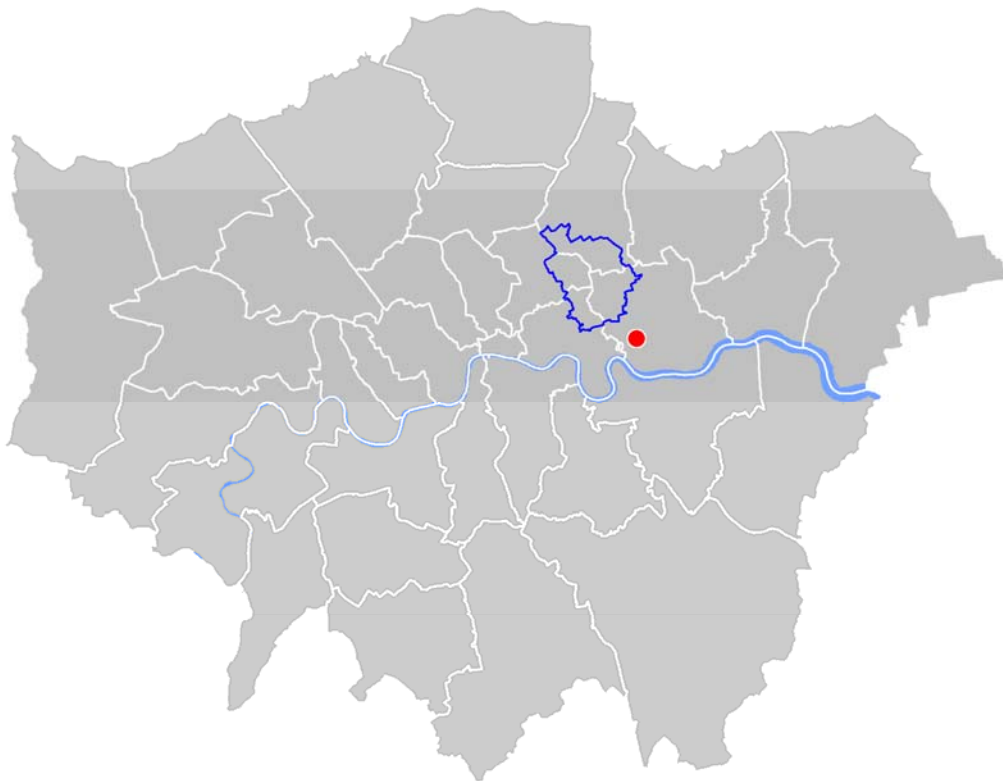
<h2>St Lukes</h2> <p>Canning Town Newham</p>		
Development Characteristics		
Site Area (ha)		0.619
Density (dwellings/ha)		324
Residential (units)		162
Commercial (sq.m.)		4,410
Predominant height (storey)		5
Building footprint		2,582
Bedroom sizes		
1 Bedroom		38
2 Bedroom		124
3 Bedroom		0
4 plus Bedroom		0
Typology grouping		Medium density - low family housing




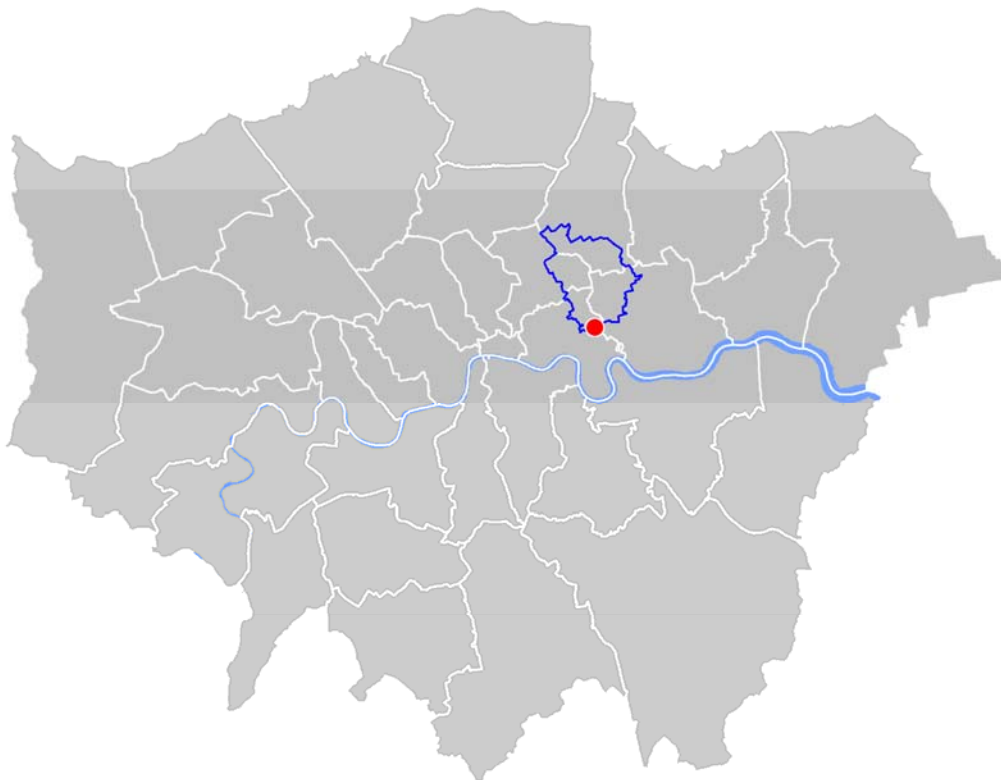
<h2 style="margin: 0;">Tabard Square</h2> <p style="margin: 0;">Long Lane Southwark</p>	
Development Characteristics	
Site Area (ha)	1,376
Density (dwellings/ha)	477
Residential (units)	553
Commercial (sq.m.)	3,990
Predominant height (storey)	8
Building footprint	7,750
Bedroom sizes	
1 Bedroom	357
2 Bedroom	146
3 Bedroom	50
4 plus Bedroom	0
Typology grouping	Medium density - low family housing



