
London Housing Standards 2009/10

Table 3.3 Minimum space standards for new development

	Dwelling type (bedroom (b)/persons-bedspaces (p))	GIA (sq m)
Flats	1p	37
	1b2p	50
	2b3p	61
	2b4p	70
	3b4p	74
	3b5p	86
	3b6p	95
	4b5p	90
	4b6p	99
	2 storey houses	2b4p
3b4p		87
3b5p		96
4b5p		100
4b6p		107
3 storey houses	3b5p	102
	4b5p	106
	4b6p	113

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About HATC Ltd

HATC Ltd is a housing consultancy specialising in property development issues, has a national client base and covers six main areas of activity:

- Project delivery
- Programme delivery (strategy development, good practice processes and procedures, standard design briefs, project financial evaluation, risk management)
- Research and policy development
- Training
- Professional development
- Recruitment

This study contributes to our programme of activities in research and policy development on housing standards.

HATC also contributes to the www.swingacat.info website aimed at raising consumer awareness about the space needed for a home to work well.



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The views expressed in this report are those of the authors and not the Greater London Authority. Any errors that may remain are the responsibility of the authors.

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Summary of Results & Recommendations

Introduction

1. This study was commissioned by the Greater London Authority (GLA) to inform preparation of benchmarks to monitor implementation of new London Plan Policy 3.5 on Quality and Design of Housing Developments. This policy summarises the range of housing standards on which the Mayor proposed to produce detailed Supplementary Planning Guidance (SPG) and, in light of his particular concern to secure more spacious homes, specifies space standards which he intends should be reflected in different types of new dwellings.
2. These housing standards were originally put forward through the London Housing Design Guide (LHDG) for development taking place on GLA-owned land or receiving public subsidy. The 2011 London Plan refined some of the standards and extended their application to all tenures of housing development across London. At the time of writing, draft SPG on the detailed content of the standards and their implementation has been subject to two rounds of consultation and will be finalised in 2012.
3. It is anticipated that, drawing on the results of the present study, the London Plan Implementation Plan will provide a platform for monitoring the impact of Policy 3.5 and in particular that of the new space standards
4. Because affordable housing is already subject to quality standards, this study focuses on market housing. As the study is intended to provide a 'snapshot' of the quality - particularly the size - of market dwellings prior to the introduction of the new standards, its proposals for monitoring benchmarks are based on developments approved in 2009/10 i.e. before publication of the 2011 London Plan and accompanying SPG. It focuses on housing approvals rather than completions because these provide a better 'leading edge' indicator of the effect of policy.
5. The study has concentrated on the following standards set out in the 2011 consultation draft SPG:
 - Dwelling size (GIA – see below for definition) (Standard 4.1.1) – the primary concern of the study;
 - The combined cooking/living/eating area in the dwelling (4.4.1);
 - The minimum width of the main living area in the dwelling (4.4.2);
 - Whether 3-bed plus dwellings have two living spaces, both with external windows (4.4.3);
 - Whether the dwelling has a living area at entrance level (4.4.5);
 - Bedroom area for single bedrooms (4.5.1);
 - Bedroom area for double/twin bedrooms (4.5.2);
 - Area of a built-in general storage (4.7.1);
 - Area of private outdoor open space (4.10.1);

- Depth and width of all balconies (4.10.3);
 - Single aspect combined with orientation (5.2.1).
6. The primary subject of this study is dwelling Gross Internal Area (GIA). Formally defined in the *RICS Code of Measuring Practice 6th edition* (2007), in simple terms it is the total internal area of a dwelling. The amount of space within the dwelling is one of the key factors¹ which influences its flexibility and adaptability for different uses over time, and its ability to respond to the different pressures of the housing market over the decades. This also extends the likely life of the property before it becomes functionally obsolescent, yielding both financial and carbon savings over the long-term. At a day-to-day level, this is experienced by Londoners feeling less cramped and overcrowded in their homes.
7. Terminology: a group of properties, such as encountered in studies such as this, will contain a variety of property types that can be described using a variety of terms such as typologies, unit mix, unit types etc. These terms are not always used consistently in the industry, and so are defined here:
- **Typology:** dwellings of different forms such as flats (apartments), maisonettes, bungalows, 2-storey houses, 3-storey houses etc.
 - **Unit mix:** differentiates by the numbers of bedrooms and people e.g. a 1b2p dwelling versus a 2b3p dwelling or a 3b5p dwelling;
 - **Unit type:** one specific design. For example, two 1b2p flats with different layouts and / or sizes would represent a single typology (flats) and both be of the same unit mix (1b2p), but would be two different unit types.
 - **Total units:** all dwellings, regardless of typology, mix or unit type.

¹ Along with the presence/absence of internal structural partitions.

Summary of Method

8. Because affordable housing is already subject to quality standards, this study looks at the quality of market housing only. As policy changes influence planning permissions at an earlier date than they affect completions, the study used approved plans rather than as-built plans. Specifically, the study addresses market housing that received planning permission in 2009/10 i.e. *before* the standards in the London Plan and accompanying SPG were published. Establishing the pre-Plan/SPG level of housing quality enables future studies to demonstrate how effective the London Plan policy and SPG prove to be at improving the quality of market housing in London.
9. Within the constraints of available resources, the study sought to draw on a representative sample of market housing approvals across London immediately prior to introduction of the housing standards proposed in the 2011 London Plan and associated SPG. The sample was drawn from a total 'population' of 4,512 housing schemes containing 56,900 dwellings recorded by the London Development Database as being approved in June 2009 – June 2010. Affordable dwellings, live work units, cluster flats and proposals which did not receive full planning permission were excluded. This process identified 3,774 schemes comprising 25,257 homes as the population of market dwellings for the study.
10. 90% of the dwellings in the total population were flats and 10% were houses or bungalows. 5% were bedsit/studios, 35% 1-bedroom dwellings, 43% were 2-bedroom dwellings and 12% were three-bedroom dwellings. 6% were 4 bedroom dwellings or larger.
11. The population was heavily skewed, with a few very large schemes, and many schemes with very few units. 5% of the schemes accounted for 70% of the total dwellings; indeed, 1% of the schemes accounted for 50% of the total units in the population. Therefore, instead of randomly sampling the 3,774 schemes, a stratified approach was adopted.
12. 15 schemes were randomly sampled from the 40 largest schemes in the study population and 75 schemes from the remainder of the population. This resulted in a sample of 90 schemes which had 740 unit types representing 3,240 units in total.

Dwelling Occupancy

13. The detail of the London Plan's minimum space standards policy was debated extensively at the EIP and are complemented by preferred minimum bedroom sizes in the (draft) housing SPG. The overall aim of policy 3.5 c is to ensure that new dwellings are of an adequate size for their intended occupation. However, there are a number of considerations that need to be taken into account when considering space standards, they are:
 - Occupation and marketing of a dwelling (to prevent overcrowding)
 - The impact of GIA minimum sizes on development viability (to not constrain housing delivery)
 - Monitoring of compliance (to enable realistic and consistent monitoring for the current assessment of policy outcomes and future comparison)

14. The main focus of the GLA space standards is GIA, related to the number of occupants, bedrooms and storeys of a dwelling. While the GIA is Policy 3.5's primary concern, to assess an approval against this standard, it is also necessary to take into account the number of bedrooms in a dwelling, as well as the number of persons/bed-spaces the dwelling is able to comfortably accommodate. To do this, the study has attempted to define the size threshold between a one and two person bedroom.
15. The reason this was necessary was that the size of a bedroom advertised as being a double room may:
- vary considerably between different schemes, and/or may
 - be much smaller in practice than either the GLA guidance for a double bedroom of 12m², or the minimum stated by overcrowding legislation of 10.2m². In fact, the threshold in this sample is approximately 8.7m².
16. The study has looked at three different ways of classifying a bedroom as occupied by one person, or two:
- Self-declared i.e. as stated on the plans in the sample or – where not stated - 8.7m² (the actual threshold in the sample);
 - 10.2m² (the threshold set by overcrowding legislation);
 - 12m² (the more aspirational GLA standard).
17. This circumstance produces some counter-intuitive results. Generally, one would expect a high bedroom standard to mean only larger units comply, reducing the level of compliance of a given sample of dwellings. However, this study shows that the opposite is the case.
18. When assessing GIA in combination with an assumption of the industry standard bedroom size threshold (8.7m²), the study found that GIA compliance was lower, especially for the smallest dwelling types. Conversely, when assessing GIA and assuming the bedroom size threshold to be closer to the GLA standard of 12m², compliance with the GIA standard was higher.
19. To show how this happens, an example may be helpful:

GIA of Dwelling 1:	40 m²
Number of bedrooms:	One
Size of Bedroom:	12 m ²
Unit type (determined according to GLA bedroom threshold of 12m2)	1b2p
Relevant GIA standard for 1b2p	50m²
Compliant with relevant GIA standard?	No
GIA of Dwelling 2:	40 m²
Number of bedrooms:	One
Size of Bedroom:	10 m ²
Unit type (determined according to GLA bedroom threshold of 12m2)	1b1p
Relevant GIA standard for 1b1p	37m²
Compliant with relevant standard?	Yes

20. This means that the dwelling with a less generous bedroom will show as compliant while the dwelling with the more generous bedroom will not. This is because a high bedroom threshold means that even quite large bedrooms will be classified as singles. This, in turn, determines how the unit is classified in terms of dwelling type (e.g. a 1b1p instead of a1b2p). This lowers the GIA standard against which the dwelling is compared. A lower GIA benchmark results in higher levels of compliance.

Summary Results

21. Some Tables in this section are duplicates of Tables in the main body of the Report, and are numbered accordingly.

22. Table 1 below provides a summary of the results of the survey, showing the levels of compliance with the SPG standards. "Unit Types" refers to the different designs included in the sample (of which there were 740). The "Total Units" refers to the total number of dwellings in the sample (of which there were 3,240). Levels of compliance can be assessed against the range of dwellings designs produced (Units Types) or the dwellings for which planning permission was granted (Total Units). The results will differ because of different levels of repetition of individual unit types.

23. Compliance with the Gross Internal Area standard is shown using all three thresholds of bedroom occupancy, with the benchmark levels of compliance (assessed using the 10.2 m² threshold) are shown in bold.

Table 1

<i>SPG Standard</i>		<i>Level of Compliance</i>		
		<i>Unit Types</i>	<i>Total Units</i>	
Gross Internal Area (where occupancy is determined according to different single / double bedroom thresholds)		Self-declared/8.7m ²	38%	31%
		10.2m²	49%	42%
		12m ²	74%	73%
(differentiating between large schemes and small schemes, assuming occupancy is determined by 8.7m ² bedroom threshold)		Large schemes	37%	29%
		Small schemes	39%	45%
Cooking/eating/living areas Living/Dining/Kitchen areas			33%	40%
Living Rooms/spaces				
≥2.3m width for 2-3 person dwelling			69%	66%
≥3.2m width for 4+ person dwelling			63%	56%
Entrance-level socialising space			99%	100%
2 living spaces in 3b+ dwellings			9%	7%
Bedrooms				
1-person bedroom ≥ 8m ²			44%	57%
2-person bedroom ≥ 12m ²			64%	60%
2-person bedroom width ≥ (2.75m)			66%	67%
WCs				
2 WCs in 5+ person dwellings			96%	99%
Storage				
Dwellings with no storage			30%	
≥ 0.8m ² (up to 2-person) plus 0.5m ² per person			17%	19%
≥ 1.5m ² plus 0.5m ² per person			5%	6%
≥ 10% of GIA (Parker Morris standard)			0%	0%
Core/Lift access				
≤ 8 dwellings accessed from single core (% of floors)			78%	
≥ 1 lift for 4 storey block			98%	

SPG Standard	Level of Compliance	
	Unit Types	Total Units
≥ 1 lift for 5 storey block	100%	
≥ 2 lift for 8 storey block	65%	
Private outdoor spaces		
% with no private outdoor space at all	30%	
≥ 8m ² (up to 2-person) plus 1m ² per person	32%	22%
Useable private outdoor space (min 1.5m depth and width) of ≥ 8m ² (up to 2-person) plus 1m ² per person	24%	15%
Single-aspect dwellings		
% single aspect	46%	64%
% of single-aspect dwellings that are north-facing		18%
% of 3-bed+ dwellings that were single-aspect	28%	38%

24. As well as identifying what proportion of the units types and total units in the sample complied with the standards being assessed, this study reports on the average sizes of dwellings in the sample, where there is sufficient data to produce an average figure. For each dwelling type, where the sample included less than 10 unit types, or less than 30 total units, statistics were not produced as the sub-sample is so small. These are shown as "N/A" in Tables 10 & 10A.

25. The "average" size of a unit type can refer to the sample mean, the sample median or the population mean (and all three are used in the report). These average figures are then compared to the SPG standard.

26. It should be noted that if an **average** figure is close to the SPG standard then approximately half of all the dwellings will be below the standard. Similarly, if the average is above the standard, a significant proportion of the sample may still be below the standard.

Table 10

For Unit Types:	Flats					
	1B/1P	1B/2P	2B/3P	2B/4P	3B/5P	3B/6P
If bedroom occupancy assessed by 8.7m ² threshold						
Sample Median GIA	21	46	60	69	86	92
Sample Mean GIA	N/A	45	61	73	89	112
Pop. Mean GIA (95% confidence)	N/A	44-46	59-63	71-74	87-91	101-112
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 10.2m ² threshold						
Sample Median GIA	36	47	63	72	91	106
Sample Mean GIA	36	48	64	75	91	116
Pop. Mean GIA (95% confidence)	35-38	47-49	63-66	73-77	89-94	103-128
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 12m ² threshold						
Sample Median GIA	41	48	68	77	94	129
Sample Mean GIA	41	49	69	80	96	139
Pop. Mean GIA (95% confidence)	39-42	48-51	68-71	76-84	93-99	N/A
SPG Standard	37	50	61	70	86	95

Table 10A

For Total Units	Flats					
	1B/1P	1B/2P	2B/3P	2B/4P	3B/5P	3B/6P
If bedroom occupancy assessed by 8.7m ² threshold						
Sample Median GIA	21	46	61	69	86	92
Sample Mean GIA	N/A	45	61	71	87	106
Pop. Mean GIA (95% confidence)	N/A	44-45	60-62	71-72	87-88	101-112
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 10.2m ² threshold						
Sample Median GIA	34	47	62	70	86	108
Sample Mean GIA	35	48	63	73	89	108
Pop. Mean GIA (95% confidence)	35-36	47-48	63-64	72-74	88-90	101-115
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 12m ² threshold						
Sample Median GIA	42	47	68	79	92	108
Sample Mean GIA	41	49	68	78	94	123
Pop. Mean GIA (95% confidence)	41-42	48-49	68-69	77-79	92-96	N/A
SPG Standard	37	50	61	70	86	95

27. In total, **49% of units types (42% of total number of units in the sample) met or exceeded the GIA standards** set out in Policy 3.5 of the *London Plan*, when occupancy is determined by a bedroom size threshold of 10.2m². Figures 13 and 13A provide the breakdown.

