Technical appendix: calculating the need for affordable housing

This document sets out in detail the approach taken to calculate the need for affordable housing by Cobweb Consulting for the South East London Strategic Housing Market Assessment. The approach follows that of the official government Guidance, both the old Guidance (August 2007) and the National Planning Policy Guidance issued in March 2014.

A secondary data approach was taken following the requirements of the South East London Housing Partnership's brief. A wide range of data sources were examined and the best sources were selected in order to achieve robust outputs. It is important to emphasise however than that the outputs are estimates rather than exact measurements. No sources provide a comprehensive picture of the matter at hand and combining different sources inevitably means that there are gaps and overlaps. This necessitates the making of assumptions and the use of proxies at certain stages of the calculation in order to complete the estimate. These assumptions and proxies are explained in this note so that the methodology is not a "black box". In doing so Process Requirements 4 and 5 of the 2007 Guidance are met, these being:

- (4) Contains a full technical explanation of the methods employed, with any limitations noted;
- (5) Assumptions, judgements and findings are fully justified and presented in an open and transparent manner.

The structure of this technical note follows the main stages of the calculation, organised under these headings:

- Calculating Backlog Need;
- Calculating Newly Arising Need;
- Supply;
- Completing the Calculation.

Calculating backlog need

The first component is that of **concealed households**. The first source examined is the Census 2011 which counted 8,257 concealed "families" in SE London. Being a comprehensive headcount of the population the Census is a robust source, although the measurement was made just over three years ago and is therefore somewhat out of date. The Census Analysis Unit within the Population Statistics Division at ONS defines a concealed family as "a family living in a multi-family household, in addition to the primary family". It further notes that concealed family statistics are a useful indicator of housing demand for house building and planning in the future.

Concealed families Census	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
2011	1,313	1,290	2,076	1,715	1,863	8,257
% of London (68,600)	1.9%	1.9%	3.0%	2.5%	2.7%	12.0%

According to the Census Analysis Unit a concealed family can be a couple (with or without children) or a lone parent. An adult offspring living without a partner or child is not considered to be a family. This exclusion of single person concealed households is a problem because ideally we would like to include them in our estimate of concealed households. Anecdotal evidence suggest large numbers of younger adults who are "still living with mum and dad" well into their thirties, not out of choice but because they can't afford to move to independent accommodation. This is resulting in the suppression of household formation and this suppression is built into the latest household projections.

Work done on the GLA SHMA concluded that there were 85,826 concealed households in the whole of London. This number was arrived at following analysis of the most recent 3 years of data from the English Housing Survey (EHS). EHS variable "WhInform2" was the key to this approach. The question reads: *"We are interested in the number of people in the household who might, in other circumstances, be living in their own accommodation. Which of the statements on this card best describes your current situation?"* Response (3) reads: "*Would like to buy or rent but can't afford it at the moment."* When this response was chosen this was taken to indicate the presence of a concealed household. Further analysis of the EHS carried out by the GLA led to the following table which differentiates concealed households by tenure and size of dwelling required.

All concealed hholds in London: GLA data (from EHS)

	1 bed	2 bed	Total	1 bed	2 bed	% (vertical)
Social rent	40,116	-	40,116	100%	0%	47%
Intermediate	32,225	3,653	35,877	90%	10%	42%
Private rent	7,483	2,349	9,832	76%	24%	11%
Total	79,824	6,002	85,826	93%	7%	100%

According to the Census data there were a total of 68,600 concealed families in the whole of London. Upon consideration the exclusion of single person households from the Census figures justifies the adoption of the higher number yielded from the EHS analysis. Therefore the Census outputs for SE London were scaled up by a factor of 1.25 (68,600/85,826) to arrive at a final estimate of concealed households in SE London. Furthermore the breakdown by tenure and size of dwelling required from the GLA work was applied to the up-scaled SE London data, resulting in the following final estimate of concealed households in the sub-region. The 11% of households deemed to be able to afford private rented accommodation (see the previous table) have been discarded. In arriving at this estimate it is assumed that the Census is a good source for the numbers of concealed households in each borough relative to each other, but that the work done by the GLA using EHS is a better indicator of the overall level of concealed households, this being higher than the Census indicates. Furthermore the assumption is made that bedroom size requirements and the tenure split outputs at the London level are transferable to the local level. Given the lack of alternative sources this was considered the best way to proceed.

Concealed households in need of affordable households

	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social/afford. Rent	1,148	1,065	1,813	1,479	1,475	6,980
of which 1 bedroom needed	1,093	1,014	1,726	1,408	1,404	6,645
of which 2 bedrooms needed	55	51	87	71	71	336
Intermediate sector	306	364	487	421	588	2,167
of which 1 bedroom needed	291	347	464	401	560	2,063
of which 2 bedrooms needed	15	18	23	20	28	104
Total in need	1,455	1,429	2,300	1,900	2,064	9,147

The next component of backlog need concerns **overcrowded households**. Again, Census 2011 is the primary source used, showing there to be 53,093 overcrowded households in SE London. There is no better or more recent source available.