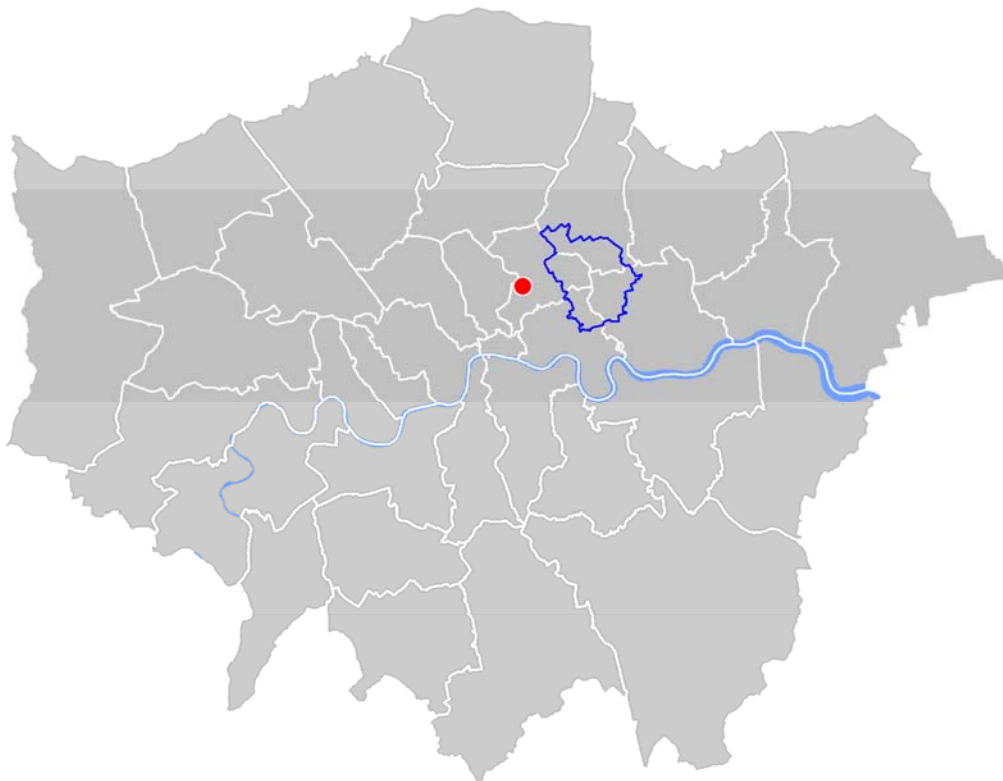
<h2>Canning Town, Area 3</h2> <p>Newham</p>		
Development Characteristics		
Site Area (ha)		3.7
Density (dwellings/ha)		175
Residential (units)		649
Commercial (sq.m.)		0
Predominant height (storey)		5
Building footprint		11,730
Bedroom sizes		
1 Bedroom		236
2 Bedroom		324
3 Bedroom		81
4 plus Bedroom		8
Typology grouping		Medium density - medium family housing




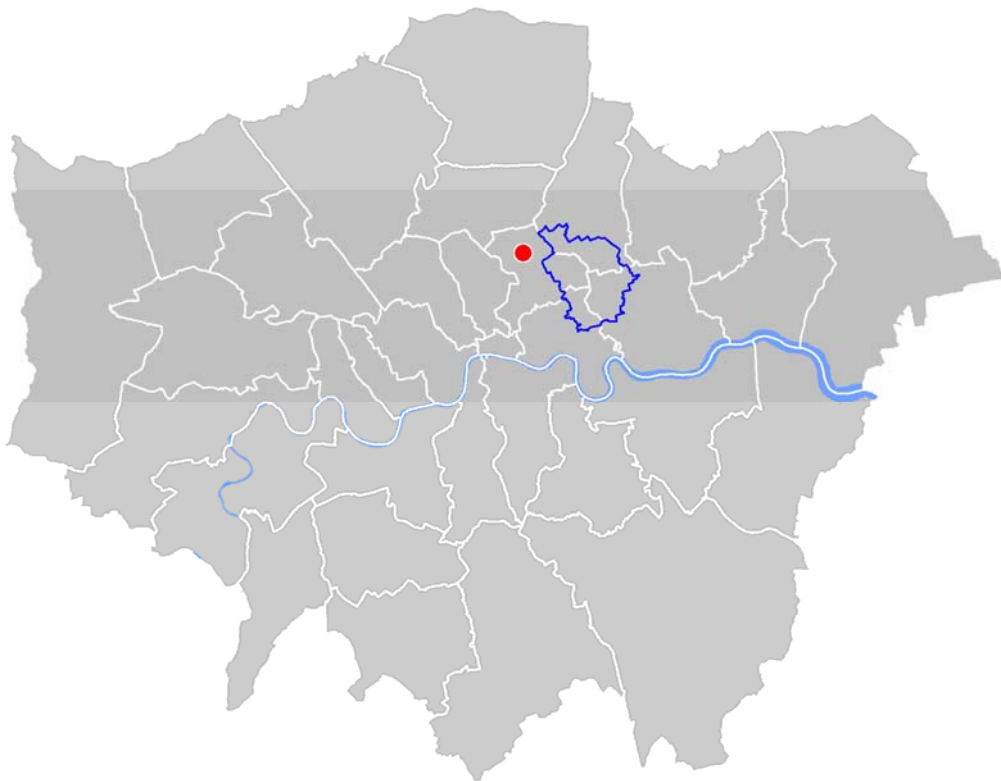
<h2 style="margin: 0;">St Andrews</h2> <p style="margin: 0;">Bromley by Bow Tower Hamlets</p>	
Development Characteristics	
Site Area (ha)	3.01
Density (dwellings/ha)	320
Residential (units)	964
Commercial (sq.m.)	3,351
Predominant height (storey)	4
Building footprint	11,809
Bedroom sizes	
1 Bedroom	399
2 Bedroom	276
3 Bedroom	248
4 plus Bedroom	41
Typology grouping	Medium density - medium family housing




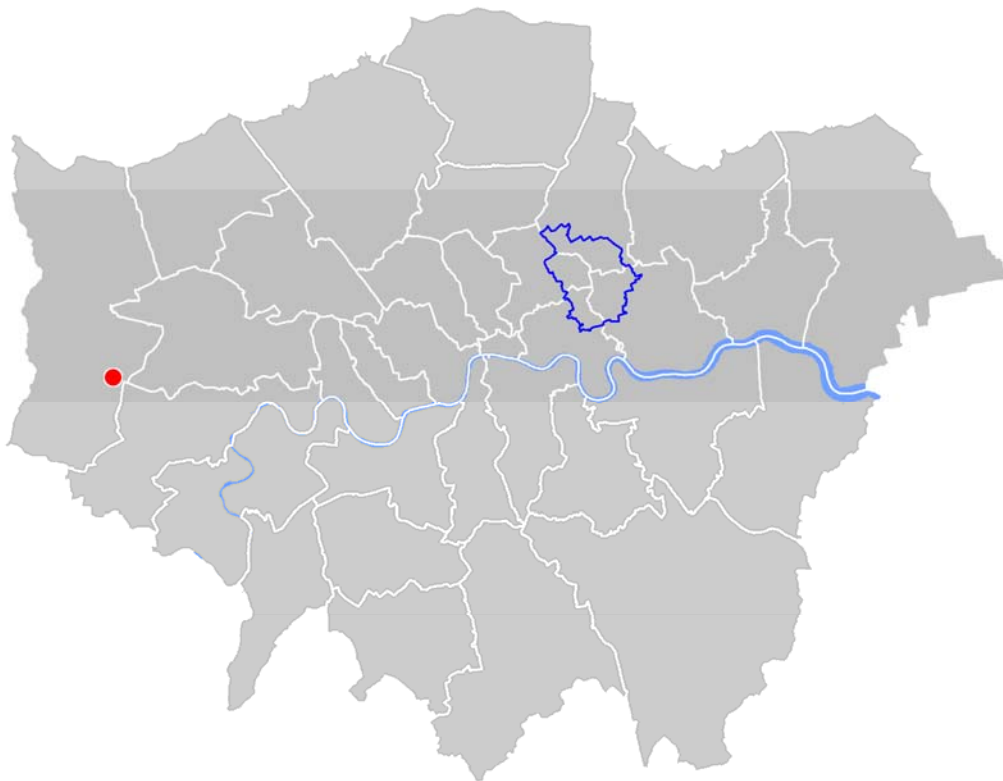
<h2 style="text-align: center;">Dalston Lane South</h2> <p style="text-align: center;">Hackney London E8 3DY</p>		
Development Characteristics		
Site Area (ha)		0.727
Density (dwellings/ha)		228
Residential (units)		244
Commercial (sq.m.)		1,711
Predominant height (storey)		
Building footprint		4,549
Bedroom sizes		
1 Bedroom		81
2 Bedroom		82
3 Bedroom		59
4 plus Bedroom		22
Typology grouping		Medium density - high family housing