Figure 13

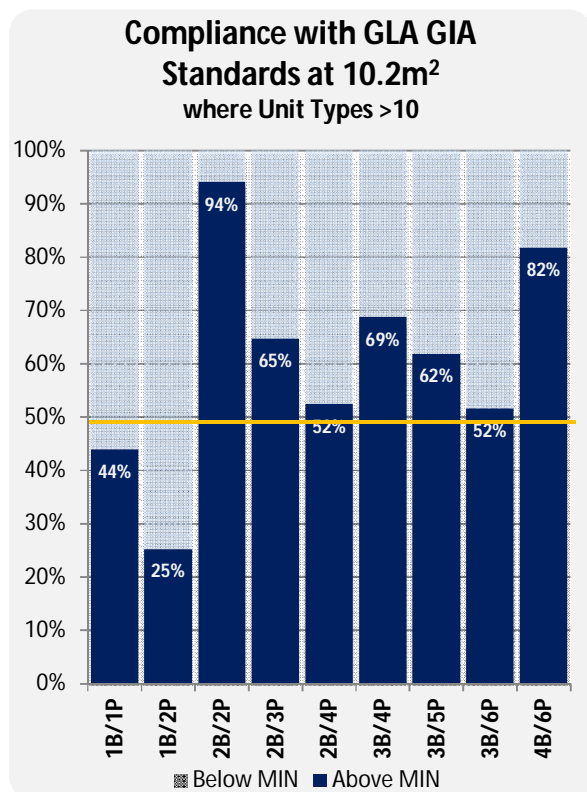
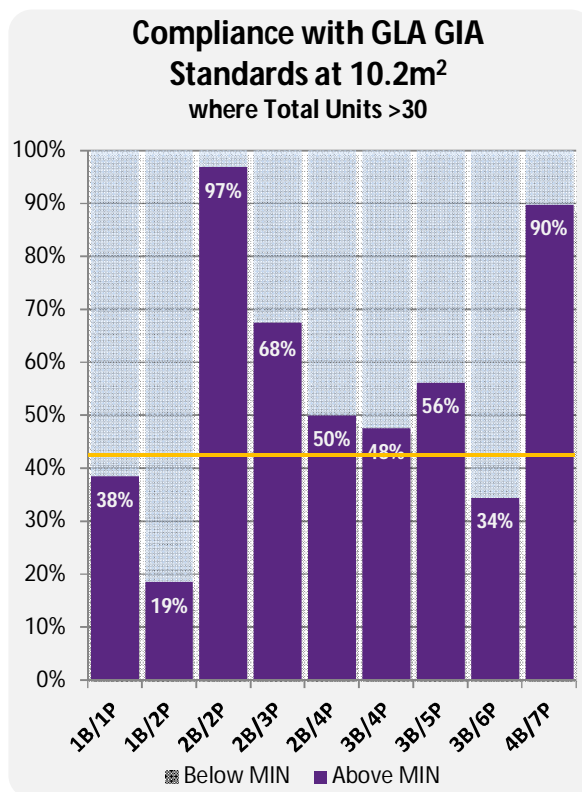


Figure 13A



28. Figure 19 shows the variance between the median sizes of different unit mixes and the SPG standard, assuming occupancy is assessed on the self-declared basis. Figure 19A

shows the same variance between the median dwelling size and the SPG standard, but calculating occupancy using the 10.2m² bedroom threshold

Figure 19: Variance of median GIAs from GLA minima (assuming self-declared/8.7m² bedroom occupancy threshold).

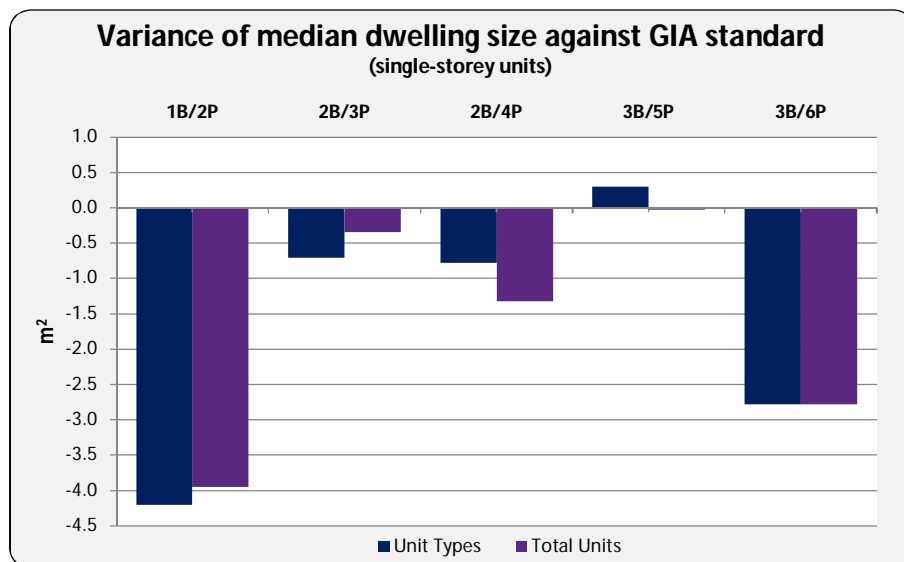
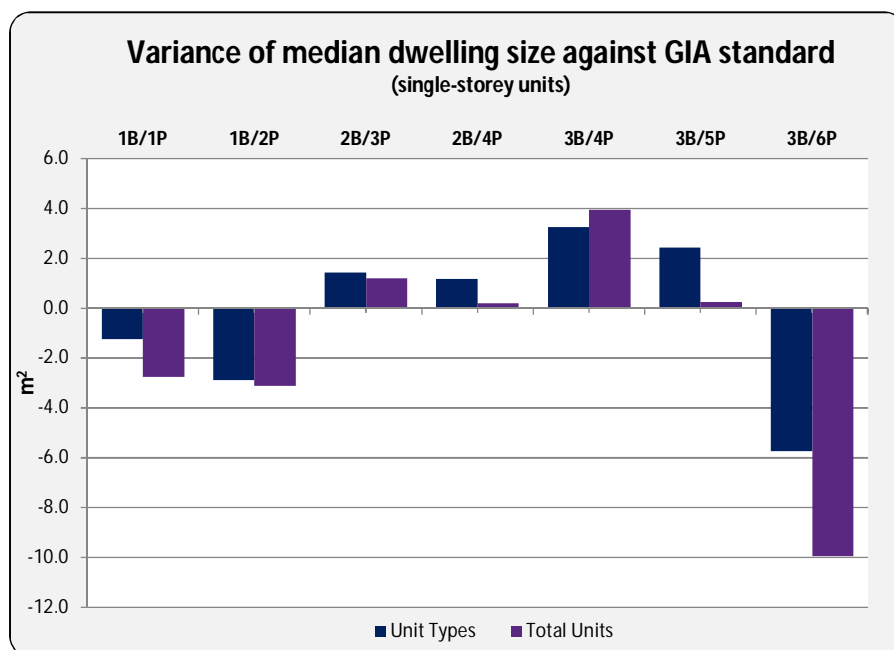


Figure 19A: Variance of median GIAs from GLA minima (assuming 10.2 m² bedroom occupancy threshold).



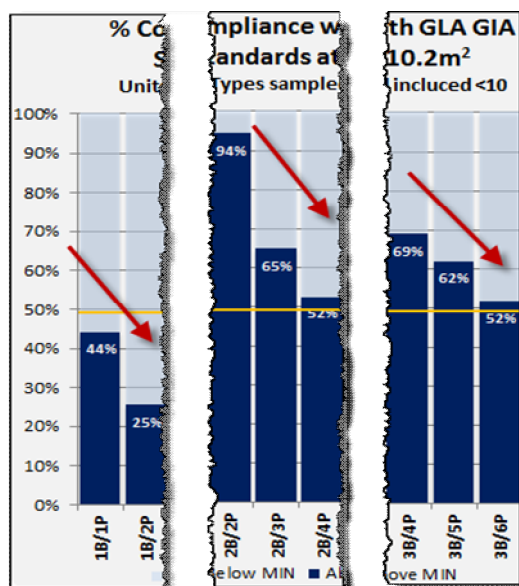
29. The average size of dwellings by bedroom (ignoring occupancy level) was also measured. The results are shown in Figure 30

Commentary on Headline Results

30. Less than half (49% of unit types and 42% of total units) of the sample met the GLA's 2011 GIA standards (Table 1).

31. The greatest shortfall was in dwellings where most bedrooms were suitable for 2 people; the highest levels of compliance were where all bedrooms were classified as single occupancy only. The highest level of compliance was the 2b2p unit type, with the 1b2p unit type showing the lowest levels of compliance.
32. Unsurprisingly, there are high levels of compliance for dwellings where the assumed occupancy level equates to, or is very close to the number of bedrooms. Where there is a large proportional difference between numbers of occupants and numbers of bedrooms (such as the 1b2p type) compliance levels are much lower than the average. This trend can be seen by taking Figure 13 and splitting it into the 1 bed, 2 bed and 3 bed categories as shown at Figure 14.

Figure 14: trends in compliance within bedroom categories



33. The median sampled dwelling sizes were below the SPG standards for 1-bedroom flats and for the 3b6p flats. Median size was above SPG standards for the sampled 2-bed flats and 3b4p & 3b5p flats. (If assessed on a self-declared level of occupancy, the median sampled dwelling sizes- for total units - were below the SPG standards for **all** dwelling types). (Tables 9 & 9A and Figures 19 & 19A)
34. The median for the sampled 1-bed flats was approximately 2m² below the SPG standard and (for total units) 10m² below the SPG standard for the 3b6p flats. (Figure 19A)
35. The levels of compliance were noticeably lower in designs for large schemes than for small schemes, with less than one in three of total units on large schemes complying with the new GIA standards (Table 1).
36. Only one third of units types comply with the space requirement for cooking/eating/living. This is reasonably consistent with the level of compliance against the total area for the dwelling (GIA) but which suggests, when coupled with the approximate 50% level of compliance with room width standard, that residents are likely to find the living areas cramped (Table 1).
37. The same pattern of approximately 50% compliance appears for bedroom size and width (Table 1).

38. There is almost no provision of a second living space in family dwellings (3 bedroom or larger), with compliance around 8% (Table 1).
39. There is almost 100% compliance with the requirements for entrance-level socialising space and two WCs in 5+ person dwellings i.e. the space-based *Lifetime Homes* requirements. Similarly, there are very high levels of compliance regarding lift access. This suggests that some significant accessibility requirements were being met in 2009/10 (Table 1).
40. Storage provision is at an extremely low level, with approximately 1 in 3 dwellings having no built-in storage at all. Less than 20% of dwellings complied with the SPG storage standards, and only approximately 5% complied with the *Interim London Housing Design Guide* storage standards (Table 1).
41. A similar finding emerges regarding private outdoor space, with 1 in 3 dwellings having none at all, and only approximately 20% of dwellings complying with the SPG standards. Also, the shape of many balconies meant that large proportions of the total area could not be used for relaxation activities (Table 1).
42. Approximately 2/3 of total dwellings were single aspect, 1 in 5 of the single aspect dwellings were North facing. Nearly 2 in 5 family dwellings (3-bed plus) were single aspect (Table 1).

Summary Recommendations

43. Future studies will need to assess compliance against the 10.2m² and 12m² threshold in order to be able to assess trends; it would also be useful if they identified the self-declared threshold for bedroom occupancy, to see if that moves over time;
44. In order for the London Plan Policy on dwelling GIAs to be implemented the GLA should provide guidance on a number of issues (which should be brought in as updated policy at the next opportunity), specifically:
 - that the term Gross Internal Area in the London Plan should be interpreted in accordance with the RICS definition of Net Sales Area;
 - ensure that London Boroughs set and use unit mix policies which link with London Plan Policy 3.5 on GIA, without which the effectiveness of the GIA policy is likely to be seriously compromised;
 - determining bedroom occupancy i.e. what size (or other) threshold distinguishes single occupancy from two-person occupancy of bedrooms;
 - clarify how rooms should be categorised as studies, second living areas or bedrooms to avoid the intent of Policy 3.5 being subverted;
 - highlight to the London Boroughs' planning and Trading Standards teams the danger that dwellings approved as being of a suitable size for one level of occupancy are then marketed as being suitable for a higher level of occupancy. The GLA may wish to undertake further research on this issue, and promote advertising of dwellings in terms of the dwelling GIA as well as number and size of bedrooms.
45. Other recommendations regarding the implementation of policy include:

- in future reviews of standards to give consideration to whether or not they should include a minimum kitchen area;
- the definition of family housing should not be expressed in terms of numbers of bedrooms, but occupancy, to align it with Policy 3.5;
- providing guidance on how to determine the cooking/eating/living area in bedsit/studios;
- providing guidance on how the width of irregular rooms is to be determined in order for planning officers to determine compliance with room width standards;
- consolidating the private outdoor space standards to avoid conflict between standards requiring minimum areas, and minimum lengths;
- highlighting to London Boroughs the existing requirement for all planning application drawings to show the direction North (many of which did not in the sample);
- introducing a requirement in London that planning application drawings should also show the NW-NE quadrant to help planning officers identify North facing, single aspect dwellings.

46. The report makes recommendations on development control issues:

- that the standardised planning application form, 1APP, is amended to gather the GIA data needed to evaluate whether the scheme complies with the Policy requirements;
- that the GLA and London Boroughs request GPS coordinates for the site, which is then published on the planning applications website, to facilitate community engagement;
- that the GLA and London Boroughs check whether furniture layouts shown on plans use standard or non-standard furniture sizes, when assessing compliance with the SPG requirements that rooms should be large enough to accommodate the stated items of furniture;
- that the GLA and London Boroughs request planning application drawings in CAD format not PDFs, to avoid fuzzy and poor-quality images that make it hard for planning officers (or researchers) to evaluate the designs;

47. The report makes recommendations on further research:

- the GLA should commission a follow-up study in 2014 or 2015 so that progress against the benchmark's established in this study can be identified;
- given that planning officers will probably pay less attention to dwelling types where 1APP declares that they are above the GIAs standard, the GLA should commission research into the accuracy of 1APP information provided by applicants, comparing it with the actual plans;
- as London Plan Policy 3.5 is clearly intended to have an effect beyond development control decisions, and reduce the incidence of Londoners

living in newly built, but instantly cramped housing, we recommend that research into the (in)consistency in occupation levels between those declared in the planning application and those shown in marketing literature;

- as this study looks at housing designed before the GLA standards were mooted, it has focused on market housing only (as affordable housing was being designed to long-standing standards). However, affordable housing should also be assessed against these new standards by repeating this research, but for affordable housing;
- Similarly, there is no evidence on the extent of compliance of accessible and wheelchair housing compliance with relevant standards; this should also be researched.