Census 2011 "Occupancy rating"

	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
1 bedroom short	3,763	4,646	8,892	11,704	14,949	43,954
2 or more bedrooms short	604	575	2,119	2,314	3,526	9,138
Total number overcrowded	4,367	5,221	11,011	14,018	18,475	53,092

However there is inevitably an overlap between overcrowded and concealed households: were concealed households to be given their own accommodation then in some cases this would solve the overcrowding in the remnant household. According to work done by GLA based on an analysis of three years of EHS data (London-wide) around 25% of concealed households were also overcrowded. Applying this to SE London, assuming the sub-regional situation does not differ markedly from the regional one, the census figures for overcrowded households in SE London were reduced by 25% of the number of concealed households in each borough. This reduced the overcrowded number down from 53,092 to 50,509.

However it is not necessarily the case that all of these households are unable to afford open market housing. Data from the EHS (again, for the whole of London) provided an indication of the income distribution of overcrowded households when measured against the income distribution of all households:

- 11.4% in the lowest income quintile;
- 30.9% in the 2nd income quintile;
- 29.7% in the 3rd (middle) income quintile;
- 19.6% in the 4th income quintile;
- 8.4% in the highest income quintile.

The analysis of EHS also provided an indication of the dwelling size requirements of overcrowded households (again, London-wide):

- 26% required a 2 bedroom dwelling;
- 34% required a 3 bedroom dwelling;
- 40% required a 4+ bedroom dwelling.

An affordability test was carried out using these two inputs from the EHS analysis, in combination with household income data for SE London (CACI Paycheck) and market entry price levels (SELHP Market Monitor). The detailed method of the affordability test is explained later in this document under the heading "newly arising need." Those unable to afford market entry are deemed to be in need of affordable housing. The full results of the affordability test applied to overcrowded households are shown in the following table. In total 42,626 of the 50,509 households are deemed unable to afford.

Overcrowded households in housing need

	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social/afford. rent	1,793	2,359	5,750	7,554	12,398	29,856
of which 2 bedrooms needed	473	622	1,516	1,992	3,269	7,872
of which 3 bedrooms needed	606	797	1,943	2,552	4,189	10,087
of which 4+ bedrooms needed	715	940	2,291	3,010	4,940	11,896
Intermediate sector	1,036	1,517	2,447	3,259	4,511	12,771
of which 2 bedrooms needed	273	400	645	859	1,189	3,367
of which 3 bedrooms needed	350	513	827	1,101	1,524	4,315
of which 4+ bedrooms needed	413	605	975	1,299	1,798	5,089
Total in need	2,830	3,877	8,198	10,813	16,909	42,626

The next component of backlog need concerns **homeless households** in temporary accommodation. The source for this component is P1E administrative data. There is a statutory requirement for Local Authorities to collect this data on homelessness. The most recent dataset showed there to be 3,689 homeless households in temporary accommodation in SE London at the close of 2013. This source is therefore more up to date than the sources used for the other components of backlog need. However it is unlikely that the P1E figures have 100% coverage of the situation of the ground as only those households that have come into contact with local authority homelessness teams are counted. There are likely to be others that are homeless but have not

sought assistance. Therefore the P1E figures are considered to be an undercount. Given that there is no alternative source with which to estimate the likely scale of the undercount the P1E figures are taken on face value as the best source available.

Furthermore the assumption is made that all of these households require social rented accommodation (i.e. they cannot afford the intermediate sector). This assumption is made because it is considered unlikely that a household would find itself in local authority assisted temporary accommodation if it had sufficient financial resources to be able to afford the intermediate sector. A household in this situation would be far more likely to "stretch" their income to access the PRS. This assumption might mean that the requirement for intermediate accommodation as opposed to social rented accommodation is very slightly understated.

The size of dwellings required by homeless households in temporary accommodation is estimated following an analysis of CORE data. Three years of data from CORE (2010/11-2012/13) covering General Needs lettings to new tenants (as opposed to transferring tenants) was examined. Using the variable "PREVTEN", records were selected if it was indicated that the tenant had previously been housed in a form of temporary accommodation including hostels, Bed & Breakfasts and rough sleeping. An assumption is made that the needs for this group are broadly similar across the sub-region (i.e. they don't differ markedly from one borough to the next). According to this method the size of dwellings required to house the homeless in SE London breaks down as follows:

- 68% requiring 1 bedroom dwellings;
- 25% requiring 2 bedroom dwellings;
- 6% requiring 3 bedroom dwellings;
- 1% 4 bedroom dwellings.

Applying these percentages to the P1E data resulted in the following table.

Homeless households in housing need

	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social/afford. rent	501	806	249	1,372	761	3,689
of which 1 bedroom needed	340	546	169	930	516	2,501
of which 2 bedrooms needed	126	203	63	346	192	930
of which 3 bedrooms needed	29	47	14	80	44	214
of which 4+ bedrooms needed	6	10	3	17	9	45

To generate a final figure for backlog housing need the numbers of concealed, overcrowded and homeless households were added together, resulting in the next table.

Gross current need (i.e. "Backlog")

		Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social and afford. rent	1 bed	1,433	1,560	1,894	2,338	1,920	9,145
	2 bed	654	876	1,666	2,409	3,532	9,137
	3 bed	635	844	1,957	2,632	4,233	10,301
	4+ bed	721	950	2,294	3,027	4,949	11,941
	Total	3,443	4,230	7,812	10,406	14,634	40,525
Intermediate sector	1 bed	291	347	464	401	560	2,063
	2 bed	288	418	669	879	1,218	3,471
	3 bed	350	513	827	1,101	1,524	4,315
	4+ bed	413	605	975	1,299	1,798	5,089
	Total	1,342	1,882	2,934	3,680	5,099	14,937
Total, all affordable		4,785	6,112	10,746	14,085	19,734	55,462

Some of the backlog concerns households already housed in the social sector. It is necessary to differentiate this group as the resolution of their housing needs will release their current dwelling

for re-use. This unit therefore counts towards "available stock" later in the calculation. This is estimated to be 20,258 units, as shown in the next table.