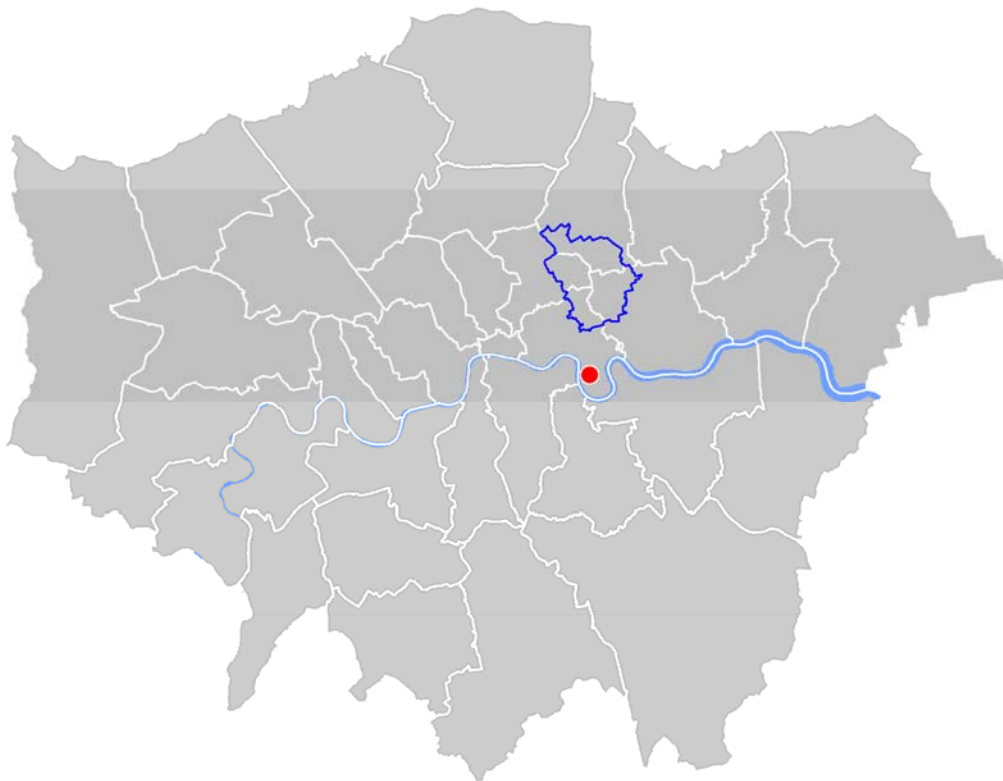
<p>Raines Dairy Northwold Road Stoke Newington Hackney</p>		
Development Characteristics		
Site Area (ha)		0.275
Density (dwellings/ha)		139
Residential (units)		53
Commercial (sq.m.)		803
Predominant height (storey)		6
Building footprint		1,287
Bedroom sizes		
1 Bedroom		0
2 Bedroom		41
3 Bedroom		12
4 plus Bedroom		0
Typology grouping		Medium density - high family housing




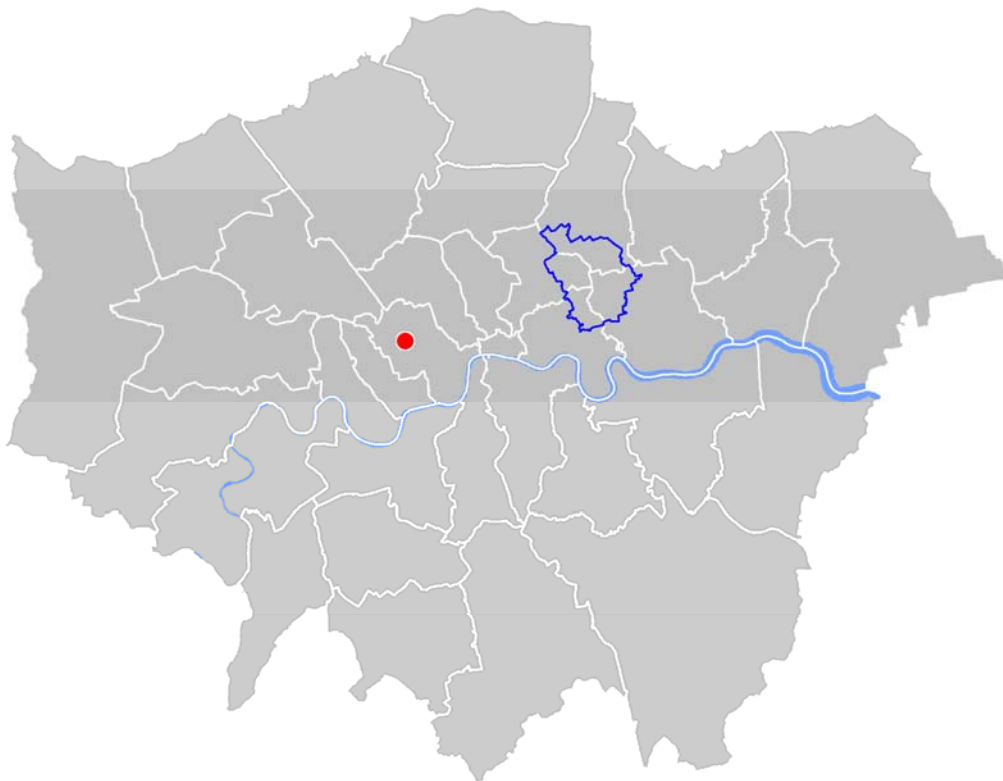
<p>Hayes Goods Yard 80-100 Station Road Hillingdon</p>	
<p>Development Characteristics</p>	
<p>Site Area (ha)</p>	<p>2.5</p>
<p>Density (dwellings/ha)</p>	<p>230</p>
<p>Residential (units)</p>	<p>576</p>
<p>Commercial (sq.m.)</p>	<p>6,400</p>
<p>Predominant height (storey)</p>	<p>7</p>
<p>Building footprint</p>	<p>4,443</p>
<p>Bedroom sizes</p>	
<p>1 Bedroom</p>	<p>320</p>
<p>2 Bedroom</p>	<p>176</p>
<p>3 Bedroom</p>	<p>64</p>
<p>4 plus Bedroom</p>	<p>16</p>
<p>Typology grouping</p>	<p>Higher density - low family</p>