Introduction

48. The Greater London Authority (GLA) introduced new policies on housing standards in the *London Plan* which was adopted in July 2011. As part of their statutory responsibility to monitor the effectiveness of plan policies, the GLA commissioned this research in the spring of 2011 into qualitative aspects of housing being developed by the private sector before the new policies in the *London Plan* were introduced.
49. The quality issues addressed included the Gross Internal Area (GIA) of dwellings (Policy 3.5 of the *London Plan*) and a number of standards cited in the *Interim London Housing Design Guide* (August 2010) and which were incorporated into the consultative draft *Supplementary Planning Guidance* of December 2011.
50. The focus of the study has been to measure the GIA of housing developed for private sale, assessing compliance with the Standards of the *London Plan* 2011¹, as shown in Table 1:

Table 2 London Plan 2011 minimum space standards for new development

Unit Typology	Unit type (bedroom/ persons)	Minimum GIA (m ²)
Flats	1b1p	37
	1b2p	50
	2b3p	61
	2b4p	70
	3b4p	74
	3b5p	86
	3b6p	95
	4b5p	90
	4b6p	99
2 storey houses	2b4p	83
	3b4p	87
	3b5p	96
	4b5p	100
	4b6p	107
3 storey houses	3b5P	102
	4b5p	106
	4b6p	113

¹ set out in Table 3.3 of the London Plan.

51. The results of the survey therefore form a benchmark for aspects of housing quality which can be used in conjunction with the results of future surveys, to help identify the effect of the introduction of these new Plan policies.
52. The quality standards assessed as part of this study were drawn initially from the *London Housing Design Guide*. These standards were then incorporated into the December 2012 draft *Supplementary Planning Guidance* and so are referred to as SPG standards in this report. The standards examined in this study are:
- Dwelling size (GIA1) (4.1.1);
 - The combined cooking/living/eating area in the dwelling (4.4.1);
 - The minimum width of the main living area in the dwelling (4.4.2);
 - Whether 3-bed plus dwellings have two living spaces, both with external windows (4.4.3);
 - Whether the dwelling has a living area at entrance level (4.4.5);
 - Bedroom area for single bedrooms (4.5.1);
 - Bedroom area for double/twin bedrooms (4.5.2);
 - Area of a built-in general storage (4.7.1);
 - Area of private outdoor open space (4.10.1);
 - Depth and width of all balconies (4.10.3);
 - Single aspect combined with orientation (5.2.1).

¹ See Definitions in Appendix 2

Research Method

What was Included: the Study Population

Terminology

53. A group of properties, such as encountered in studies such as this, will contain a variety of property types that can be described using a variety of terms such as typologies, unit mix, unit types etc. These terms are not always used consistently in the industry, and so are defined here:

- **Typology:** dwellings of different forms such as flats (apartments), maisonettes, bungalows, 2-storey houses, 3-storey houses etc.
- **Unit mix:** differentiates by the numbers of bedrooms and people e.g. a 1b2p dwelling verses a 2b3p dwelling or a 3b5p dwelling;
- **Unit type:** one specific design. For example, two 1b2p flats with different layouts and / or sizes would represent a single typology (flats) both be of the same unit mix (1b2p), but would be two different unit types.
- **Total units:** all dwellings, regardless of typology, mix or unit type.

Permissions or Completed Schemes?

54. Given that the purpose of the research is to identify aspects of housing quality being delivered by private housebuilders before the *London Plan* policies came into effect, the question arose whether to assess only completed schemes or those that had received planning permission.

55. The argument in favour of the former approach is that the research would report on what was actually built as opposed to schemes with planning permissions, some of which are never actually constructed.

56. The argument in favour of the latter approach is that the Plan policies only indirectly influence what is ultimately built, but directly influence what is approved through the planning process. Furthermore, the effect on policy changes will be felt more quickly than for completed developments, allowing trends to be identified more swiftly.

57. It was therefore decided that the study should look at approved plans rather than as-built. With a focus on planning permissions, the study used the London Development Database as a starting point. The London Development Database records all planning permissions granted by London Boroughs, covering outline permissions, full permissions, reserved matter permissions and Certificates of Lawful Use. It includes information about the number of new homes proposed (including highlighting where property is simply being demolished without replacement by scoring the new homes produced as zero), the number of the dwellings on the scheme that are affordable as well as some breakdown by unit type and tenure.

Time Period

58. As the purpose of the research is to look at planning permissions granted before the policies of the emerging *London Plan* began to influence designers, the GLA proposed that the study should consider planning permissions granted in London over the period July 2009 – June 2010 to provide a snapshot in time which can be used as a benchmark for future monitoring. An extract of the London Development Database for this period

was provided and this supplied the starting point for the population for the study, from which the sample was drawn.

Exclusions

59. The London Development Database for the period July 2009-June 2010 included 4,512 schemes totalling 56,879 units¹. Nearly all of the standards examined by this study are only articulated in designs contained in full planning applications. The study therefore excluded planning permissions relating to:

- outline permissions, reserved matters & Certificate of Lawful Use (335 schemes in total);
- demolition-only schemes (139 schemes)

60. The study also excluded affordable homes as they are already subject to quality standards², and would therefore partially obscure the effect of the new policies in the *London Plan*.

61. Therefore, any schemes in the population that were 100% affordable were also excluded prior to the population being sampled (266 schemes).

62. For those schemes in the sample that included both private and affordable dwellings, only the private dwellings were measured and assessed. All affordable types of units would merely be counted to satisfy specific statistics requiring Block unit counts.

The Study Population

63. The study population consisted of the full list of schemes that received a full planning permission from the London Boroughs for the period July 2009-June 2010, excluding affordable-only projects. This was 3,774 schemes with 33,235 units. The schemes ranged in size from single-unit schemes to a scheme of 919 units.

64. The schemes included dwellings which are affordable (under Section 106 Agreements). Of the total 33,235 units in the study population, 25,257 were market-sale with the remainder being affordable. Affordable units therefore represented 24% of the total units included in the study population.

65. The LDD also included planning permissions for dwellings described as "live/work" units and for cluster flats. Both of these were omitted from the study population as the SPG standards referred to residential use only, and self-contained dwellings only.

66. The study population can be broken down by LDD typology and number of bedrooms of the properties included in the approved plans as shown in Table 3:

¹ There is a discrepancy between the units totals in two parts of the Database. The 'Scheme Summary' worksheet total shows 56,879 units, whilst the breakdown into different dwelling types and tenures (the 'Approvals Line Level' worksheet) shows a total of 53,988, a difference of 2,891 units. The figures in this report come from the 'Approvals Line Level' totals, as this worksheet contains the information regarding type of development (conversion, new building etc).

² Dwellings designed for social rent would have had to comply with the requirements of the Housing Corporation's/HCAs quality standards set out in Scheme Development Standards or Design & Quality Standards (depending upon the year in which the scheme received grant funding). Some housing associations also set equivalent or similar standards for shared ownership dwellings. Therefore, any affordable dwelling was either definitely subject to a pre-existing set of quality standards, or may have been subject to such standards. All affordable dwellings were therefore excluded from the study to avoid bias.

Table 3: breakdown of the study population by typology and numbers of bedrooms

	<i>Studio</i>	<i>1 bed</i>	<i>2 bed</i>	<i>3 bed</i>	<i>4 bed</i>	<i>5 bed</i>	<i>6+ bed</i>	<i>Total</i>	<i>%</i>
Flats	1,194	8,655	10,360	2,298	216	36	14	22,773	90%
House/ Bungalow	0	141	427	852	679	224	161	2,484	10%
Totals	1,194	8,796	10,787	3,150	895	260	175	25,257	
Percentage	5%	35%	43%	12%	4%	1%	1%		

67. The breakdown of scheme type together with the mean and median numbers of dwellings per scheme for each type of scheme are shown in Table 4:

Table 4: study population scheme types with their mean, medians and 3rd quartiles

	<i>Mean</i>	<i>Median</i>	<i>3rd Quartile</i>
<i>New Residential Building</i>	18	2	6
<i>Conversion of Dwelling(s) or ancillary C3 floorspace</i>	3	2	3
<i>Extension to building for residential unit(s)</i>	2	1	3
<i>Change of use of Non-Res floor space to Dwelling(s)</i>	3	1	3

68. The difference in the mean and median figures for the new developments suggested that the population included a few very large schemes. The sample is actually very skewed:

- the largest 5% of the schemes accounted for 70% of the units;
- the largest 1% (approximately¹) of schemes accounted for 50% of total units .

¹ 1.3% of schemes accounted for 50% of the units in the study population.

The Sample

Sample Size & Stratification

69. The agreed sample size was 90 schemes which, it was assumed, would result in approximately 400 private sale dwelling types being assessed¹. 90 schemes is 2.4% of the schemes in the population. 400 market-cell units represents 1.5% of the total units in the population.
70. Given the highly asymmetric distribution of scheme sizes around the mean there was a concern that a purely random sample may not contain any large schemes; it was quite likely that the 90 schemes might represent only 90 units types and 90 units in total. This would mean that the study examined only 0.4% of the total units in this study population, which would undermine the usefulness of the research.
71. However, as well as needing to ensure that the study contains sufficient units types and total units to be credible, it was also important to ensure that the focus was not narrowly directed towards only large-scale newbuild developments. The level of compliance with the SPG standards of small-scale newbuild and conversion schemes was also an important part of the study.
72. It was therefore decided to employ two samples from the study population, one drawing from larger schemes, and one from the remainder of the population. As 50% of the total units were contained within the largest 1% of schemes (approximately 40 schemes), it was felt that sampling this sub-population at a level of approximately one third would deliver a large number of units types and total units, making the research as a whole more representative. It was therefore agreed that 15 large schemes would be randomly sampled from the largest 40 schemes in the study population, with the remaining 75 schemes randomly sampled from the rest of the study population.
73. Due consideration was given to the idea of stratified sampling by sub-region, unit typology etc but it was agreed that each sub-sample (a large and small) should be generated randomly without being further stratified.
74. The schemes in each sub-sample were selected using a random number generator in an Excel spreadsheet to identify the row numbers in the London Development Database extract "Scheme Summary" page. Table 5 provides a summary of the sample data.

¹ When tendering, the proposed method was to sample all 90 of the schemes that had newly-built dwellings for sale at that time, according to the London Residential Research database. Although the project method was amended, the scope remained the same.

Table 5: breakdown of sample and sub-samples by unit types and total units

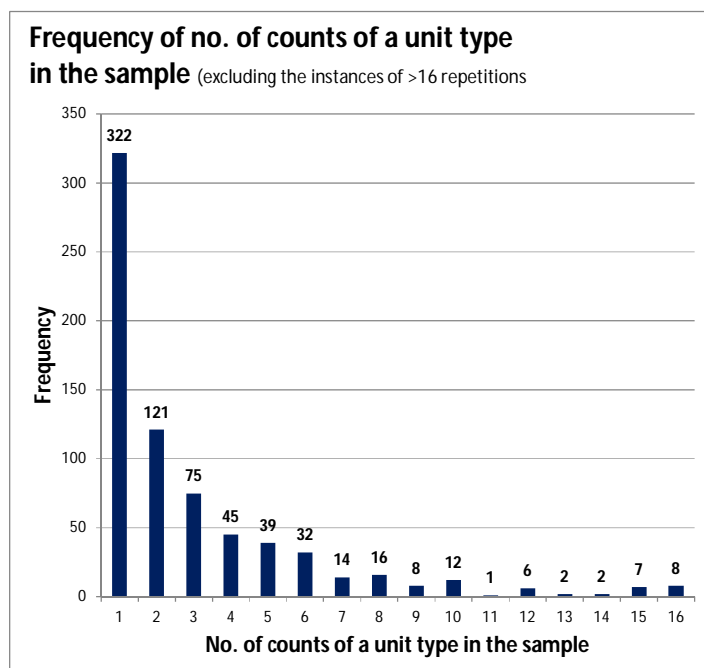
	<i>Sub-samples</i>		<i>All Schemes</i>
	<i>Large schemes</i>	<i>Small schemes</i>	
No. of Schemes in sub-samples	15	75	90
No. of Unit Types	542	198	740
No. of Total Units	2,948	292	3,240

Unit Types & Unit Numbers – the amount of repetition

75. Some schemes (322) had as many unit types as units in the scheme – each type featured only once. However in some schemes - mainly the larger schemes - a unit type was often repeated many times. This usually occurred when a group of (say) five different dwellings formed a complete floor in a block of flats. That complete floor would then be repeated for several stories in the block. Thus, each unit type may feature only once in the sample, but it may be counted many times amongst the total units. One unit type occurred 81 times in a scheme.

76. Figure 1 shows the frequency with which a unit type featured only once in the total units, twice, or higher at counts. There were 322 unit types that only featured once; on 121 occasions a unit type was counted twice; 75 times where there were 3 units of the same type etc. There were relatively few unit types where the count was greater than 30, although some unit types were repeated extensively: 37 counts (seven schemes), 39 (two schemes), 43, 51, 67, 71 & 81 counts occurred only once each.

Figure 1



Unit Mix & Typologies

77. Table 6 and Table 6A show the breakdown of the sample (both large and small sub-samples) by unit mix and typology (built form), firstly by unit type, and secondly by total units. Figures are shown by numbers and percentages of the total. N.B. - this is a different (more detailed) set of typologies than the LDD typologies referred to in Table 3.

NB: dwellings were categorised into the unit types shown using the self-declared/8.7 m² bedroom threshold, not the 10.2 m² threshold.