Available stock

		Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Backlog households already in social rented sector accomodation	Overcrowded %	28%	40%	44%	41%	55%	46%
	Overcrowded number	779	1,533	3,581	4,452	9,254	19,599
	Concealed %	0%	0%	0%	0%	0%	0%
	Concealed number	-	-	-	-	-	-
	Homeless %	0%	24%	18%	12%	33%	18%
	Homeless number	-	191	46	168	254	659
	Total %	16%	28%	34%	33%	48%	37%
	Total number	779	1,724	3,627	4,620	9,508	20,258

The percentages in the table are based on the following sources:

- Overcrowded: Census 2011, showing breakdown of overcrowding by tenure and by borough;
- Concealed: None of these households are counted because they are sharing the accommodation of another household. As a result providing them with independent accommodation will not free up their current dwelling for re-use.
- Homeless: P1E data. It concerns homeless housed temporarily in council or RSL stock.

Netting off the available stock from the gross backlog results in "net current need" i.e. those households in need that are currently outside the social sector plus concealed households within the affordable sector. These households require additional affordable units to meet their needs.

Net Current Need		Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social and affordable rented sector	1 bed	1,199	1,120	1,255	1,571	995	6,141
	2 bed	548	629	1,104	1,619	1,830	5,730
	3 bed	532	606	1,297	1,769	2,193	6,396
	4+ bed	603	682	1,520	2,034	2,565	7,404
	Total	2,882	3,037	5,175	6,993	7,583	25,671
Intermediate sector	1 bed	244	249	307	269	290	1,360
	2 bed	241	300	443	591	631	2,206
	3 bed	293	368	548	740	790	2,739
	4+ bed	346	434	646	873	931	3,230
	Total	1,124	1,351	1,944	2,473	2,643	9,534
Total all affordable sectors		4,006	4,388	7,119	9,465	10,226	35,204

The above estimate excludes certain categories of need for which there are no robust secondary data sources available to derive borough or sub-regional level estimates. The GLA London-wide SHMA for example used the EHS to estimate the numbers of sharing households, households in homes lacking basic facilities, non-homeless households in non-self-contained accommodation and households suffering from harassment. Avoiding double counting the number of households in these categories requiring affordable accommodation was estimated to be 20,050 London-wide. Applying this number to SE London simply on the basis of proportionality (of population or households) would result in an additional gross current need of approximately 3,450 households in SE London, and net current need would be around 2,100 households higher (assuming circa 40% available stock).

Due to the exclusion of these households from the calculation, plus the cautious approach taken to estimating concealed, overcrowded and homeless households it is likely that the final estimate of backlog need is an undercount. The actual number could be considerably higher than the figure given. This is especially the case given that the sources used for the two biggest components of backlog need – overcrowded and concealed households – are now several years old. Market signals from the past two or three years indicate a worsening affordability situation in SE London (see chapter 4 of the main report) therefore the backlog is likely to have increased in the years since the

2011 Census and the EHS survey years from which data is available (2008/09 – 2010/11). In conclusion it is considered to be extremely unlikely that the estimate of backlog need constitutes an over-count.

Calculating newly arising need

The first component of newly arising need concerns newly forming households in need. The SHMA Practice Guidance (CLG, 2007) states that an estimate of new household formation must be based on "gross" rather than "net" household formation i.e. it is the total number of newly forming households that must be measured as opposed to newly forming households minus dissolving households. The method employed to calculate gross newly forming households is set out in paragraph 15 of Annex B of the Practice Guidance (CLG, 2007). We call this approach "the cohort method".
The source used to estimate newly forming households is the 2013 central trend household projection from the GLA. This source provides borough-level figures for the estimated number of households for each year between 2011 and 2041, broken down into 10-year age cohorts and into household types. The approach is to use the GLA Central household projection to track the development of each age cohort at ten year intervals to measure change, with an increase in the size of the cohort being ascribed to newly forming households. The resultant numbers are then divided by ten to arrive at annual figures. For example according to the projections data there were 908 single parent households in Bexley in 2011 in the 15-24 age band and there are projected to be 3,479 single parent households in 2021 in the 25-34 age band. The expansion is therefore 2,571. Furthermore there were 2,200 single parent households in Bexley in 2011 in the 25-34 age band and there are projected to be 3,796 single parent households in 2021 in the 35-44 age band. The expansion is therefore 1,597. These two numbers are then added together to make 4,168 which is then divided by 10 to make 417 newly forming single parent households per annum in Bexley.

As acknowledged in the Guidance most household formation is concentrated in the younger age ranges and it is therefore not necessary to look at all age cohorts. It is reasonable to assume that newly forming households in age cohorts older than 45 years will have already found suitable accommodation be it in the market or in the social sector. Moreover, if these older households suffer a reversal of circumstances they will be captured later in the calculation as existing households falling into need. For these reasons older households are excluded.