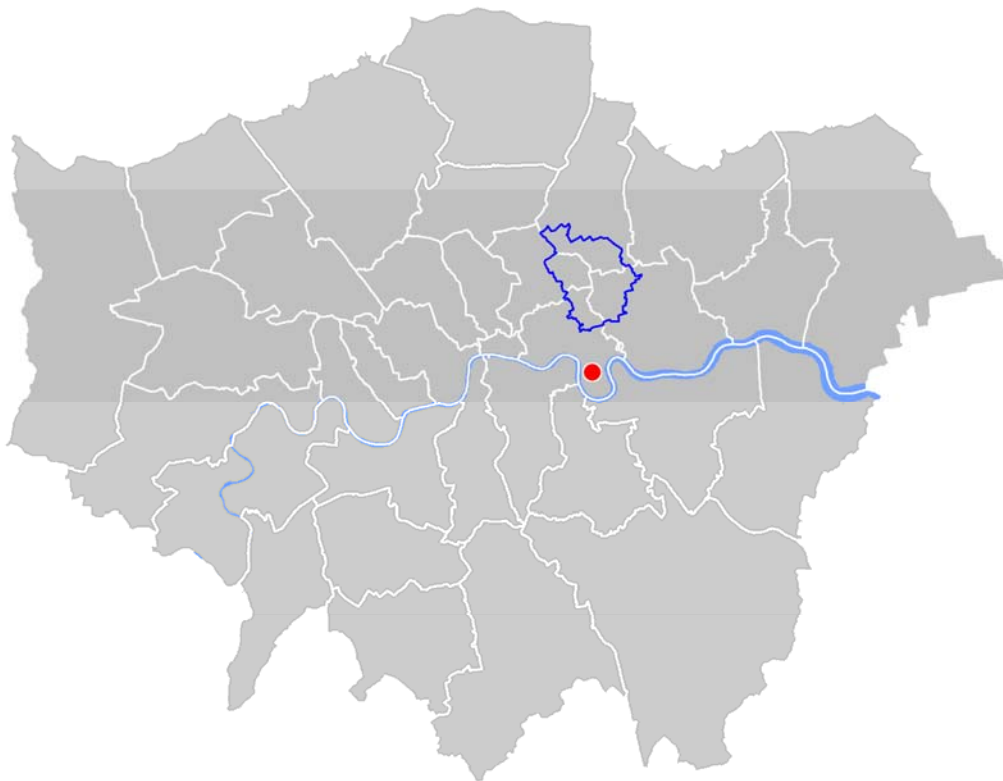
<h2 style="text-align: center;">Indecon Court</h2> <p style="text-align: center;">Millharbour Tower Hamlets</p>		
Development Characteristics		
Site Area (ha)		1.76
Density (dwellings/ha)		320
Residential (units)		910
Commercial (sq.m.)		10,268
Predominant height (storey)		16
Building footprint		6,511
Bedroom sizes		
1 Bedroom		441
2 Bedroom		214
3 Bedroom		224
4 plus Bedroom		31
Typology grouping		Higher density - low family



<h2>Merchant Square</h2> <p>Paddington Basin Westminster</p>	
Development Characteristics	
Site Area (ha)	1.63
Density (dwellings/ha)	343
Residential (units)	559
Commercial (sq.m.)	81,149
Predominant height (storey)	9
Building footprint	8,002
Bedroom sizes	
1 Bedroom	130
2 Bedroom	220
3 Bedroom	136
4 plus Bedroom	73
Typology grouping	Super high density - low family housing




<h2>Pan Peninsula</h2> <p>Millharbour Tower Hamlets</p>	
Development Characteristics	
Site Area (ha)	0.5
Density (dwellings/ha)	1580
Residential (units)	790
Commercial (sq.m.)	1,000
Predominant height (storey)	44
Building footprint	3,313
Bedroom sizes	
1 Bedroom	449
2 Bedroom	312
3 Bedroom	14
4 plus Bedroom	15
Typology grouping	Super high density - low family housing



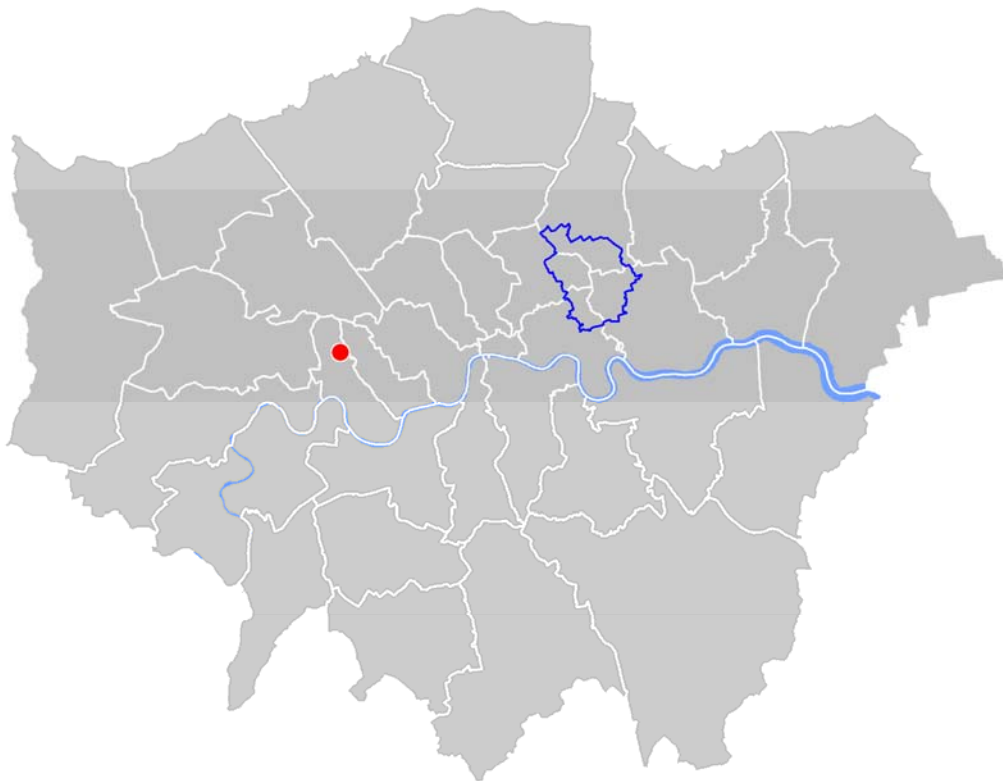
<h2 style="margin: 0;">Strata Tower</h2> <p style="margin: 0;">Elephant & Castle Southwark</p>	
Development Characteristics	
Site Area (ha)	0.3
Density (dwellings/ha)	1360
Residential (units)	408
Commercial (sq.m.)	0
Predominant height (storey)	42
Building footprint	1,018
Bedroom sizes	
1 Bedroom	240
2 Bedroom	148
3 Bedroom	20
4 plus Bedroom	0
Typology grouping	Super high density - low family housing