Table 6: sample breakdown by unit mix and typology (for unit types)

Unit Types	Bedsit/ Studio		Flat		Maisonette		Bungalow		House 2storey & Duplex Flat		House 3storey		Grand Total	
1B/1P	12	2%	1	0%									13	2%
1B/2P	43	6%	222	30%	1	0%			1	0%			267	36%
2B/3P			52	7%	6	1%			1	0%			59	8%
2B/4P			243	33%	16	2%	2	0%	3	0%			264	36%
3B/4P			4	1%									4	1%
3B/5P			48	6%	10	1%			8	1%	1	0%	67	9%
3B/6P			17	2%	20	3%			2	0%	1	0%	40	5%
4B/5P			1	0%									1	0%
4B/6P			1	0%	1	0%			3	0%			5	1%
4B/7P			2	0%					3	0%	3	0%	8	1%
4B/8P			1	0%					2	0%	3	0%	6	1%
5B/10P									1	0%	3	0%	4	1%
6B/11P											1	0%	1	0%
6B/12P											1	0%	1	0%
Grand Total	55	7%	592	80%	54	7%	2	0%	24	3%	13	2%	740	100%

Table 6A: sample breakdown by unit mix and typology (for total units)

Total Units	Bedsit/ Studio		Flat		Maisonette		Bungalow		House 2storey & Duplex Flat		House 3storey		Grand Total	
1B/1P	12	0%	1	0%									13	0%
1B/2P	233	7%	1217	38%	1	0%			1	0%			1,452	45%
2B/3P			134	4%	6	0%			1	0%			141	4%
2B/4P			1226	38%	19	1%	3	0%	3	0%			1,251	39%
3B/4P			9	0%									9	0%
3B/5P			169	5%	22	1%			24	1%	2	0%	217	7%
3B/6P			38	1%	20	1%			7	0%	16	0%	81	3%
4B/5P			1	0%									1	0%
4B/6P			1	0%	1	0%			6	0%			8	0%
4B/7P			5	0%					7	0%	32	1%	44	1%
4B/8P			4	0%					3	0%	9	0%	16	0%
5B/10P									1	0%	4	0%	5	0%
6B/11P											1	0%	1	0%
6B/12P											1	0%	1	0%
Grand Total	245	8%	2805	87%	69	2%	3	0%	53	2%	65	2%	3,240	100%

78. Some of the information in Table 6 and 6A - the breakdown of typologies and the mix of unit types - are shown graphically in Figures 2 and 2A.

Figure 2

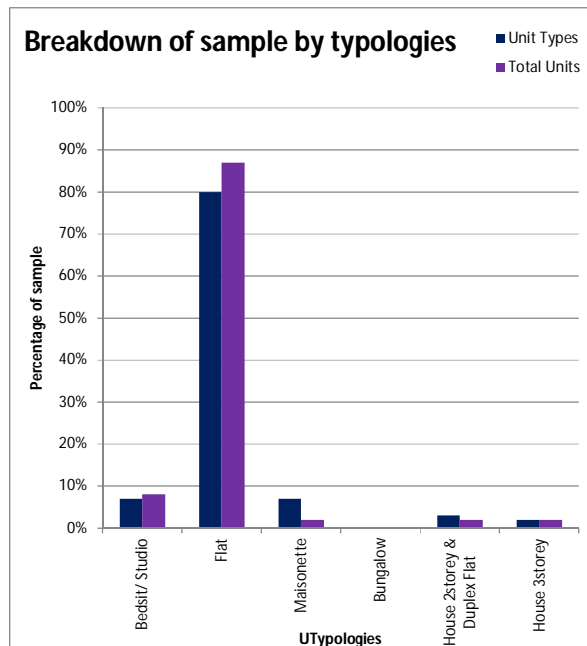
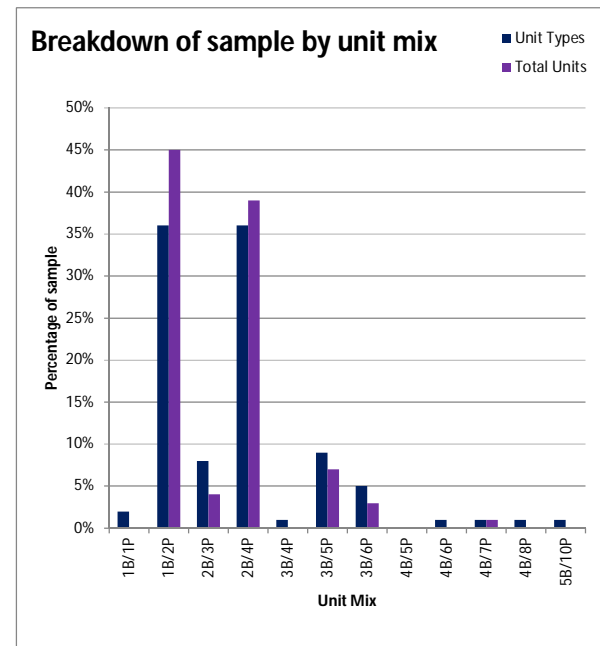


Figure 2A



79. Figure 2 shows that 87% of units types are apartments - bedsits and flats - with a further 7% being maisonettes. In terms of total units in the sample, bedsits and flats account for 95% with maisonettes are further 2%. Only 4%¹ of the total units (5% of units types) are houses, bungalows or duplex flats (maisonettes with ground floor entry-level).

80. Figure 2A shows that the overwhelming majority of unit types are 1b2p and 2b4p dwellings (72% of unit types and 84% of total units in the sample). 19% of unit types (11% of total units) had 3 or more bedrooms.

¹ Total adds up to 101% arising from rounding.

Characteristics of the Study Population and Sample

Regional Distribution of Study Population and Sample

81. The pattern of regional distribution of schemes by number of units (not unit types) are shown in Figures 3 & 3A. Schemes in the East region are over-represented at the expense of those in the North region.

Figure 3: Study population by sub-region.

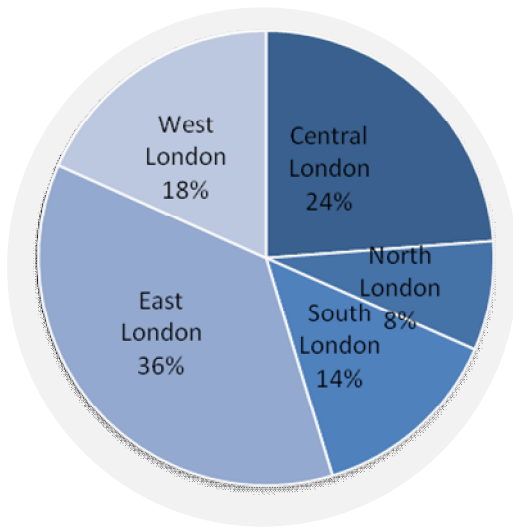
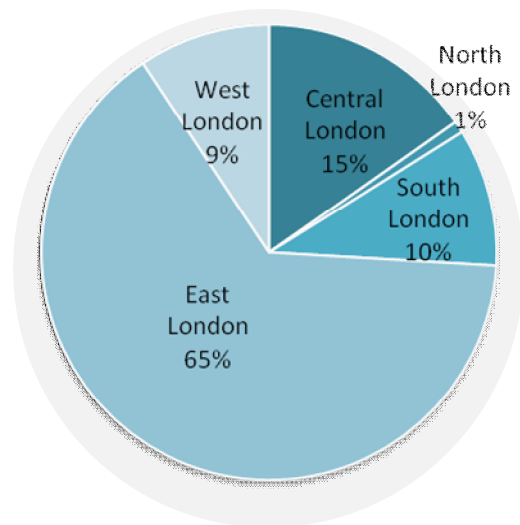


Figure 3A: Study sample by sub-region.



82. In terms of scheme type, the sample contained a higher proportion of new residential buildings than the study population. This is a natural consequence of stratifying to ensure that there was a suitable number of larger schemes in the sample. See Figures 4 & 4A.

Figure 4: Study population by scheme

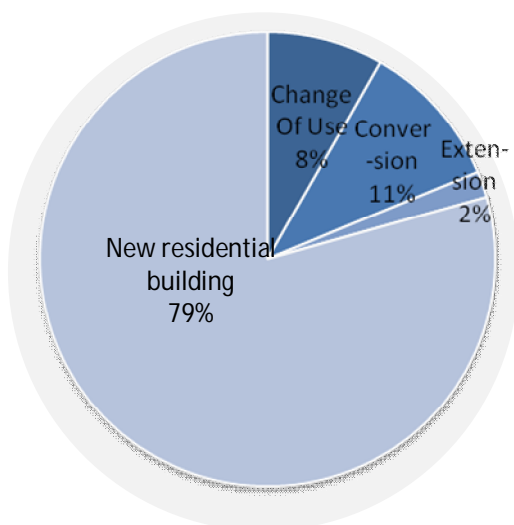
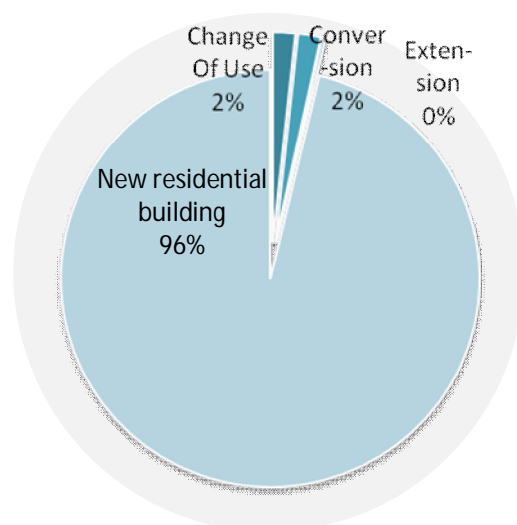


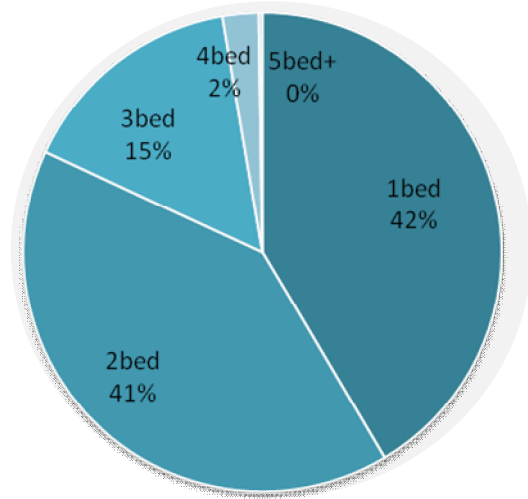
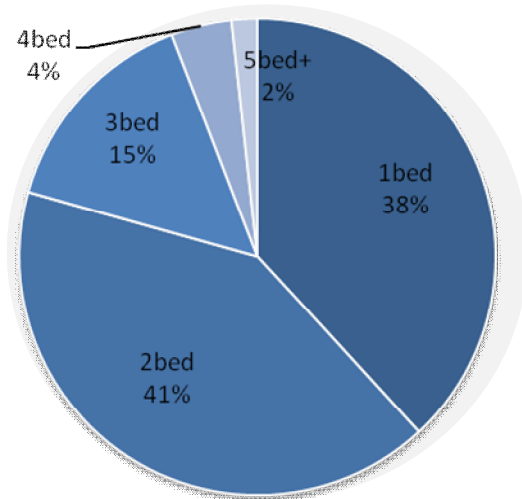
Figure 4A: Study sample by scheme



83. The sample closely reflects the study population in terms of dwellings when scored by number of bedrooms (Figures 5 & 5A). The sample contains a slight over-representation of 1-bed dwellings at the expense of 5, 6 and 7 plus bed dwellings. Again, this is likely to stem from the decision to stratify the sample to ensure enough large schemes were included.

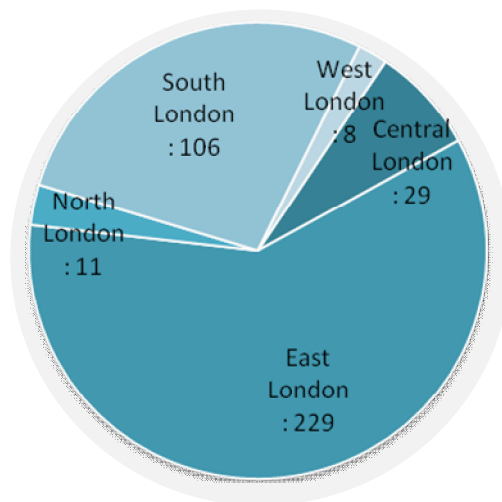
Figure 5 : Study population by bedroom

Figure 4 : Study sample by bedroom type



84. Given the interest in family-sized dwellings the sample was analysed to show the sub-regional distribution of 3-bedroom dwellings and larger¹. These are shown in Figure 6.

Figure 6 : Sub-regional distribution of 3+bed dwelling in sample



¹ The London Plan defines family accommodation as having 3 or more bedrooms.

85. The sample also closely reflects the study population in terms of dwelling type. There is a slight under-representation in the sample of houses/bungalows and an equivalent over-representation in the studio/bedsits. Again, this is a consequence of the decision to stratify in terms of scheme size. See Figures 7 & 7A.

Figure 7: Study population by dwelling type

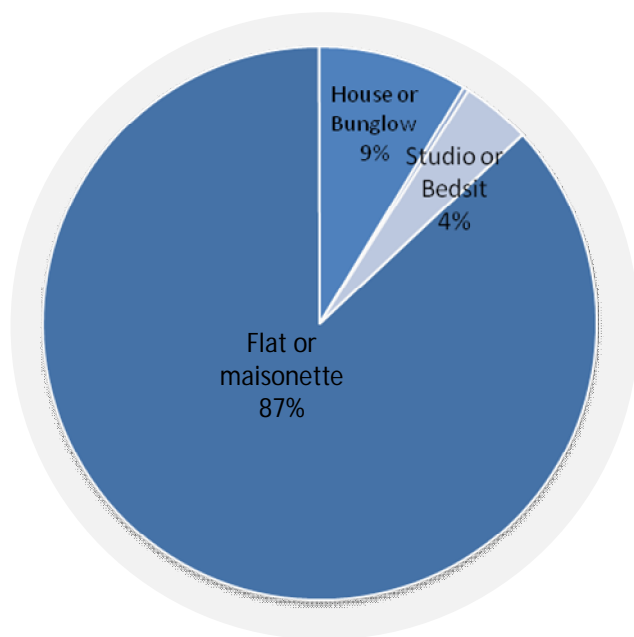
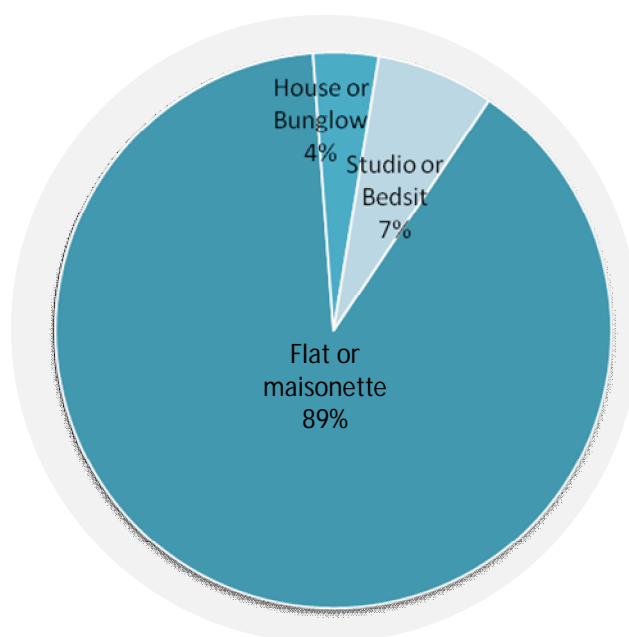


Figure 7A: Sample by dwelling type



Method & Validation

Obtaining the Data

86. Schemes were selected for the sample by using a random number generator to identify rows in the London Development Database "Scheme Approvals" sheet. Each row represented one scheme and provided a planning application reference number.
87. Planning application drawings that have been approved were downloaded from the relevant Borough's website.
88. Nearly all plans downloaded were in Portable Document Format (PDF); these were imported into AutoCAD. As the PDFs were of standard ISO sizes (A1, A2 or A3) of known dimensions, the resulting AutoCAD plans could be accurately scaled.
89. Planning application documents were reviewed to identify which units in the scheme (if any) were affordable. Affordable units were excluded from the sample.
90. Many of the original sample of the 15 large schemes did not provide sufficiently detailed information about which units were affordable and which were not. Design & Access Statements and/or Section 106 Agreements always identified the unit mix of the scheme i.e. how many dwellings were for private sale, and how many were affordable - usually distinguishing between social rented and shared ownership. However not all plans showed the proposed tenure of the individual units.
91. Where this information was not available from the planning application documents, the original designers and/or developers were contacted and asked to provide a definitive schedule. This yielded the necessary information in some cases, but not for all.
92. Some of the original sample schemes were also excluded because of a lack of information on the drawings (e.g. kitchen layouts, anticipated use of room/space), or because of imprecise information usually blurred drawings that did not permit accurate measurements to be made.
93. Where the information was not available the scheme was excluded from the sample and another randomly-chosen scheme was substituted.