Some household types, e.g. couples without children, expand up to the 25 age mark then contract thereafter. In this case the negative number is subtracted from the positive number so that the final number shows a sort of "net" newly forming households of that type over the period. What is happening is that one type of household evolves into another type of household (single => couple no children => couple with children => single parent household). This is a complicated dynamic as many individuals will "pop in and out" of different household categories within the 10 year period being measured. However taking the net approach at decades end means there will not be any double counting of households. Instead what we are left with is a steady demographic progression that reveals the overall levels of change. The cohort method is the officially sanctioned method and given the lack of workable alternative approaches it is considered to be the best way to gauge the overall annual number of newly forming households and fit for purpose. The approach yields the following estimate of annual newly forming households.

Estimated number of newly forming households per year 2011-2021						
HH-type	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Single person	301	651	461	927	627	2,966
Couple, no dependent children	58	246	257	307	661	1,528
Couple with child(ren)	816	1,091	864	586	470	3,827
Single parent with child(ren)	417	465	330	630	372	2,214
Other multiperson households	248	207	411	563	700	2,128
Total	1,839	2,659	2,323	3,013	2,829	12,663

The next step is to apply an affordability test to these households, to estimate the share able or not able to access open market housing. There are several steps to this. First, market entry price levels must be determined. This is done using data from Housing Market Trends Bulletin No.18 SELHP, 3rd quarter 2013. This provides lower quartile prices for buying and renting a dwelling on the open market in each borough, broken down by dwelling size. Buyer's prices are converted to annual mortgage sums by applying the following criteria:

- A 5% deposit is assumed, so the mortgage amount is 95% of the price;
- An interest rate of 5% APR is assumed (the cheapest available rate as per mid-January 2014);
- A mortgage repayment period of 25 years.

Following the conversion of lower quartile purchase prices to annual mortgage payments these are compared to the lower quartile annual cost of renting in the PRS. Of the two tenures the lower cost is selected, this being taken to represent the market entry price level. These are shown in the next table.

Market entry threshold: annual cost

	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
1 bed	£ 7,660	£ 9,000	£ 9,259	£ 10,188	£ 12,344	£ 9,906
2 bed	£ 9,124	£ 12,000	£ 11,245	£ 12,693	£ 16,329	£ 12,585
3 bed	£ 13,200	£ 15,000	£ 14,484	£ 15,600	£ 23,400	£ 18,269
4 bed	£ 16,200	£ 20,400	£ 20,148	£ 19,200	£ 28,080	£ 23,167

The SHMA Guidance requires assumptions concerning intermediate housing to be based on actual prices of intermediate products being offered in the market (p. 59 of the 2007 Guidance). In keeping with this instruction the intermediate threshold, demarcating the lower boundary of the intermediate sector and separating it from the social and affordable rent sector, was determined following an analysis of the shared ownership prices in SE London as contained in CORE data. The annual cost of shared ownership dwellings was calculated by adding the rent sum to the nominal cost of financing the mortgage on the equity share of the property (applying the same financial criteria set out above). The lower quartile price level of each dwelling size in each borough was calculated; however the small number of records was an obstacle in some cases. Therefore to make the intermediate threshold more robust the upper quartile price of social and affordable rent lettings was also determined using CORE data. The intermediate threshold price was set at the mid-point between upper quartile social/affordable rent and lower quartile shared ownership.

Intermediate threshold: annual cost

	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
1 bed	£ 6,511	£ 7,200	£ 7,407	£ 7,641	£ 9,258	£ 7,925
2 bed	£ 7,756	£ 9,600	£ 8,996	£ 9,520	£ 11,431	£ 10,068
3 bed	£ 9,240	£ 9,000	£ 11,587	£ 10,920	£ 12,870	£ 11,875
4 bed	£ 9,720	£ 10,200	£ 11,081	£ 11,520	£ 14,040	£ 12,742

The intermediate range lies between the intermediate threshold and the market entry threshold. It is important to keep in mind that the outputs of the affordability calculation are predicated on

intermediate products being offered for sale or for rent within this price range. Furthermore should intermediate products only be offered at the top end of this range (i.e. 5% or 10% under the market entry price level) then many of the households calculated to be able to afford the intermediate sector will not in fact be able to do so. It is therefore important to ensure that intermediate products are offered at different price points within the intermediate range, including at lower price points, so as not to invalidate the tenure-split outputs of the model.

The next step is to convert the annual costs of market entry and the intermediate sector into the income levels required to afford them. This is done using the affordability threshold percentage, i.e. the maximum percentage of gross income to be spent on housing for this to be considered affordable. The percentage used in the baseline scenario is **33.3%**. It is considered unaffordable if a household needs to spend more than a third of its gross income to access market housing. Therefore the income needed is three times the amounts shown in the 2 tables above.

The 2007 Guidance recommends an affordability percentage of 25% however it goes on to state that "local circumstances could justify a figure other than 25 per cent of gross household income being used" (p. 42). Anecdotal and quantitative evidence (e.g. from the EHS) indicates that households in London are commonly spending a much higher share of their income on housing costs in order to be able to access the market, more than 50% in some cases. This is particularly the case with younger households i.e. newly forming households. Another related consideration is that household incomes in London, including SE London, are generally higher than elsewhere in the country, which means a greater amount can be paid toward housing while having enough left over for other necessities. Given the reality on the ground in SE London a 25% income threshold is considered too low. 40% income threshold was tested in the affordability model, which is close to the reality facing many new entrants in the housing market. However given the pressure this places on the finances of those on lower incomes it was considered to be too high a percentage to use as the basis for future housing policy recommendations. On consideration, one-third of income was considered the most appropriate level for the affordability threshold, this being on the one hand closer to the reality on the ground while on the other not overstretching the spending capacity of lower income households.