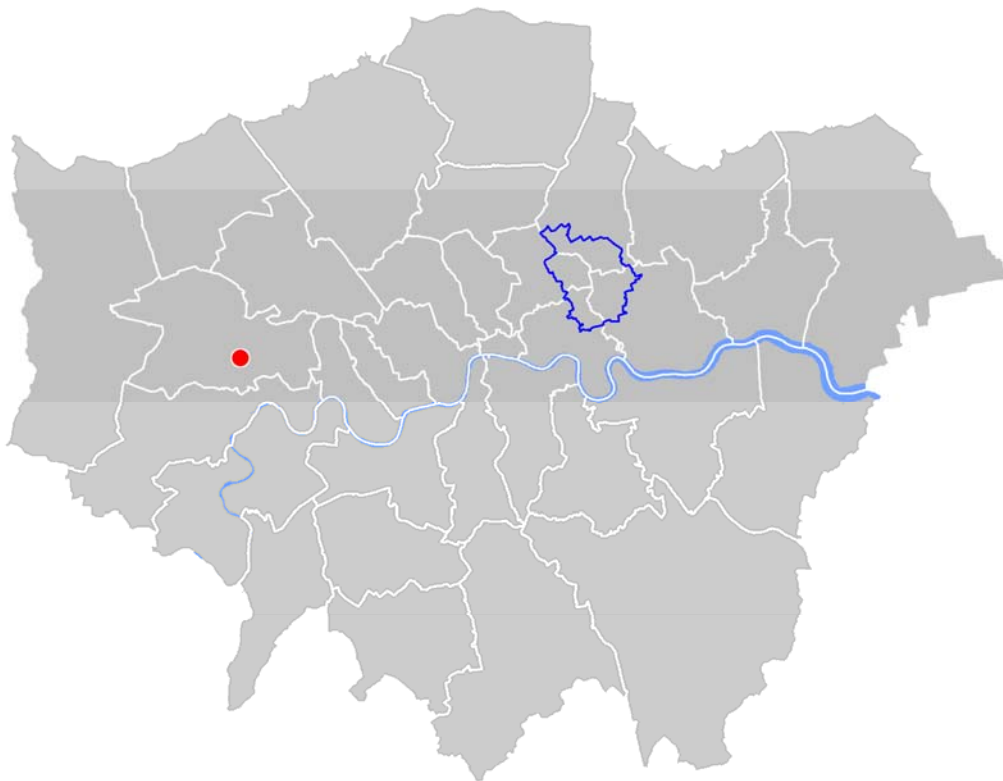
<h2 style="text-align: center;">Aldersmanbury Square</h2> <p style="text-align: center;">City of London</p>		
Development Characteristics		
Site Area (ha)		0.286
Density (dwellings/ha)		0
Residential (units)		0
Commercial (sq.m.)		35,165
Predominant height (storey)		18
Building footprint		1,954
Bedroom sizes		
1 Bedroom		0
2 Bedroom		0
3 Bedroom		0
4 plus Bedroom		0
Typology grouping		Commercial



<h2>BBC Media Village</h2> <p>White City Hammersmith and Fulham</p>		
Development Characteristics		
Site Area (ha)		1.7
Density (dwellings/ha)		0
Residential (units)		0
Commercial (sq.m.)		85,000
Predominant height (storey)		6
Building footprint		11,873
Bedroom sizes		
1 Bedroom		0
2 Bedroom		0
3 Bedroom		0
4 plus Bedroom		0
Typology grouping		Commercial



<h2 style="margin: 0;">79-89 Uxbridge Road</h2> <p style="margin: 0;">Ealing</p>		
Development Characteristics		
Site Area (ha)	0.75	
Density (dwellings/ha)	0	
Residential (units)	0	
Commercial (sq.m.)	14,763	
Predominant height (storey)	7	
Building footprint	2,109	
Bedroom sizes		
1 Bedroom	0	
2 Bedroom	0	
3 Bedroom	0	
4 plus Bedroom	0	
Typology grouping		Commercial



Appendix 2- GLA Intelligence Unit Advice Note

GLA INTELLIGENCE UNIT

Olympics LCS Population Yield 29th February 2012

Background

This paper outlines the GLA Intelligence Unit's (GLA IU) advice regarding population yield estimates to help GLA planners assess the Olympic Park Legacy Company's (OPLC) Legacy Community Scheme (LCS) planning application and prepare the Mayor's Olympic Legacy Supplementary Planning Guidance (OLSPG). It is also offered to the Olympic Delivery Authority's Planning Decisions Team for the same purpose and has been copied to the relevant Host Borough demographic lead officers and AECOM.

Chapter 8 of the Housing and Social Infrastructure Statement submitted by AECOM on behalf of the OPLC included the following baseline population estimates of adult and child yields for the LCS.

Tables 1a, 1b and 1c

Table 9.21: LCS assumed Average Household Size and Age Profiles of Market Units

Inner London ONS data (2011) - new moves)	Market Population											
	Studio	1 Bed Flat	2 Bed Flat	3 Bed Flat	4 Bed Flat ¹⁾	3 Bed Mews	4 Bed Mews	3 Bed Maisonette / Stacked Maisonette	4 Bed Maisonette / Stacked Maisonette	3 Bed Town house	4 Bed Town house	5 Bed Town house
Average Household Size	1.94	1.8	1.6	1.7	N/A	2.1	2.3	2.1	2.3	2.1	2.3	2.5
0-3 years	0.0%	1.3%	2.0%	4.9%	N/A	0.3%	11.5%	0.8%	11.2%	0.3%	13.2%	14.4%
4-10 years	0.0%	3.8%	1.5%	3.1%	N/A	5.8%	8.5%	5.8%	6.5%	5.8%	6.5%	9.0%
11-15 years	0.0%	0.3%	0.4%	1.3%	N/A	3.1%	3.4%	3.1%	3.4%	3.1%	3.4%	3.7%
16-17 years	0.0%	0.1%	0.4%	0.6%	N/A	1.0%	1.1%	1.0%	1.1%	1.0%	1.1%	0.7%
18-19 years	0.0%	0.7%	0.7%	0.6%	N/A	0.9%	1.3%	0.9%	1.3%	0.9%	1.3%	1.2%
20 - 24 years	0.1%	5.4%	7.1%	6.4%	N/A	4.8%	4.8%	4.6%	4.8%	4.8%	4.8%	4.8%
25 - 29 years	34.8%	32.6%	31.8%	22.0%	N/A	17.6%	13.5%	17.6%	13.5%	17.6%	13.5%	9.4%
30 - 34 years	24.8%	22.8%	24.0%	24.0%	N/A	23.2%	22.0%	23.2%	22.0%	23.2%	22.0%	21.5%
35 - 39 years	14.0%	13.7%	12.0%	13.5%	N/A	14.0%	15.0%	14.0%	15.0%	14.0%	15.0%	16.1%
40 - 44 years	8.4%	8.5%	8.5%	7.3%	N/A	8.0%	8.5%	8.0%	8.5%	8.0%	8.5%	7.5%
45 - 49 years	4.0%	3.7%	3.2%	4.2%	N/A	3.6%	4.1%	3.6%	4.1%	3.6%	4.1%	4.0%
50 - 54 years	3.6%	3.2%	2.8%	4.6%	N/A	2.2%	3.3%	2.2%	3.3%	2.2%	3.3%	3.2%
55 - 59 years	0.7%	0.5%	0.8%	2.9%	N/A	0.1%	1.0%	0.1%	1.0%	0.1%	1.0%	1.5%
60 - 64 years	0.0%	1.8%	1.8%	2.3%	N/A	1.3%	1.5%	1.3%	1.5%	1.3%	1.5%	1.3%
65 - 69 years	0.0%	0.9%	0.9%	1.0%	N/A	1.1%	0.8%	1.1%	0.8%	1.1%	0.8%	1.0%
70 - 74 years	0.0%	0.7%	0.7%	0.9%	N/A	0.6%	0.8%	0.6%	0.8%	0.6%	0.8%	0.5%
75 + years	0.0%	1.0%	1.0%	1.3%	N/A	0.0%	0.4%	0.0%	0.4%	0.0%	0.4%	0.7%
Total	100%	100%	100%	100%	N/A	100%	100%	100%	100%	100%	100%	100%