Capturing the Data

94. A bespoke relational database was developed for this project in Microsoft Access.
95. Data entry was via a Form created for the purpose.
96. Data consisted of areas and linear dimensions drawn from AutoCAD, scoring
 - the incidence of services such as number of WCs;
 - applies/does not apply checkboxes for building or unit characteristics such as second living area, balcony, single aspect etc;
 - dwelling GIA;
 - habitable areas, corridors, storage areas etc.

Validating the Data

97. Data was validated in three ways:

- The database fields were set to receive specified forms of data, within anticipated ranges to reduce the probability of serious input error¹;
- The individual areas measured within each dwelling were summed and compared with the measured GIA. As the only difference should be the space taken up on plan by non-structural partitions, the expected ratio of these two figures would be in the range of approximately 92%-98%². Results outside this range were checked resulting in corrections in 47 out of the 740 cases.
- 10% of the scheme measurements and assessments were independently checked to identify any systematic errors. None were found, although some individual corrections were made. The main benefit of this validation check, however, was to help clarify the Definitions of the spaces to be measured (see Appendix 2).

Definitions

98. Detailed definitions of the areas are set out in Appendix 2.

99. There were 5 areas where more careful definitions needed to be drawn:

- notional corridors,
- balcony area
- single/dual aspect
- Bedsit/Studio sleeping area
- Bedroom occupancy

Notional Corridors:

100. Historically, the circulation area in the dwelling needed for the residents to move from one room to another was partitioned off and so was patently unusable as living, heating, cooking or sleeping area. However, partitioned circulation areas dictate the routes that residents must use to get from one part of the dwelling to another. Open-plan layouts offer residents the opportunity to choose how to move from (say) the door of the kitchen / dining / living room to the garden or balcony.

101. Open plan designs allow residents choices over how to move around multi-function rooms, but does not remove the need for them to have the space to move. In this study, therefore, an assessment has to be made of the extent of "notional corridors" within dwellings.

102. In practice, residents will arrange their furniture in a way which balances their preferred locations of items of furniture with creating convenient pathways to the space's ingress and egress points. Different people will have different furniture layouts.

¹ known as Validation Rules.

² The *Interim London Housing Design Guide* contains an assumption that approximately 5% of GIA will be taken up by non-structural internal partitions. It was found that where the aggregate of the individual areas was less than 92% or more than 98% of the measured GIA, there had been measurement errors. However, within the 92%-98% band no errors were found. This suggests that non-structural partitions take up 2%-8% of GIA.

103. Illustrations 1-4 show example routes to the balcony for an example flat with a typical complement of furniture in an open plan kitchen/dining/living space. The resident or visitor, entering through the door from the hallway, will need to be able to get to the kitchen area and the balcony. To do so, they will need to be able to move reasonably conveniently through the open plan room, which is illustrated by a notional corridor (blue) which is 750 mm wide.

Illustration 1.

One option would be to allow movement through a large open area created by setting back sofas etc.

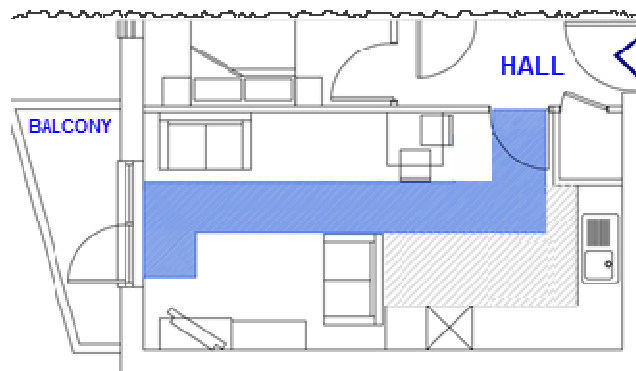


Illustration 2

An alternative furniture arrangement - a cosier, tighter area - would allow access to the balcony to be around the perimeter of the room. Both of these options illustrate the large amount of floor area that cannot be used for furniture etc as it would get in the way of access to the balcony. Notional corridors, like partitioned corridors, can be extensive.

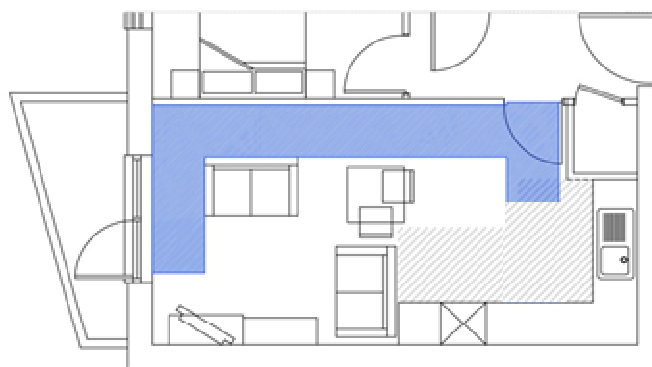


Illustration 3

A more prudent approach would be to only consider the need for residents to get from the doorway to the kitchen area, and ignore the space needed to reach the balcony.

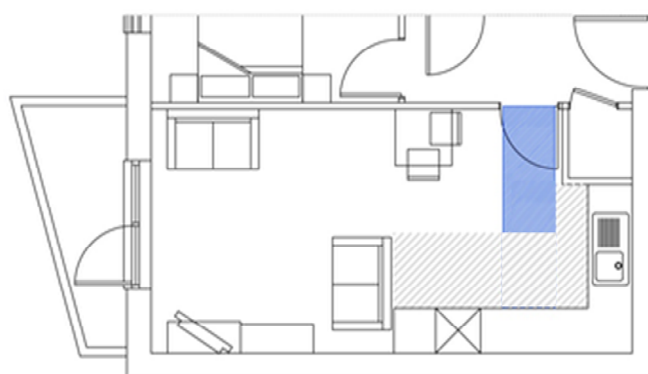
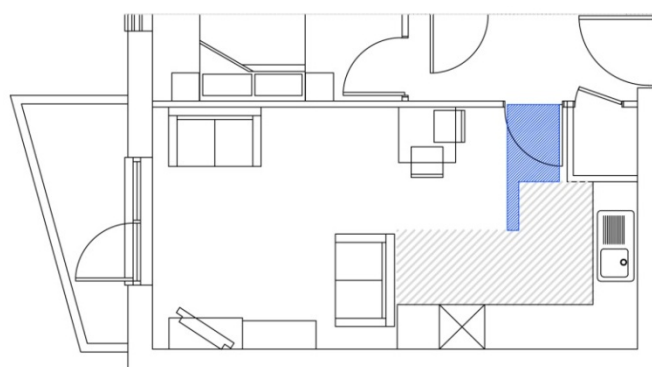


Illustration 4

This shows the approach adopted by this study - the notional corridor has been curtailed where it overlaps with space that is considered part of the kitchen (the 1 m deep space in front of worktops).



104. Depending upon the layout of rooms (the point of ingress and egress) notional corridors can take up relatively little space, or can take up a considerable part of what appears to be habitable area. In other words, this is a material issue. Whilst the question of notional corridors has been raised previously¹, it is a relatively new issue upon which there is as yet no general agreement. For the purposes of this report, therefore, notional corridors were assessed deliberately prudently - arguably unrealistically so – as shown in Illustration 4. The only area classified as notional corridor was the space needed to get from the door / opening off a hallway to the kitchen area. All other notional corridors were ignored.

105. Where identified, notional corridors were the most direct route ignoring furniture layouts on drawings, as these are illustrative only and do not necessarily bear any relationship to how the space will eventually be used by the various households who will live there over time.

Balcony area:

106. Balconies come in a variety of shapes and sizes, some more usable than others. The study distinguishes between total balcony area and usable balcony area. 'Usable balcony area' excludes those parts of the balcony that are less than 1500 mm wide or deep in accordance with the standard set in the *Supplementary Planning Guidance*.

Illustration 5

The study reports the total area of this regular, rectangular balcony. However as the balcony is less than 1.5 m deep for its entire width, none of it is usable and so the usable area is reported as 0 m².

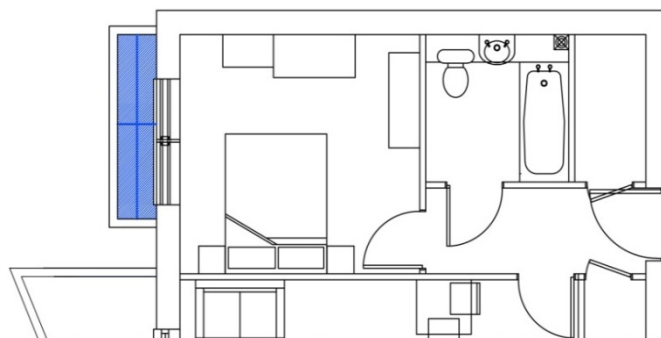
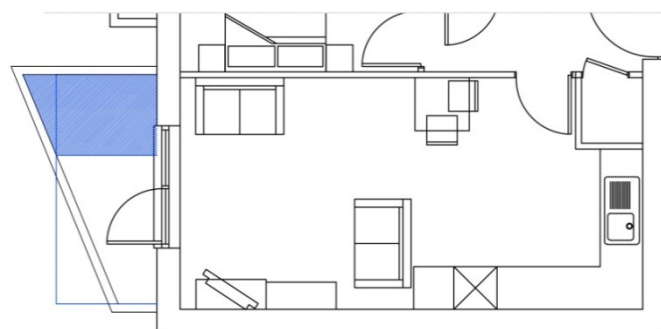


Illustration 6

The study will report on the total area of this irregular-shaped balcony. However, the usable area is the part of the balcony shaded blue i.e. the area that is at least 1.5 m deep.



¹ *Room to Swing A Cat?*, HATC, 2010

Single / Dual Aspect

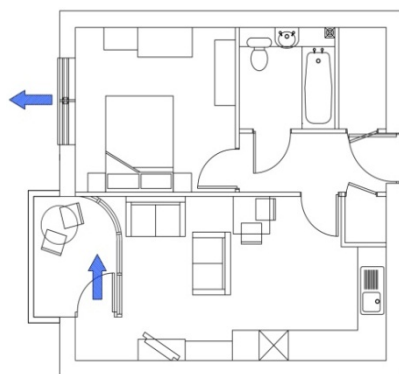
107. The *Supplementary Planning Guidance* states that "A dual aspect dwelling is defined as one with openable windows on two external walls, which may be opposite or adjacent around a corner. One aspect may be towards an external access deck or courtyard".
108. This report has interpreted the phrase "around the corner" to mean that the internal angle between the planes of the windows should be 90° or less. The internal angle between windows on opposite sides of the building (where the walls run in parallel) would be 0° .
109. As well as the relative orientation of openable windows, there is the question of their size. The benefits to the residents for which "dual aspect" is a proxy are increased levels of light and the opportunity to have natural through-ventilation to (most of) the dwelling. Both of those require sufficient areas of glazing and opening. A very small window in a WC may not be enough to turn an otherwise single-aspect dwelling into a dual-aspect dwelling.
110. In a dual aspect dwelling, therefore, has been defined as one which has openable windows that are suitable for a habitable area, at an internal angle of 90° or less relative to each other and which are in different habitable areas.

Illustration 7



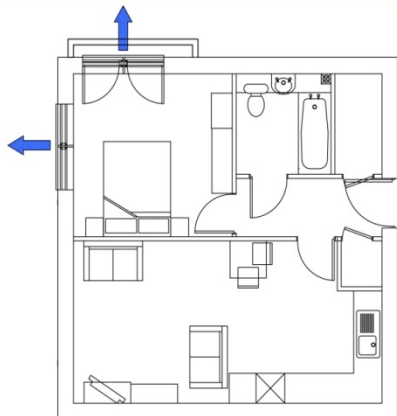
This flat is clearly dual aspect as it has windows on opposite sides of the dwelling sufficiently large to let in a useful amount of light and provide a view to the residents. Assuming the window is openable it also provides reasonable ventilation.

Illustration 8



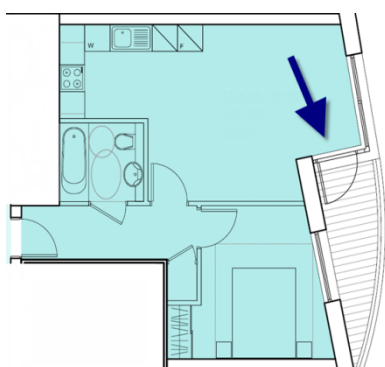
This flat would be classed as single aspect. The balcony door and the window to the bedroom are in different habitable areas, and are set at 90° to one another. However, the balcony door is recessed behind the elevation to the flat and is set in the corner of the living area. It would not allow noticeably improved levels of light internally, nor offer any kind of view beyond that already available from the living room windows. Neither is it on a different elevation from the bedroom window and so does not help with ventilation.

Illustration 9



This flat would be classed as single aspect because although it has sizeable openable windows on different elevations at a 90° angle to one another, both open onto the same habitable area. In reality, such a flat would have a window in the living area, which would render it a dual-aspect dwelling.