The next step is to determine the size of dwellings required by different types of household. This is done using data from the EHS. Record-level data for London covering the most recent three years available (2009/10-2011/12) was analysed. Those households occupying their homes in line with the bedroom standard were selected (i.e. overcrowded and under-occupying households were discarded) which resulted in the following patterns of occupation. An assumption made here is that requirements by household type in SE London do not differ greatly from those across London as a whole.

Bedroom mix by household type: affordable sector

	1 bed	2 bed	3 bed	4+ beds
Single person hh	100%	0%	0%	0%
Couple, no dependent children	61%	25%	11%	3%
Couple with dependent children	0%	55%	38%	7%
Lone parent household	0%	65%	32%	3%
Other multi-person household	0%	65%	29%	5%

Next both the market entry and intermediate price thresholds were weighted for each household type according to the mix of dwelling sizes required by each household type. For single person households this simply meant a 100% weighting for one-bedroom dwellings. For couples with dependent children the weighting was 55% two-bed, 38% three-bed and 7% 4+ bed. Following this method a single price level for each household type in each borough was arrived at. This "weighted price" is the price level against which household income is tested. Using this method of a

"weighted price" is considered to be an effective way of taking the differing size requirements of different types of households into account. The approach is considered to be better than simply testing affordability against the price of either a 2-bed or 3-bed dwelling.

CACI Paycheck household income data was used to ascertain income levels. This dataset showed the numbers of households in South East London in income bands of £5,000. Inter-quintile nodal points (the boundary values demarcating 5 evenly sized groups of households with 20% of households in each group) were estimated from this dataset (in determining the exact value of the inter-nodal point, a linear distribution across each of the £5,000 bands was assumed). The CACI data pertained to 2012. To bring this into line with the price data which pertained to the 3rd quarter 2013 the inter-nodal values were inflated by a factor of 1.5% (this value was derived from ASHE data on income and earnings, the rise in incomes in SE London between 2012 and 2013). The resultant household income quintiles were:

- lowest income quintile: £0 - £14,138
- 2nd income quintile: £14,138 - £25,609
- 3rd (middle) income quintile: £25,609 - £40,193
- 4th income quintile: £40,193 - £60,734
- highest income quintile: > £60,734

The next step was to determine the income distribution of newly forming households across the 20% income quintiles of all households. This was done using London-wide figures from the EHS because sub-regional or borough level figures with the necessary breakdowns are not available. First the whole dataset was ordered by household income and coded up into 5 equal groups of 20% (income quintiles). Then records of households in the age-band 16-44 were selected for all household types with the exception of single person households for which the age selection was 25-44. Together these records were taken to represent newly forming households. The income distribution of these households was examined, yielding the following table. This approach is in keeping with the 2007 Guidance which states "where possible, information about household incomes should be estimated by age and household type" (p. 22).

Income distribution of newly forming households by household type

	Single person hh	Couple, no child(ren)	Couple with child(ren)	Lone parent hh	Other multiperson hh
1st quintile	42%	8%	4%	40%	10%
2nd quintile	23%	15%	17%	33%	20%
3rd quintile	20%	20%	20%	16%	23%
4th quintile	10%	26%	27%	8%	25%
5th quintile	5%	31%	31%	3%	21%

The figures were then multiplied by the table containing the estimate for the annual number of newly forming households broken down by borough and by household type. This yielded the number of newly forming households in each borough broken down by household type and income quintile. The market entry price level for each household type (the price weighted by dwelling sizes required), converted into income required to afford that price-level (i.e. multiplied by 3) was then compared to the inter-quintile income nodal values to determine if households in that quintile were able to afford the price level being tested. This was done in a series of calculations in excel using a complex if/then formula which worked out:

- If the income required to afford was lower than the lower nodal point of the income quintile then all households in the quintile could afford market entry;
- If the income required to afford was higher than the upper nodal point of the income quintile then none of the households in the quintile could afford market entry;

- If the income required to afford fell between the lower and upper nodes then some of the households were calculated able to afford, the proportion being determined by the exact point at which the inter-nodal range was cut (again a linear distribution between inter-nodal points is assumed).

Market entry and intermediate price levels were tested in turn to determine the number of households able to afford the open market, those able to afford the intermediate sector but unable to afford the open market, and the remaining households unable to afford either. The following table demonstrates the outputs of the affordability calculation using the example of single parent households. There are four other tables (not shown here) covering single person households, couples without dependent children, couples with dependent children and finally "other multi-person households".

Affordability calulation - single parent households

	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Income distribution						
1st quintile	166	186	132	251	148	883
2nd quintile	139	156	110	211	124	741
3rd quintile	68	76	54	103	61	363
4th quintile	32	35	25	48	28	169
5th quintile	11	12	9	17	10	58
Households of each quintile able to afford intermediate						
1st quintile	0	0	0	0	0	0
2nd quintile	12	0	0	0	0	12
3rd quintile	68	62	41	74	19	264
4th quintile	32	35	25	48	28	169
5th quintile	11	12	9	17	10	58
Households of each quintile able to afford open market						
1st quintile	0	0	0	0	0	0
2nd quintile	0	0	0	0	0	0
3rd quintile	39	3	9	0	0	51
4th quintile	32	35	25	45	5	143
5th quintile	11	12	9	17	10	58

The collated results of the affordability calculation are shown in the next table. In all 7,583 newly forming households are calculated to be unable to afford open market housing, which is 60% of the total.