¹⁾Source: ONS (2011) and LCS 1403128 252946 433961 (2/11)

Table 9.22: LCS assumed Average Household Size and Age Profiles of Social Rented Affordable Units

Four Borough CORE Average 2006-2010	Affordable - Social Rented Population											
	Studio ¹⁵²	1 Bed Flat	2 Bed Flat	3 Bed Flat	4 Bed Flat	3 Bed Mews	4 Bed Mews	3 Bed Maisonette / Stacked Maisonette	4 Bed Maisonette / Stacked Maisonette	3 Bed Town house	4 Bed Town house	5 Bed Town house
Average Household Size	N/A	1.1	2.4	4.0	6.0	4.0	5.7	4.0	5.7	4.0	5.7	7.0
0-3 years	N/A	1.8%	24.4%	15.8%	11.4%	10.5%	7.3%	10.5%	7.3%	10.5%	7.3%	6.2%
4-10 years	N/A	0.5%	12.2%	26.2%	25.5%	22.8%	23.6%	22.8%	23.6%	22.8%	23.6%	23.9%
11-15 years	N/A	0.1%	3.3%	10.8%	20.0%	14.7%	19.6%	14.7%	19.6%	14.7%	19.6%	20.8%
16-17 years	N/A	0.7%	1.2%	3.2%	5.9%	4.4%	6.6%	4.4%	6.6%	4.4%	6.6%	9.5%
18-19 years	N/A	6.2%	2.4%	2.5%	4.8%	4.0%	5.0%	4.0%	5.0%	4.0%	5.0%	5.6%
20 - 24 years	N/A	19.8%	12.6%	4.9%	4.2%	5.7%	7.1%	5.7%	7.1%	5.7%	7.1%	7.6%
25 - 29 years	N/A	17.8%	15.1%	7.1%	2.3%	4.8%	2.4%	4.8%	2.4%	4.8%	2.4%	1.9%
30 - 34 years	N/A	9.9%	10.2%	9.2%	4.5%	6.8%	4.2%	6.8%	4.2%	6.8%	4.2%	2.7%
35 - 39 years	N/A	8.1%	6.0%	8.1%	7.3%	8.0%	7.7%	8.0%	7.7%	8.0%	7.7%	7.4%
40 - 44 years	N/A	7.4%	3.6%	5.5%	5.7%	6.9%	6.4%	6.9%	6.4%	6.9%	6.4%	5.6%
45 - 49 years	N/A	6.9%	2.9%	3.1%	4.3%	5.0%	4.3%	5.0%	4.3%	5.0%	4.3%	3.3%
50 - 54 years	N/A	5.4%	2.0%	1.5%	1.4%	2.8%	2.2%	2.8%	2.2%	2.8%	2.2%	2.7%
55 - 59 years	N/A	4.2%	1.3%	0.7%	1.0%	1.3%	1.1%	1.3%	1.1%	1.3%	1.1%	0.8%
60 - 64 years	N/A	3.8%	0.8%	0.3%	0.2%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.2%
65 - 69 years	N/A	2.8%	0.6%	0.4%	0.5%	0.5%	0.4%	0.5%	0.4%	0.5%	0.4%	0.4%
70 - 74 years	N/A	2.1%	0.7%	0.5%	0.3%	0.6%	0.5%	0.6%	0.5%	0.6%	0.5%	0.4%
75 + years	N/A	2.5%	0.6%	0.4%	0.5%	0.5%	0.8%	0.5%	0.8%	0.5%	0.8%	1.0%
Total	N/A	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: CORE Data (2006-10) and LCS Technical Studies Analysis (2011)

Table 9.23: LCS assumed Average Household Size and Age Profiles of Intermediate Affordable Units

Inner London CORE Average 2006-2010	Affordable - Intermediate Population ¹⁵³											
	Studio	1 Bed Flat	2 Bed Flat	3 Bed Flat	4 Bed Flat	3 Bed Mews	4 Bed Mews	3 Bed Maisonette/ Stacked Maisonette	4 Bed Maisonette / Stacked Maisonette	3 Bed Town house	4 Bed Town house	5 Bed Town house
Average Household Size	N/A	1.2	1.5	2.2	N/A	2.4	N/A	2.4	N/A	2.4	N/A	N/A
0-3 years	N/A	0.2%	2.3%	4.8%	N/A	8.5%	N/A	8.5%	N/A	8.5%	N/A	N/A
4-10 years	N/A	0.1%	1.9%	7.2%	N/A	9.8%	N/A	9.8%	N/A	9.8%	N/A	N/A
11-15 years	N/A	0.1%	0.9%	4.2%	N/A	7.3%	N/A	7.3%	N/A	7.3%	N/A	N/A
16-17 years	N/A	0.0%	0.3%	1.8%	N/A	1.9%	N/A	1.9%	N/A	1.9%	N/A	N/A
18-19 years	N/A	0.2%	0.3%	0.9%	N/A	1.6%	N/A	1.6%	N/A	1.6%	N/A	N/A
20 - 24 years	N/A	8.5%	8.8%	6.6%	N/A	3.8%	N/A	3.8%	N/A	3.8%	N/A	N/A
25 - 29 years	N/A	35.7%	32.2%	22.0%	N/A	12.0%	N/A	12.0%	N/A	12.0%	N/A	N/A
30 - 34 years	N/A	27.3%	26.6%	17.8%	N/A	18.6%	N/A	18.6%	N/A	18.6%	N/A	N/A
35 - 39 years	N/A	15.8%	14.1%	14.8%	N/A	14.2%	N/A	14.2%	N/A	14.2%	N/A	N/A
40 - 44 years	N/A	6.4%	6.4%	8.4%	N/A	13.9%	N/A	13.9%	N/A	13.9%	N/A	N/A
45 - 49 years	N/A	3.0%	3.4%	6.3%	N/A	5.4%	N/A	5.4%	N/A	5.4%	N/A	N/A
50 - 54 years	N/A	1.5%	1.4%	3.0%	N/A	1.9%	N/A	1.9%	N/A	1.9%	N/A	N/A
55 - 59 years	N/A	0.6%	0.6%	0.6%	N/A	0.6%	N/A	0.6%	N/A	0.6%	N/A	N/A
60 - 64 years	N/A	0.2%	0.2%	0.3%	N/A	0.0%	N/A	0.0%	N/A	0.0%	N/A	N/A
65 - 69 years	N/A	0.2%	0.1%	0.3%	N/A	0.0%	N/A	0.0%	N/A	0.0%	N/A	N/A
70 - 74 years	N/A	0.1%	0.1%	0.9%	N/A	0.0%	N/A	0.0%	N/A	0.0%	N/A	N/A
75 + years	N/A	0.0%	0.2%	0.0%	N/A	0.6%	N/A	0.6%	N/A	0.6%	N/A	N/A
Total	N/A	100%	100%	100%	N/A	100%	N/A	100%	N/A	100%	N/A	N/A

Source: CORE Data (2006-10) and LCS Technical Studies Analysis (2011)

The calculation of market population estimates relied heavily on 2001 Census data, but are considered insufficiently robust to plan social infrastructure provision in the area given the time that has elapsed since the 2001 Census was conducted, coupled with the demographic and social changes that have taken place since then in the boroughs within which the LCS application is located. As such this document specifically deals with population yields from market units and the approach advocated by AECOM for affordable housing set out above are considered sufficiently valid at the time of writing to be used to assess the LCS and within the OLSPG.