Illustration 10



This example highlights the difficulty of providing a comprehensive definition of single aspect. Unlike Illustration 8 the doorway to the balcony **does** have an unobstructed view in a different direction from the adjacent window in the living area and the bedroom. Also, it is not set in the corner.

However the flat was classified as single aspect because it did not add significantly to the light entering the dwelling or assist with ventilation.

Bedsit/Studio area

111. In order to assess compliance with the *Supplementary Planning Guidance* Standard for a minimum cooking/eating/living space, an assumption has to be made about how much of a bed sitting area should be counted as the sleeping area so that the cooking/eating/living space could be deduced.
112. The bedsit/studio plans that were approved contained furniture layouts showing both single bed and double beds in the dwellings. Assumptions therefore had to be made for both single-person occupancy and two-person occupancy.
113. The most obvious assumption would be to use the standards in the SPG of 8 m² for a single bed space and 12 m² for a double bed space. However, it was apparent from visual inspection that if that amount of space were deemed to apply to the sleeping area, there would be very little space indeed for the cooking/eating/living area in many of the bedsit units types.
114. It is difficult to mount a convincing argument that the amount of space needed to meet the various functional requirements of a sleeping space is less in a bedsit than any other form of dwelling. Less space is taken up on plan by partitioning, but the occupant

still needs a bed, space to store clothing, to move around and get dressed. There is therefore a strong case that normal bedroom standards should apply, and if the remaining space that can then be considered available for cooking/eating/living falls well below its standard, then it simply highlights the inadequacy of the total space available to the occupant(s).

115. However, to avoid any possibility of this study being vulnerable to criticism that it exaggerates non-compliance, a very prudent (unrealistically minimalistic) assumption was made about the space deemed to be attributable to sleeping areas, prior to assessing compliance with cooking/eating/living areas in bedsits. This study, therefore, exaggerates bedsit compliance with the cooking/eating/living standard.

116. The normal assumption for bedroom furniture requirements for a single person is

- a single bed,
- a bedside table,
- a chest of drawers,
- a table and chair,
- a single wardrobe,
- associated access, passing and activity zones,

all with defined dimensions (ILHDG Appendix 2).

117. The prudent assumption was that bedroom furniture a requirement for a single person in a bedsit/studio is:

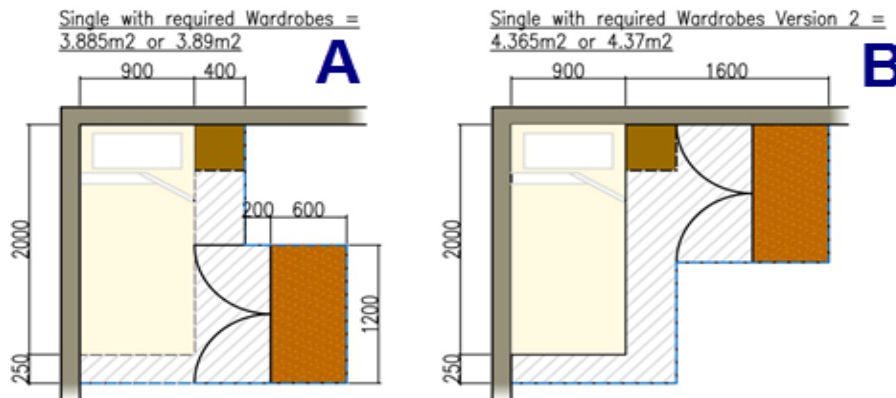
- a single bed,
- a double wardrobe,
- associated access, passing and activity zones,

118. It was assumed that the resident would use the dining table rather than a bedroom table/chair. Also, the space required on plan for a chest of drawers and its associated access zone is less than that of a single wardrobe. A second wardrobe was therefore substituted for the chest of drawers. Instead of two single wardrobes a double wardrobe is shown.

119. Layout A in Illustration 11 shows the smallest area that will accommodate these requirements at 3.9 m². However, it is probably an unrealistic layout, requiring a wardrobe to be in the middle of circulation space. Layout B is a much more realistic furniture arrangement with the wardrobe against the wall. However it takes up nearly an extra 0.5 m² because the access zone for the wardrobe (the door swings) do not overlap the access zone for the bed as much as in Layout A.

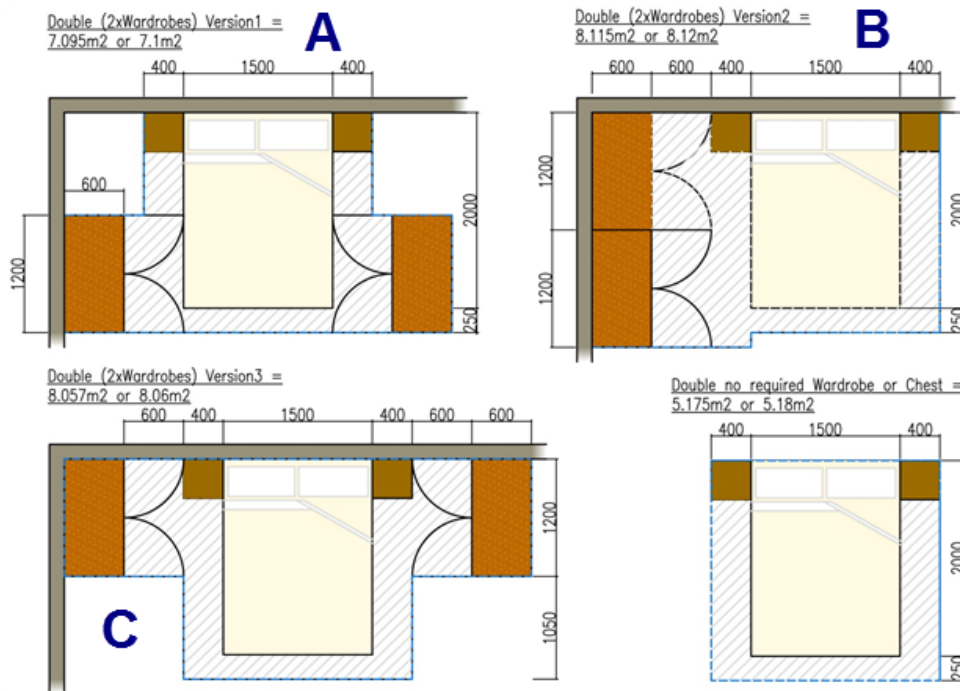
120. Although it probably under-states the amount of space taken up by the sleeping area, the study used the assumption of 3.9 m² for the sleeping area in single-person bedsit/studios.

Illustration 11



121. Following the same logic the furniture requirement for two people could be assumed to be a double bed, two bedside tables and two double wardrobes. Different furniture layouts have been considered (Layouts A, B, C in Illustration 12 below), and the smallest floor area taken, (Layout A) even though it may be much less practical, and therefore likely, than alternative layouts.

Illustration 12



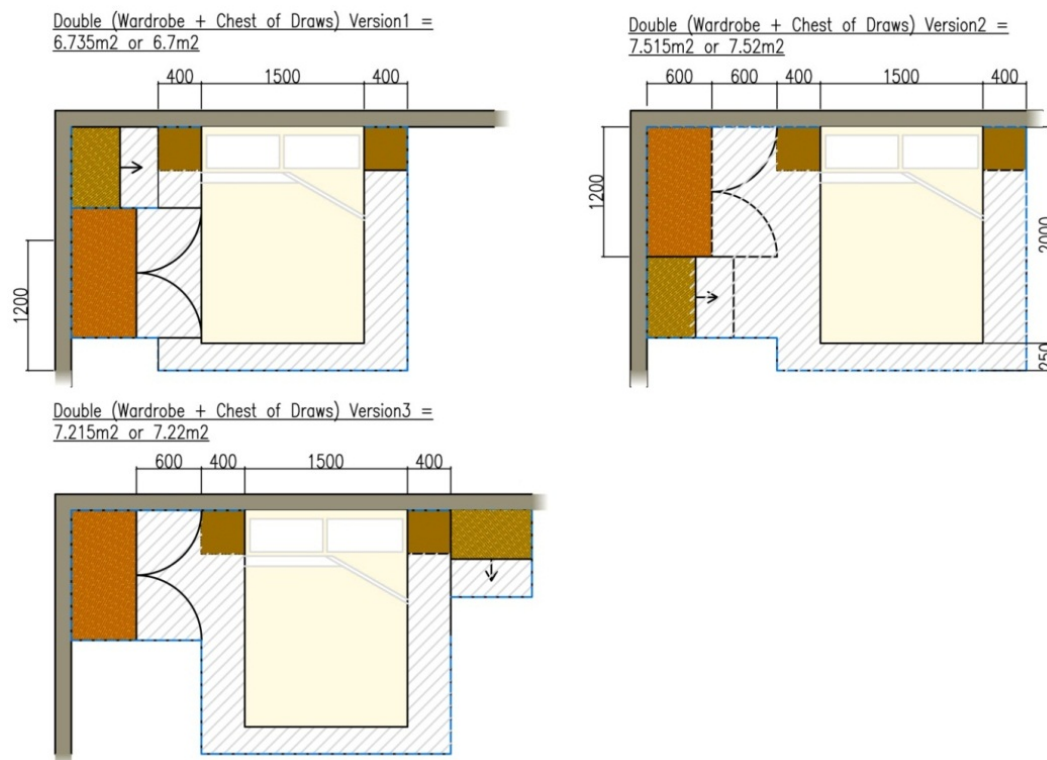
122. If an even more stringent view were to be taken of the furniture requirements for two people, it might be assumed that a chest of drawers could be substituted for a double wardrobe. Illustration 13 shows this, with differing layouts.

123. It is important to note that all of these options understate the amount of space needed to accommodate the range of furniture, access, passing and activity zones described in

the *Supplementary Planning Guidance*. These are all, therefore, "sub standard" sleeping spaces. They have been used, however, to avoid the criticism that levels of compliance are under-stated because of unreasonably large allowances being used for the sort of assessments. This is the same prudent approach that has been taken with notional corridors.

124. The amount of space assumed in this report to be attributable to sleeping in 1-person bedsits and 2-person bedsits is 3.9 m² and 7.1 m² respectively.

Illustration 13



Bedroom Occupancy

125. The 740 dwelling types in the sample contained 1,371 bedrooms – a mean of 1.86 bedrooms per dwelling type.

126. Because the *London Plan* Policy 3.5 sets minimum GIA standard in terms of numbers of designed-for occupancy as well as numbers of bedrooms, it was necessary to classify all bedrooms as either single-person occupancy or two-person occupancy. This is a critical decision, as the minimum GIA Standard is driven by occupancy level, and therefore levels of compliance with the standards will be different depending upon the occupancy level assumed.

127. The study has used 3 different ways of determining occupancy level in bedrooms by using:

- current industry custom and practice (self-declared or 8.7 m²);
- overcrowding legislation threshold (10.2 m²);

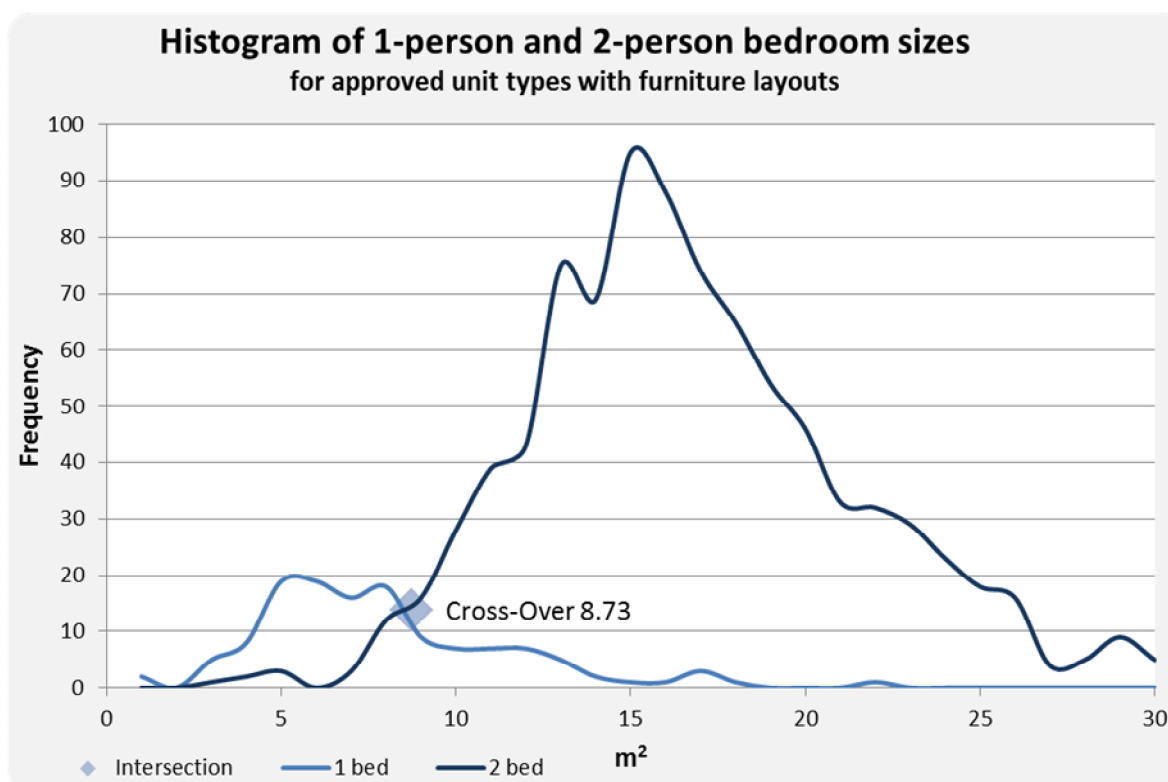
- Supplementary Planning Guidance standard (12 m²)

Current Industry Custom and Practice

128. Most of the plans had furniture layouts which showed whether a bedroom contained a double bed, a single bed or two single beds i.e. occupancy was self-declared. This was the case for 1,110 (81%) of the bedrooms. There was no indicative furniture layout in 261 (19%) of the bedrooms.

129. Drawing upon all sampled unit types that had furniture layouts, a histogram was prepared plotting the frequency of single-person bedroom sizes and two-person bedroom sizes as shown at Figure 8.

Figure 8



130. This shows that as bedroom size moved beyond 8m² they began to be scored as 2-person bedrooms. Similarly, the incidence of bedrooms being shown as suitable for a single person fell away when floor areas were more than 8.5 m².

131. The "cross-over point" for the histogram looking at units types was 8.7m². When looking at total units, rather than units types, the cross-over point was 8.4m².

132. As the report is looking at designs approved rather than the effect of repetition the figure of 8.7m² was used as the current industry custom and practice threshold for classifying bedrooms without furniture plans as either single-person or 2-person rooms.