Summary of affordability, newly forming households						
	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Single person households						
Social/afford. rent	160	373	270	555	428	1,786
Intermediate	21	64	45	112	79	320
Market	120	214	147	260	121	860
Couples, no children						
Social/afford. rent	10	52	57	71	200	391
Intermediate	4	26	23	38	122	213
Market	44	167	176	198	339	924
Couples with children						
Social/afford. rent	169	270	240	164	170	1,014
Intermediate	93	196	108	99	144	639
Market	554	624	517	323	155	2,173
Single parent households						
Social/afford. rent	293	355	256	492	314	1,710
Intermediate	42	60	31	77	42	252
Market	81	51	43	62	15	252
Other multi-person households						
Social/afford. rent	73	73	153	214	332	845
Intermediate	29	38	55	101	189	412
Market	146	95	203	248	179	871
All newly forming households						
Social/afford. rent	706	1,124	976	1,497	1,444	5,746
Intermediate	188	384	262	426	576	1,837
Total affordable sectors	894	1,508	1,238	1,923	2,020	7,583
Market	945	1,151	1,085	1,090	809	5,080

The next step is to convert these figures into requirements for dwellings of different sizes. This is done using the table "**Bedroom mix by Household Type: affordable sector**" (i.e. the bedroom standard, see above). The percentages in this table are applied to the numbers in the table above to generate the next table. Again, an assumption made here is that the size requirements of each household type in SE London do not differ greatly from those across London as a whole.

Housing need and demand from newly forming households						
	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social and affordable rent						
1 bed	166	404	305	599	549	2,023
2 bed	334	441	413	568	566	2,322
3 bed	181	243	224	291	285	1,223
4+ beds	25	35	34	40	45	178
Intermediate						
1 bed	23	80	59	135	153	449
2 bed	98	179	122	180	262	841
3 bed	57	107	69	96	137	467
4+ beds	9	18	12	16	25	80
Market						
1 bed	79	171	138	206	181	775
2 bed	381	453	433	435	336	2,039
3 bed	377	412	394	342	220	1,745
4+ beds	107	115	119	107	73	522

Although not relevant to the calculation of the need for affordable housing, the market requirements shown in the table above are derived from a different household/dwelling-size table, because the bedroom standard is not relevant to the open market sector. The approach was also based on an analysis of London-wide data from the EHS. In this case records pertaining to newly forming households (based on age, see above) housed in open market accommodation were selected, and overcrowded households were excluded. The occupancy pattern of the remaining

households is represented in the table below, and this was used to generate the figures for the open market in the table above.

Bedroom mix by household type: open market				
	1 bed	2 bed	3 bed	4+ beds
Single person hh	53%	30%	13%	3%
Couple, no children	34%	47%	15%	4%
Couple with children	0%	38%	49%	13%
Lone parent hh	0%	71%	29%	0%
Other multi-person hh	0%	40%	41%	19%

The method used to calculate affordability for newly arising households was also applied to overcrowded households in "backlog need" as alluded to earlier. The inputs concerning income distribution and dwelling size requirements by household type were those given as bullet points on page 3 of this paper.

There is a second component of newly arising need – existing households that fall into need each year due to a reversal in fortune. It is difficult to get a clear measure of this group from the available secondary data sources. It was decided to use mortgage possession orders as a proxy for this component. The data source for this originates from the Ministry of Justice. The figures are based on an annual average from the period 2010 to 1st quarter 2013, which yield a total for SE London of 1,284.

Alternative sources for existing households falling into need were considered. One such source was PRS evictions, terminations & mortgage possessions as recorded in the SELHP Homelessness data. The 12 months to Q3 2013 showed a total of 644 cases in the sub-region. However the distribution of the data across the boroughs was very different to that of the Min. Justice figures which raised question marks about a possible lack of consistency in the way of the data was collected. Consistency is far less of an issue with the Min. Justice data as it constitutes a full count of court judgements without any variance of definition or subjectivity at the local level. Using landlord possession orders from the Ministry of Justice was also considered. The annual average for the sub-region in the period 2010 to 1st quarter 2013 was 4,504 – much higher than for mortgage possession orders. However there is a possibility of double counting with landlord possession orders as in some cases the same households could be evicted more than once within the same year (far less likely for mortgage possessions). Furthermore evicted tenants are more likely to be counted among those in backlog need. After careful consideration it was decided to limit the estimate to mortgage possession orders only. This is in keeping with taking a conservative approach to the estimate of housing need.