Estimating population yields - general

Given the importance the Mayor places on the provision of new social and community infrastructure and the limited locally specific up-to-date information held by the GLA, the GLA Intelligence Unit is of the view that local authorities are often the relevant experts on their local population dynamics, and as such have an important contribution to make to discussion of population yields from new developments in their areas.

The GLA Intelligence Unit is therefore of the view that:

- Where possible, local surveys conducted by the relevant local authority should be used to estimate population yields, and it is noted that the London Borough of Tower Hamlets has conducted recent housing surveys which may assist this process.
- Where a local authority has not undertaken recent population surveys, a survey conducted by another London borough might be used where the surveyed population closely matches and reflects the likely population and characteristics of the development site. For instance the London Borough of Hackney has devised a calculator based on the surveys of other authorities to assist them assess new developments.
- Where resurveys exist, these should also be used as they can provide valuable information on the emerging and evolving characteristics of households, in particular households that move in anticipation of starting a family. This is particularly important as London is currently experiencing a baby boom, which coupled with a decrease in outmigration of young families due to the recession, (of which instability in the labour market and a depressed housing market are both factors), means that increasingly, starter families are dependent on housing that was previously envisaged would be occupied by younger professionals who had no children.

LCS population estimates

To help assess the implications of new housing in the LCS area, in March 2011, the Host Boroughs commissioned an external agency to conduct a series of *Mayhew studies*¹ in their administrative areas. These datasets are however constrained by issues of confidentiality and are not readily comparable or collatable across the authorities.

Given the lack of definitive consistent data across the relevant local authorities, the GLA Intelligence Unit worked with the Host Boroughs to prepare an alternative set of population yields that would be informed by more recent data. This advice should be considered the best current view at the time of writing.²

Given the timescales proposed in the LCS submission and OLSPG and given that occupation of the new housing will span a considerably long time line (2015 to 2031) the GLA Intelligence Unit however suggests that population yield figures are kept under routine review as London population dynamics can change quickly and are volatile in relation to housing market and labour market conditions. Furthermore, the data that outlines these changes may not always be available in a timely manner and population yield discussions should be appropriately reviewed to reflect this.

Finally, it is noted that the proposed housing mix for the LCS application and the OLSPG is yet to be agreed and the resultant population yields may be subject to change as a result. The advice provided in this note is also made without prejudice to any future Mayoral comment or decision.

¹ A population count based on administrative data.

² The Intelligence Unit though continuously seeks information that can better inform population yield methodologies, and this position may change in light of emerging data, the geographical location of developments and the information available about the development. For instance 2011 Census information will for, the first time, include data on population characteristics and bedrooms and at that point the Intelligence Unit plans to update this guidance accordingly.

GLA Intelligence Unit advice

In December 2011, the GLA IU met with the Host Boroughs and AECOM to discuss population estimate for the LCS scheme. Representatives from the ODA PDT and OPLC were also present. Specifically, the meeting was to understand and explore the population yield calculation used by AECOM within its LCS submission and to discuss alternative approaches if this was felt to be inadequate. At this meeting the Host Boroughs confirmed that they each had separately commissioned an external agency to conduct Mayhew studies in March 2011 which resulted in a population count based on administrative data sources. In the discussion it appeared that this information might help improve estimates of population yields from new developments in the LCS and OLSPG areas as it was available at a detailed level and included age breakdown and gender.

It was therefore agreed that borough officers would identify localities within their boroughs that were predominantly 'new developments' and pass on analysis of the associated populations to AECOM in a consistent and usable format.

There were no specific GLA IU actions from this meeting however the IU offered to liaise with the boroughs and AECOM if required.

In January 2012, the GLA IU was present at a further meeting between the host boroughs, ODA PDT, OPLC and AECOM. At this meeting AECOM gave a broad overview of how they intended to use the borough-supplied Mayhew data to modify their original census-derived population yield figures. At this meeting AECOM also agreed to look into using the Wandsworth survey data to produce an additional population scenario.

AECOM circulated draft population yield figures based on integration of the Mayhew data. For instance LB Hackney received the following information (as set out in Table 2a and 2b below).

Table 2a and 2b

Results adjusting the LBH Leabridge AHS and Age Range by the % change from a central point

Flats							Houses					
AHS	Studio	1 bed	2 bed	3 bed	4 bed	5 bed	AHS	1 bed	2 bed	3 bed	4 bed	5 bed
	2.11	2.36	2.78	3.52	3.94	1.69		1.10	2.78	3.63	3.96	3.52
Age Profile												
0-3 years	19.2%	19.4%	19.6%	20.7%	20.8%	19.2%	0-3 years	19.5%	19.6%	19.6%	19.0%	20.3%
4-10 years	6.4%	6.4%	6.4%	6.4%	6.9%	6.4%	4-10 years	6.4%	6.4%	6.6%	6.8%	6.6%
11-15 years	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	11-15 years	3.8%	3.8%	3.9%	3.9%	3.9%
16-17 years	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	16-17 years	1.1%	1.1%	1.1%	1.1%	1.1%
18-19 years	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	18-19 years	1.4%	1.4%	1.4%	1.5%	1.5%
20 - 24 years	7.1%	6.8%	6.8%	6.7%	6.5%	6.5%	20 - 24 years	6.4%	6.8%	6.4%	6.9%	6.8%
25 - 29 years	17.4%	16.8%	16.4%	16.3%	14.3%	28.1%	25 - 29 years	17.6%	16.4%	14.8%	15.3%	15.1%
30 - 34 years	13.7%	13.8%	14.6%	13.3%	12.4%	10.1%	30 - 34 years	16.4%	14.6%	15.2%	13.7%	14.8%
35 - 39 years	9.4%	9.7%	9.6%	10.1%	12.2%	8.0%	35 - 39 years	8.2%	9.6%	9.7%	9.8%	9.6%
40 - 44 years	7.0%	7.0%	7.0%	7.1%	6.6%	6.6%	40 - 44 years	7.6%	7.0%	7.4%	7.6%	7.1%
45 - 49 years	4.7%	4.8%	4.7%	4.6%	4.9%	4.6%	45 - 49 years	4.5%	4.7%	4.8%	4.7%	4.7%
50 - 54 years	2.9%	2.9%	2.9%	2.9%	2.8%	2.8%	50 - 54 years	2.8%	2.9%	2.8%	2.8%	2.9%
55 - 59 years	2.4%	2.3%	2.3%	2.3%	2.3%	2.3%	55 - 59 years	2.3%	2.3%	2.3%	2.3%	2.3%
60 - 64 years	1.2%	1.3%	1.2%	1.3%	1.2%	1.2%	60 - 64 years	1.4%	1.2%	1.3%	1.2%	1.3%
65 - 69 years	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	65 - 69 years	0.6%	0.6%	0.6%	0.6%	0.6%
70 - 74 years	0.6%	0.6%	0.6%	0.7%	0.6%	0.6%	70 - 74 years	0.6%	0.6%	0.6%	0.7%	0.6%
75 + years	0.8%	0.8%	0.8%	0.9%	0.8%	0.8%	75 + years	0.8%	0.8%	0.9%	0.8%	0.8%

However, the Host Boroughs and the GLA IU believe that these revised figures are unrealistic, in that the yields for certain typologies are far above what would be expected. The average household size for studio flats in table 2a is a case in point. The IU also identified problems with the methodology that AECOM had used to integrate the Mayhew data. Borough contacts that GLA IU discussed this issue with had similar misgivings of the AECOM approach.