133. Under this approach, therefore, bedroom occupancy was either as self-declared in furniture layouts, or (for the 19% of bedrooms without furniture layouts) it was assumed

to be single occupancy if the bedroom was up to 8.7m², and 2-person occupancy for larger bedrooms.

134. As previously noted, this threshold is based upon the cross over points of unit types, not total units. If the alternative view was taken that the threshold should reflect the prevalence of dwellings rather than dwelling types, this would mean that some bedrooms classified in this report as single bedrooms would be re-classified as 2-person bedrooms meaning that the dwelling GIA would be assessed against a different (higher) standard. In other words, it would result in a higher fail rate in the sample.

135. As this would influence the headline statistics in this report the effect of using this different assumption was checked. Only 5 of the 261 bedrooms (0.2%) that did not have furniture layouts were in the range of 8.4 – 8.7m²; therefore this would not materially affect the results of the level of compliance with the GIA standard set out in Table 3.3 of the *London Plan*, when occupancy is determined by current industry custom and practice.

Overcrowding Threshold

136. The only legislative requirements regarding bedroom size comes from the *Housing Act 1985* Part 10 S.326 which deals with overcrowding, specifically how to determine the capacity of rooms as sleeping areas. These standards draw directly from the *Housing Act 1935*. The standards size thresholds for which rooms will be considered large enough for various combinations of adults and children to sleep. These standards apply to all housing, public and private, and are set out in Table 7 below.

Table 7: Room size thresholds and associated occupancy level per Housing Act 1985

<i>Room size</i>	<i>Number of persons</i>
> 10.2m ²	2
8.4 - 10.2m ²	1½
6.5 - 8.4m ²	1
4.6 - 6.5m ²	½
<4.6m ²	0

137. Children up to 5 years old are classified as half a person. 5-year-olds, older children and adults are classified as 1 person.

138. The overcrowding legislation, therefore, indicates that bedrooms of less than 10.2m² should not be considered suitable for two adults. This could therefore be taken as the threshold between single bedrooms and double bedrooms.

SPG Standard

139. Standard 4.5.1 in the *Supplementary Planning Guidance* sets a minimum size for double bedrooms of 12m². However, this is Good Practice only, not a requirement.

The Effect of Different Thresholds

140. The dwellings in the sample had their occupancy level classified in these three different ways. This resulted in three different versions of the sample, in terms of unit mix. Table 8 shows how the 1,371 bedrooms in the 740 unit types in the sample were classified under the three different methods.

Table 8: The effect of different 1p/2p thresholds on the bedroom mix of the sample

BEDROOM OCCUPANCY THRESHOLD	Single		Double or Twin	
	Self-declared or 8.7m ²	169	12%	1202
10.2m ²	352	26%	1019	74%
12m ²	707	52%	664	48%

141. According to the report method (occupancy determined in accordance with the furniture layout or a threshold of 8.7m² where no furniture shown) 12% of bedrooms were 1-person, and 88% were twins or doubles. Where the occupancy is determined by a 12m² threshold, this changes to a roughly even split between singles and double/twins.

142. These different calculations of occupancy, generated different unit mixes AND meant that some unusual dwelling types became more prevalent. For example, when using the 8.7m² threshold, it was very unusual to find 2b2p, 3b3p, 4b4p dwellings, for example. However, at a 12m² threshold these dwellings were quite common.

143. The following pie charts (Figures 9, 10 & 11) illustrate the effect of applying these different thresholds to the dwellings in the sample, with the resulting apparent changes in the unit mix.

Fig 9: Occupancy @ Report Method (Unit Types)

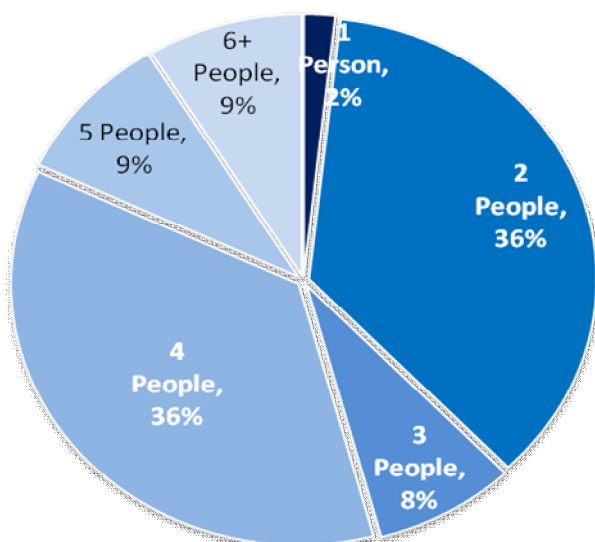


Fig 9A: Occupancy @ Report Method (Total Units)

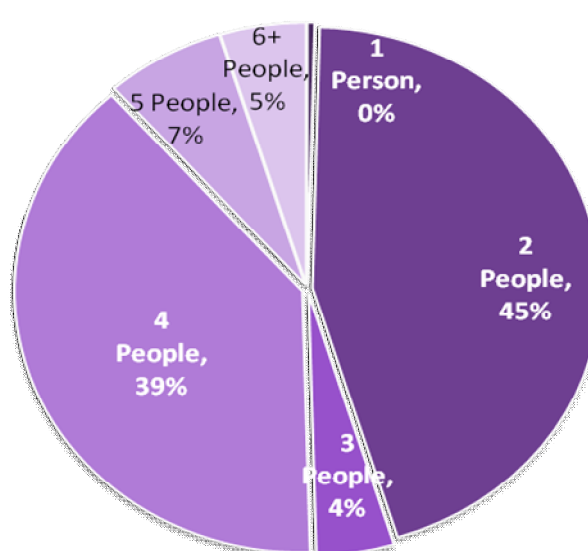


Fig 10: Occupancy @ 10.2m² threshold (Unit Types)

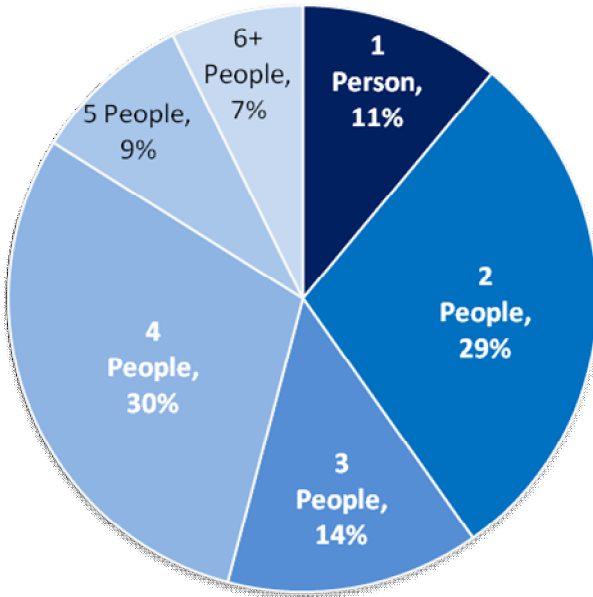


Fig 10A: Occupancy @ 10.2m² threshold (Total Units)

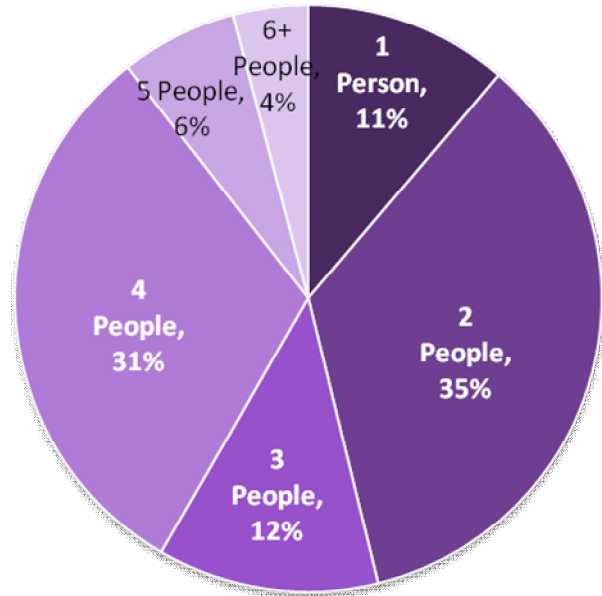


Fig 11: Occupancy @ 12m² threshold (Unit Types)

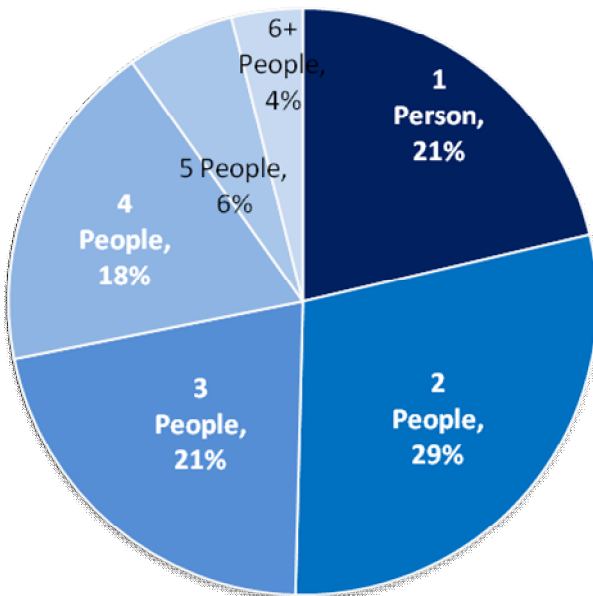
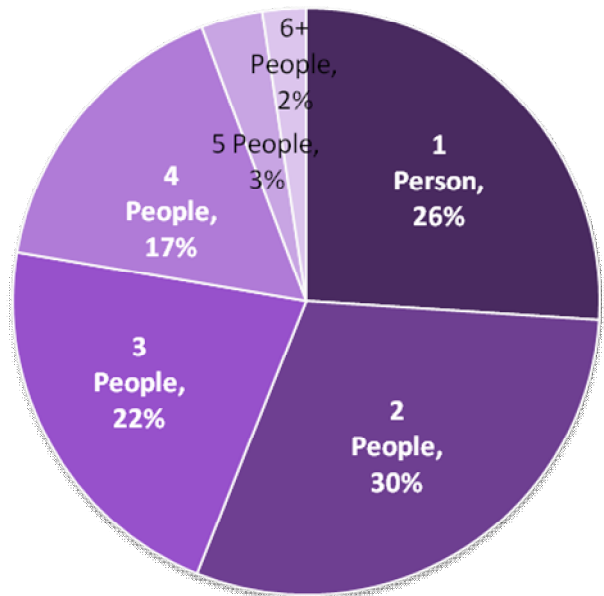


Fig 11A: Occupancy @ 12m² threshold (Total Units)



144. As bedroom threshold increases the proportion of dwellings classified as **1-person increases** dramatically from **0% to 26%** (for all units) and from 1% to 21% (for unit types).
145. At the other end of the size scale dwellings suitable **for 5 or more people falls from 12% to 5%** (for all units) and from 18% to 10% for unit types.
146. Given that the London Plan definition of family accommodation is 3 bedroom or more, the use of the larger thresholds means that a significant number of 3-bedroom dwellings would be classified as suitable for 3 people. Accommodation suitable for only 3 people is not generally recognised as "family accommodation", but this would be a consequence of using the larger thresholds without amending the London Plan definition of family housing (see Recommendations).

What Benchmark for GIA Compliance?

147. This report needs to provide a benchmark of compliance against the GIA standards which can also be used in future studies to identify the effectiveness of the space standards policy. This means choosing one bedroom occupancy threshold from the three that are available, namely current industry custom and practice, the threshold set out in overcrowding legislation, and the good practice standard included in the SPG. These are self-declared/8.7m², 10.2m² and 12m² respectively.
148. Current industry custom and practice is not suitable as a long-term benchmark as it is likely to change over time. Future studies would therefore assess compliance against a moving target, which is clearly inappropriate.
149. The SPG standard of 12m² is not a requirement, but only cited as Good Practice. Also, it may well be reviewed and be amended. This is therefore not an appropriate basis for a benchmark either.
150. The 10.2 m² threshold, however, is based in legislation - the Housing Act 1985. The provisions of this Act regarding overcrowding have been reviewed many times since 2001 without change, and it appears unlikely that there will be primary or secondary legislation amending this threshold in the foreseeable future¹. This threshold is therefore felt to be the most appropriate to establish a benchmark for levels of compliance with the GIA standard.

The GLA GIA Standards – Extended Table

151. Table 3.3 in the *London Plan* sets minimum sizes for a range of dwelling types but does not include all dwelling types. Emerging *Supplementary Planning Guidance* advises Development Control Officers to use the Homes & Communities Agency's Calculator² to determine minimum GIAs for dwelling types that are not included in Table 3.3. This Calculator has not been formally issued by the HCA, and so for ease of use we have scheduled all of the GIAs produced by the Calculator for the dwelling types that are not

¹ www.parliament.uk/briefing-papers/SN01013.pdf

² The space calculator was created initially by Levitt Bernstein Associates, then further developed by the HCA.

included in Table 3.3. Table 9 below explains the GLA's standards (in black) with those generated by the Calculator (in red).

152. When reporting on levels of compliance against minimum dwelling size, this study has used the GIAs included in this Table.

Table 9: Minimum GIAs for complete unit mix and typologies up to 6b12p dwellings

Minimum GIAs per GLA (bold) and HCA Calculator (normal)				Minimum GIAs per GLA (bold) and HCA Calculator (normal)				
	Bed rooms	Persons	m ²		Bed rooms	Persons	m ²	
Flats	1	1	37		4	7	118	
	1	2	50		4	8	127	
	2	2	52		5	5	104	
	2	3	61		5	6	113	
	2	4	70		5	7	122	
	3	3	65		5	8	131	
	3	4	74		5	9	140	
	3	5	86		5	10	149	
	3	6	95		6	6	117	
	4	4	78		6	7	126	
	4	5	90		6	8	135	
	4	6	99		6	9	144	
	4	7	108		6	10	153	
	4	8	117		6	11	162	
	5	5	94		6	12	171	
	5	6	103		3 storey houses	3	3	80
	5	7	112			3	4	89
	5	8	121			3	5	102
	5	9	130			3	6	110
	5	10	139			4	4	93
6	6	107		4		5	106	
6	7	116		4		6	113	
6	8	125		4		7	123	
6	9	134		4		8	132	
6	10	143		5		5	109	
6	11	152		5		6	118	
6	12	161		5		7	127	
2 storey houses	1	2	58			5	8	136
	2	2	62		5	9	145	
	2	3	76		5	10	154	
	2	4	83		6	6	122	
	3	3	75		6	7	131	
	3	4	87		6	8	140	
	3	5	96		6	9	149	
	3	6	110		6	10	158	
	4	4	88		6	11	167	
	4	5	100		6	12	176	
4	6	107						

153. As highlighted in the *Bedroom Occupancy* section the levels of occupancy in the sample dwellings can be determined in three ways:
- in accordance with furniture layouts shown on plan or (where no furniture layout was provided) classifying bedrooms of up to 8.7m² as single occupancy and larger bedrooms as 2-person occupancy. This was the method originally devised when designing the research, is used throughout this study and is referred to as the "Report Method";
 - setting a single person/2-person occupancy threshold for all bedrooms (regardless of indicative furniture layouts) of 10.2m²;
 - setting a single person/2-person occupancy threshold for all bedrooms (regardless of indicative furniture layouts) of 12m².
154. As the GLA's GIA Standards are the only ones articulated as Policy (as opposed to Guidance) compliance against this standard was examined comprehensively i.e. using all three ways of assessing bedroom occupancy.
155. For all other Standards, expressed as Guidance, but not Policy) occupancy levels were determined according to the Report Method alone.
156. The report shows levels of compliance of both Unit Types and Total Units. Unit Type compliance shows the extent to which designers are complying with the SPG standards in terms of their individual dwelling designs. Total Units compliance, however, shows the extent of compliance of the approved schemes as a whole.
157. Results are reported where there are more than 10 unit types in a category (such as in a Region) or where there are more than 30 total units in a category. Where there are less than these numbers of units types or units, the results have not been reported due to the small sample size.