The breakdown into required dwelling sizes of existing households falling into need was based on an analysis of CORE data: dwellings in SE London let to households who had been evicted, repossessed or had been unable to afford their previous rent or mortgage (variable = "RSNVAC") were counted. The results: 38% needing 1-bedroom dwellings, 37% 2-bed, 20% 3-bed and 4% needing 4+ bedroom dwellings. Robust data on the income profile of this group of households was lacking, ruling out the possibility of an affordability calculation to separate those able to afford the intermediate sector from those needing social or affordable rented accommodation. Therefore it was decided to use the tenure split results of the affordability calculation pertaining to newly forming households as the best proxy available, applying this to existing households falling into need. Implicit therefore is an assumption that the income profile of existing households falling into need is broadly similar to those newly forming households unable to afford the open market. It is possible that this overstates the demand for the intermediate sector among repossessed households. The outputs are shown here:

Existing households falling into need by sector and dwelling size						
	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social and affordable rent						
1 bed	77	65	82	96	58	379
2 bed	75	63	80	93	56	366
3 bed	41	34	44	51	31	201
4+ beds	8	6	8	10	6	38
Intermediate						
1 bed	21	22	22	27	23	115
2 bed	20	21	21	26	22	112
3 bed	11	12	12	15	12	61
4+ beds	2	2	2	3	2	12
Total all affordable sectors	254	226	271	321	212	1,284

The two components of newly arising need – newly forming households in need and existing households falling into need – were then added together as shown here:

Total newly arising need						
	Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social and affordable rent						
1 bed	243	469	387	695	607	2,402
2 bed	409	503	493	661	622	2,688
3 bed	222	278	268	342	316	1,424
4+ beds	33	41	42	49	50	216
Intermediate						
1 bed	44	102	81	162	176	565
2 bed	118	200	143	206	284	952
3 bed	68	119	81	110	149	528
4+ beds	11	20	14	18	27	92
Total all affordable sectors	1,148	1,734	1,509	2,244	2,232	8,867

Supply

As described in the Guidance there are two distinct types of supply, each of which is treated very differently within the calculation. The first type concerns the **total affordable stock available**. As explained above (under "backlog") this is primarily made up of those affordable units currently occupied by households in need that would come free for re-use if the needs of these households were met. The number is 20,258.

To this is added surplus stock (the number of affordable properties that can be normally expected to be vacant at any one time). It is generally considered that approximately 3% vacant stock is a necessary feature of a normal functioning market as these voids are required to facilitate household movements, renovations and the like. As shown in Chapter 3 of the report the percentage of empty social sector properties is below 3% in all boroughs except for Bexley. However the high figure in Bexley is due to regeneration activities – these empty homes are scheduled for demolition and therefore cannot be counted among the available supply. In conclusion, this component of affordable housing supply is considered to be zero. In other words there is no "spare capacity" from empty properties to meet affordable housing need.

This housing needs model excludes any assumptions concerning the future pipeline of new-builds. The rationale for this is that by excluding these assumptions the model provides a clearer picture of the current situation and thereby serves as a better basis when it comes to formulating appropriate policy responses. According to the SHMA Guidance (CLG, 2007) "committed additional housing stock" should be added to affordable stock available. However the Guidance doesn't define the meaning of the word "committed". We suggest that this should be given a narrow interpretation, to mean those new build units that are currently under construction or about to start construction.

While it is true that some of the backlog will be catered for when the new build units currently under construction are let (likely sometime in the next 12-18 months), this period will also see additional newly arising need piling up. If affordable delivery falls short of newly arising need then rather than the backlog being diminished by committed additional stock, it may instead be inflated further during the period in question. By opting for what could be termed a "policy-off" approach what we are in effect presenting is a snap shot of housing need as it currently stands. Conclusions concerning the amount of future new build required can then be drawn because they have not been pre-factored into the calculation.

The last component of total affordable stock available concerns the subtraction of units to be taken out of management. These are social sector homes that are currently occupied by households in need of affordable housing but which are due to be demolished. No homes have been confirmed as being in this category, so again no adjustment is made at this stage. The estimate of total current affordable housing supply available therefore stands at 20,258. The breakdown by borough is shown in the table "**available stock**" above.

The second part of supply is called "**future housing supply**" and consists of an annual estimate of future annual supply of social housing re-lets, calculated on the basis of past trends - an average of the past three years is advised. It concerns the expected turnover of existing stock and excludes new build lettings. It is also limited to re-lets to new tenants and excludes transfer lettings. Social rent and "affordable rent" are treated together and longer-term supported housing lettings are also included. For the most part this supply consists of General Needs lettings but a half (50%) of supported housing lettings are also included due to the fact that many of these units are being let to the very households in need (both "backlog" and "newly arising") estimated above. For example, young single mothers with dependent children make up a significant number of new tenants in supported accommodation – the same households are measured in both the backlog and newly arising components of housing need. Not all supported housing units are included because a significant proportion are let on a temporary basis (e.g. for less than one year) and therefore cannot be considered part of the permanent housing stock. Also many units are reserved for older people and/or specific vulnerable groups, and these groups fall outside the backlog and newly arising components of need being modelled.

CORE is the data source used for the estimate of future housing supply, with the exception of Greenwich Council stock lettings data which was supplied separately by the borough itself due to the fact that these lettings were missing from the CORE data. Average annual lettings from a three year period (2010/11-2012/12 in the case of CORE and 2011/12-2013/14 in the case of Royal Borough of Greenwich) are derived from the sources. They show the number of lettings of existing properties to new tenants (therefore excluding new build "first lettings" as well as lettings to transferring tenants) broken down by borough and by dwelling size.

A second component of future housing supply is the supply of intermediate affordable housing. Again it concerns the number of homes that come up for re-let or re-sale and as such excludes new build properties. It is also an estimate based on an average from the past three years. Data from the South East London Housing Partnership has been used for this estimate, augmented by data from CORE which showed the breakdown of shared ownership re-sales by dwelling size. The two parts are then added together, as shown in the next table.