However, it also transpired that suitable wards could not be identified for each host borough as there were limited locations across the boroughs that reflected the anticipated housing characteristics of the LCS.

There was however a ward in Hackney - Leabridge - that was deemed to be suitable and Hackney officers liaised with their counterparts in Newham, Tower Hamlets and Waltham Forest and the GLA IU understand that boroughs agreed that the population characteristics of Leabridge were a best reflection of expected population of the LCS and should be used in population calculations as a reasonable upper band.

As a result, the IU together with the boroughs came up with a more robust approach that appeared to satisfy the host boroughs' requirements for a set of reasonable upper bound yields. These are set out in tables 3a and 3b below and are currently considered to be more realistic than those circulated by AECOM previously. They can also be similarly used in the OLSPG to establish the most likely maximum child and population yields the new housing it envisages within and adjacent the LCS site might be expected to generate.³ This data was then supplied to AECOM by Hackney.

Table 3a and 3b

Results adjusting the LBH Leabridge AHS and Age Range by the % change from a central point

AHS	Flats					
	Studio	1 bed	2 bed	3 bed	4 bed	5 bed
AHS	1.79	1.93	2.17	2.58	2.82	1.56
0-3 years	0.0%	1.0%	1.6%	4.0%	6.6%	0.0%
4-10 years	0.0%	1.4%	2.4%	6.0%	10.0%	0.0%
11-15 years	0.0%	0.9%	1.4%	3.6%	5.9%	0.0%
16-17 years	1.8%	1.1%	1.4%	0.7%	0.0%	0.0%
18-19 years	2.4%	1.5%	1.8%	1.0%	0.0%	0.0%
20 - 24 years	11.4%	7.1%	8.5%	4.6%	0.0%	0.0%
25 - 29 years	28.2%	26.8%	28.4%	23.6%	14.4%	52.9%
30 - 34 years	25.1%	23.9%	25.3%	21.0%	12.9%	47.1%
35 - 39 years	11.7%	13.5%	12.6%	16.8%	23.8%	0.0%
40 - 44 years	8.6%	9.9%	9.3%	12.3%	17.5%	0.0%
45 - 49 years	5.5%	6.5%	3.4%	2.0%	5.5%	0.0%
50 - 54 years	3.4%	4.0%	2.1%	1.2%	3.4%	0.0%
55 - 59 years	0.8%	1.0%	0.8%	1.3%	0.0%	0.0%
60 - 64 years	0.4%	0.5%	0.4%	0.7%	0.0%	0.0%
65 - 69 years	0.2%	0.3%	0.2%	0.3%	0.0%	0.0%
70 - 74 years	0.2%	0.3%	0.2%	0.4%	0.0%	0.0%
75 + years	0.3%	0.4%	0.3%	0.5%	0.0%	0.0%

AHS	Houses				
	1 bed	2 bed	3 bed	4 bed	5 bed
AHS	1.84	2.78	3.26	3.44	3.20
Age Profile					
0-3 years	5.3%	5.0%	7.9%	7.1%	8.0%
4-10 years	7.9%	7.5%	11.9%	10.7%	12.0%
11-15 years	4.7%	4.5%	7.1%	6.4%	7.1%
16-17 years	0.0%	1.3%	0.6%	1.8%	1.5%
18-19 years	0.0%	1.7%	0.8%	2.3%	2.0%
20 - 24 years	0.0%	8.0%	3.7%	11.1%	9.6%
25 - 29 years	30.5%	19.4%	16.4%	12.6%	15.2%
30 - 34 years	27.2%	17.3%	14.6%	11.2%	13.5%
35 - 39 years	8.9%	11.3%	14.7%	15.6%	11.3%
40 - 44 years	6.5%	8.3%	10.8%	11.4%	8.3%
45 - 49 years	0.0%	5.5%	5.3%	4.6%	6.0%
50 - 54 years	0.0%	3.4%	3.3%	2.9%	3.7%
55 - 59 years	3.7%	2.8%	1.3%	0.9%	0.7%
60 - 64 years	2.0%	1.5%	0.7%	0.5%	0.4%
65 - 69 years	1.0%	0.7%	0.3%	0.3%	0.2%
70 - 74 years	1.0%	0.8%	0.4%	0.3%	0.2%
75 + years	1.4%	1.0%	0.5%	0.3%	0.3%

The GLA IU have outlined that they are available to support AECOM where necessary and on 2nd February 2012 there was an exchange of emails between OPLC, AECOM and GLA IU regarding a technical meeting. This meeting was postponed by OPLC to give AECOM time to understand the Leabridge method. No subsequent meeting has been requested.

Contact Details

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³ As advised above, these estimates should be kept under review and revised as new evidence becomes available.

Appendix 3 - Notes

¹ The Steering Group comprised officers from the London Boroughs of Hackney, Newham, Tower Hamlets and Waltham Forest, Communities and Local Government, the London Thames Gateway Development Corporation, the ODA's Planning Decisions Team and Transport for London.

² Lower Lea Valley Opportunity Area Planning Framework, Mayor of London, January 2007, <http://legacy.london.gov.uk/mayor/planning/docs/lowerleavalley-pt1.pdf>

³ Mayor's Transport Strategy, May 2010. <http://www.london.gov.uk/publication/mayors-transport-strategy>

⁴ The London Strategic Housing Land Availability Assessment and Housing Capacity Study 2009, Mayor of London, October 2009, <http://www.london.gov.uk/sites/default/files/uploads/strategic-housing-land-study-09.pdf>

⁵ The London Plan, Mayor of London, July 2011, <http://www.london.gov.uk/priorities/planning/londonplan>

⁶ The commercial floorspace estimate for Scenario 2 only covers areas where Fringe Masterplans were prepared at the time and hence does not directly equate with the Scenario 3 commercial floorspace estimate. Mathematical errors in the original calculation have also been remedied.

⁷ Employment Densities: A Full Guide – Final report of English Partnerships and the Regional Development Agencies, Arup Economics + Planning, July 2001.

⁸ GLA OLSPG Energy Study - Section 4.

⁹ These assumptions will need to be reviewed to take account of the Government's "affordable rent" proposals and when there is more clarity on funding and occupancy.

¹⁰ Child Yield, August 2005 GLA. <http://legacy.london.gov.uk/gla/publications/factsandfigures/dmag-briefing-2005-25.pdf>

¹¹ London's Healthy Urban Development Unit: <http://www.healthyurbandevelopment.nhs.uk/>

¹² Sport England's planning tool can be found at the following link: http://www.sportengland.org/facilities_planning/planning_tools_and_guidance/sports_facility_calculator.aspx

¹³ Public Libraries, Archives and New Development, A Standard Charge Approach, May 2010: http://www.mla.gov.uk/what/support/guidance/~media/Files/pdf/2010/programmes/Public_libraries_archives_and_new_development_a_standard_charge_approach

¹⁴ <http://www.barnet.gov.uk/mhe-baseline-appendix-a-b-policy.pdf>

¹⁵ <http://legacy.london.gov.uk/mayor/strategies/sds/docs/spg-children-recreation.pdf>