As alluded to above, it was discovered that CORE data excluded all the lettings of RB Greenwich stock in 2010/11 and 2011/12, necessitating the gathering of this data directly from the borough itself. This raises doubts as to whether CORE data covers all lettings of other providers in the sub-region. It has not been possible to assuage this doubt and therefore the possibility remains that the estimate of annual re-lets is an undercount.

Annual supply							
		Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Social and affordable re-lets	1 Bed	258	275	515	808	1,131	2,986
	2 Beds	164	177	372	542	567	1,822
	3 Beds	65	72	97	182	174	590
	4+ Beds	11	6	18	24	33	92
	Total	498	530	1,003	1,555	1,906	5,491
Intermediate sector re-sales	1 Bed	6	5	6	8	17	40
	2 Beds	9	11	17	10	21	67
	3 Beds	-	5	6	-	2	12
	4+ Beds	-	-	-	-	-	-
	Total	14	20	28	18	39	119
All affordable sectors	1 Bed	263	279	521	816	1,147	3,027
	2 Beds	173	188	389	552	588	1,889
	3 Beds	65	76	103	182	176	602
	4+ Beds	11	6	18	24	33	92
	Total	512	549	1,031	1,573	1,945	5,610

Another point to bear in mind is that expanding the social sector and/or raising the turnover rate of social sector stock would result in an increase in annual lettings i.e. an increase in future housing supply. The model does not make assumptions about this. Instead it assumes that future re-let supply will be the same as over the past three years (i.e. 5,610 per annum). Should supply increase, then all else being equal, net annual need (see overleaf) will be lower than that modelled at present. Conversely an increase in Right-To-Buy and other sales of affordable dwellings is also a possibility. This could perceivably result in a reduction in the social housing stock which would act to reduce re-let supply and thereby increase the need for affordable housing in the future.

Completing the calculation

The various components are then assembled in accordance with the instructions given in the 2007 Guidance (p. 52). The diagram shows the results for the sub-region as a whole.

		Bexley	Bromley	Greenwich	Lewisham	Southwark	SE London
Existing need	A:Backlog need	4,785	6,112	10,746	14,085	19,734	55,462
	B: Affordable stock available	779	1,724	3,627	4,620	9,508	20,258
	C: Net current need (A-B)	4,006	4,388	7,119	9,465	10,226	35,204
	D: Backlog reduction period	20	20	20	20	20	20
	E: Annual backlog quota (C/D)	200	219	356	473	511	1,760
New need	F: Newly forming households	1,839	2,659	2,323	3,013	2,829	12,663
	G: % unable to afford market	49%	57%	53%	64%	71%	60%
	H: Newly forming hh in need (F*G)	894	1,508	1,238	1,923	2,020	7,583
	I: Existing households falling into need	254	226	271	321	212	1,284
	J: Annual newly arising need (H+I)	1,148	1,734	1,509	2,244	2,232	8,867
Final steps	K: Gross annual need (E+J)	1,348	1,953	1,865	2,717	2,743	10,627
	L: Annual supply	512	549	1,031	1,573	1,945	5,610
	M: Net annual need (K-L)	837	1,404	835	1,144	799	5,017

The decision was taken to eliminate the backlog over a period of 20 years (i.e. a 5% annual quota). A shorter period is commonly adopted in SHMAs and the 2007 Guidance states "the quota should be based upon meeting need over a period of five years, although longer timescales can be used" (p. 52). However because of the very large size of the backlog in SE London relative to the rates of affordable housing delivery in recent years a five or even ten year backlog reduction period was considered too short to be considered realistically achievable. Adopting a 5-year period (20% annual quota) would have resulted in net annual need for affordable housing being 10,298, which is 2.3 times the average rate of stock growth in recent years across all tenures. The GLA's London-wide SHMA also adopted a backlog reduction period of 20 years so consistency with this study is an additional argument in favour of opting for 20 years.

The final stage is to combine the various components concerning dwelling size and tenure which have been differentiated throughout. The figures below concern SE London but the model also yields outputs for each of the five boroughs.

Housing need by tenure and dwelling size: SE London

		1 bed dwellings	2 bed dwellings	3 bed dwellings	4+ bed dwellings	All dwellings
Social and affordable rent	Gross annual need	2,709	2,975	1,744	586	8,014
	Annual supply	2,986	1,822	590	92	5,491
	Net annual need	(278)	1,152	1,154	494	2,523
Intermediate sector	Gross annual need	633	1,062	665	253	2,613
	Annual supply	40	67	12	-	119
	Net annual need	593	996	653	253	2,495
Total	Gross annual need	3,341	4,037	2,409	839	10,627
	Annual supply	3,027	1,889	602	92	5,610
	Net annual need	315	2,148	1,808	747	5,017

So-called "development mix" recommendations can be generated from the figures above. In the case of an oversupply of dwellings of any size/tenure combination the requirement is adjusted to zero, to avoid calculating with negative numbers. This is the case for 1 bed social and affordable rent units at the sub-regional level.

Recommended development mix: SE London

Tenure	1 bed dwellings	2 bed dwellings	3 bed dwellings	4+ bed dwellings		Tenure split
Social and affordable	-	41%	41%	18%		50%
Intermediate sector	24%	40%	26%	10%		50%