Dwelling Areas (GIA)

Overall Level of Compliance

158. The first set of statistics focus on the degree of compliance of approved designs with the minimum internal dwelling area set out in the *London Plan* Table 3.3, under Policy 3.5.
159. Compliance is assessed under the three different assumptions about bedroom occupancy discussed earlier.
160. In summary, the average sizes of the most common dwelling types in the sample (measured according to different assumptions about bedroom occupancy) are shown in Table 10 (for unit types) and in Table 10A (for total units), showing the sample mean, the sample median, the estimate of the population mean (at a 95% confidence limits) and the SPG standard.

Table 10

For Unit Types:	Flats					
	1B/1P	1B/2P	2B/3P	2B/4P	3B/5P	3B/6P
If bedroom occupancy assessed by 8.7m ² threshold						
Sample Median GIA	21	46	60	69	86	92
Sample Mean GIA	N/A	45	61	73	89	112
Pop. Mean GIA (95% confidence)	N/A	44-46	59-63	71-74	87-91	101-112
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 10.2m ² threshold						
Sample Median GIA	36	47	63	72	91	106
Sample Mean GIA	36	48	64	75	91	116
Pop. Mean GIA (95% confidence)	35-38	47-49	63-66	73-77	89-94	103-128
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 12m ² threshold						
Sample Median GIA	41	48	68	77	94	129
Sample Mean GIA	41	49	69	80	96	139
Pop. Mean GIA (95% confidence)	39-42	48-51	68-71	76-84	93-99	N/A
SPG Standard	37	50	61	70	86	95

Table 10A

For Total Units	Flats					
	1B/1P	1B/2P	2B/3P	2B/4P	3B/5P	3B/6P
If bedroom occupancy assessed by 8.7m ² threshold						
Sample Median GIA	21	46	61	69	86	92
Sample Mean GIA	N/A	45	61	71	87	106
Pop. Mean GIA (95% confidence)	N/A	44-45	60-62	71-72	87-88	101-112
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 10.2m ² threshold						
Sample Median GIA	34	47	62	70	86	108
Sample Mean GIA	35	48	63	73	89	108
Pop. Mean GIA (95% confidence)	35-36	47-48	63-64	72-74	88-90	101-115
SPG Standard	37	50	61	70	86	95
If bedroom occupancy assessed by 12m ² threshold						
Sample Median GIA	42	47	68	79	92	108
Sample Mean GIA	41	49	68	78	94	123
Pop. Mean GIA (95% confidence)	41-42	48-49	68-69	77-79	92-96	N/A
SPG Standard	37	50	61	70	86	95

GIA Compliance (Furniture Layouts / 8.7m² threshold)

161. In total, **38% of units types (31% of total number of units in the sample) met or exceeded the standards** set out in Policy 3.5 of the *London Plan*. Compliance by dwelling type is shown in Figures 12 & 12A

Figure 12

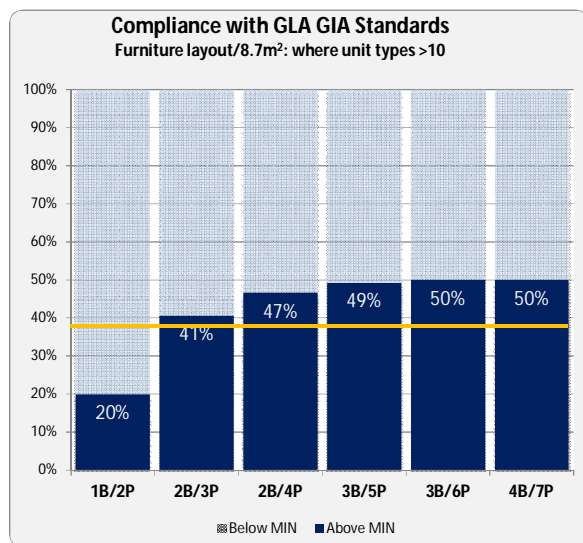
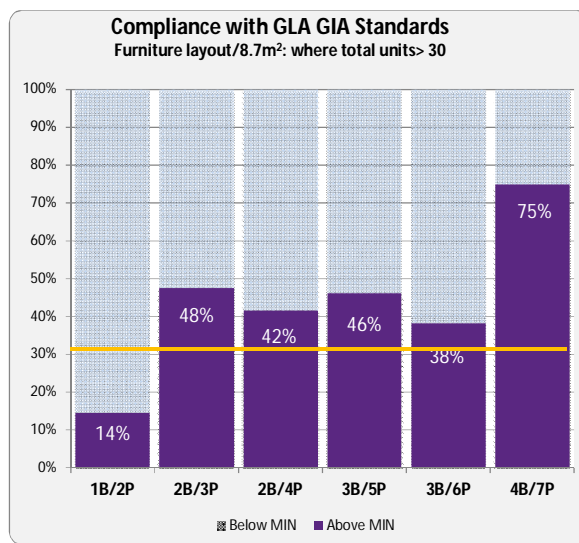


Figure 12A



162. Whilst the levels of compliance are low for all of the dwelling types for which there was a significant number in the sample, there is a particularly low level of compliance for the 1b2p dwellings.

163. The pattern of compliance by sub region is shown in Table 11:

Table 11: Regional compliance with GIA minima

Sub-region	Unit types complying	Total Units complying
Central London	58%	49%
East London	29%	27%
North London	50%	48%
South London	44%	44%
West London	22%	14%

164. East and West London both seems to show particularly low levels of compliance compared with the other three regions.

GIA Compliance (10.2m² threshold)

165. Where dwelling occupancy was determined by assessing bedrooms of less than 10.2m² as single bedrooms and larger rooms as double/twins, compliance levels are higher. This is a result of dwellings being assessed against lower benchmarks because of their (assumed) lower level of occupancy. For example, a 63m² 2b4p dwelling with a master bedroom of 11m² and a second twin bedroom of 9m² (according to the furniture layouts shown on plan), would be assessed against the GLA benchmark of 70m² in accordance with the report method for determining occupancy (as above), and would therefore be considered non-compliant. However, using a 10.2m² threshold for bedroom occupancy, that unit would now be considered as a 2b3p, not a 2b4p. It would therefore be assessed

against the benchmark of 61m², and would therefore be compliant with the GLA standard.

166. In total, **49% of units types (42% of total number of units in the sample) met or exceeded the standards** set out in Policy 3.5 of the *London Plan*, when occupancy is determined by a bedroom size threshold of 10.2m². Figures 13 and 13A provide the breakdown. As well as affecting compliance levels, this approach had the effect of re-classifying many of the units in the sample, as noted in the *Bedroom Occupancy* section. This can be seen by Figures 13 and 13A containing apparently different dwelling types from Figures 12 and 21A, even though the charts represent exactly the same units in the sample.

Figure 13

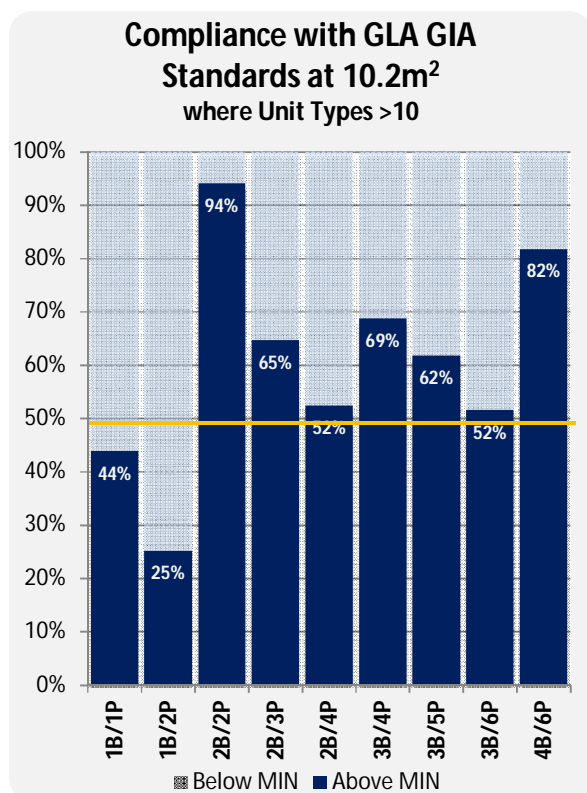
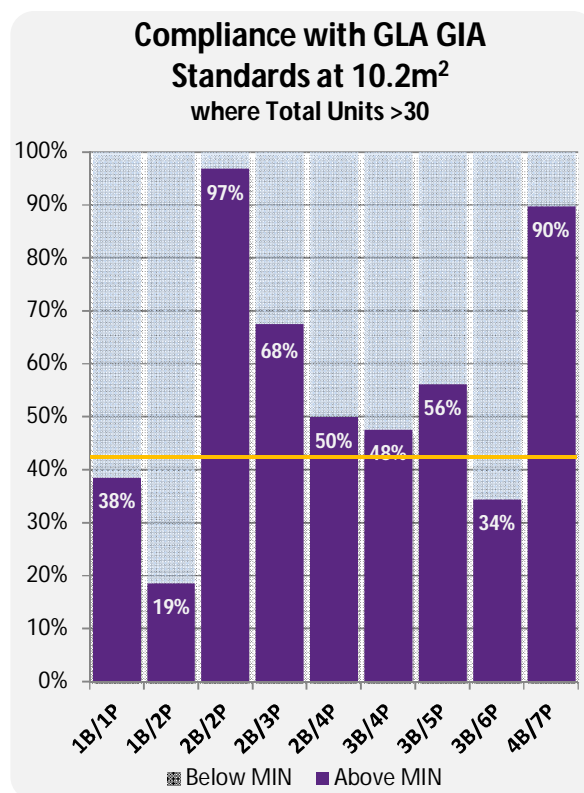


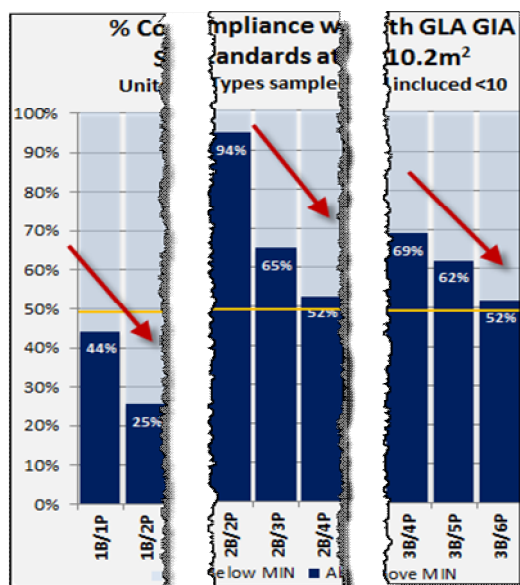
Figure 13A



167. The level of compliance of both unit types and total units **has increased by 11%** by changing the method of assessing bedroom occupancy from furniture layouts to the 10.2m² threshold.

168. Unsurprisingly, there are high levels of compliance for dwellings where the assumed occupancy level equates to, or is very close to the number of bedrooms. Where there is a large proportional difference between numbers of occupants and numbers of bedrooms (such as the 1b2p type) compliance levels are much lower than the average. This trend can be seen by taking Figure 13 and splitting it into the 1 bed, 2 bed and 3 bed categories as shown at Figure 14.

Figure 14: trends in compliance within bedroom categories



GIA Compliance (12m² threshold)

169. Where dwelling occupancy was determined by assessing bedrooms of less than 12m² as single bedrooms and larger rooms as double/twins, compliance levels are **74% for units types (73% of total number of units)**.

170. Categorising occupancy in this way has resulted in significant numbers of dwellings being classified as 1b1p, 2b2p and 3b3p etc.

171. The results are shown in Figure 15 & 15A.

172. Compliance levels would have been even higher had the 1b2p dwellings still not fallen significantly short of the benchmark. Even where all of the smaller 1-bedroom dwellings have been stripped out from the 1b2p category so that the remaining **1b2p dwellings all had a bedroom larger than 12m², only 33% of unit types (26% of total units) met the GLA standard.**

Figure 15: Unit types

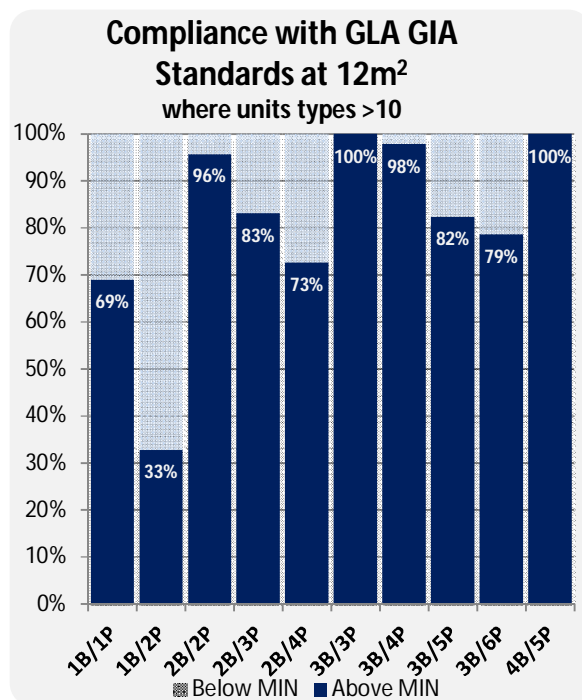
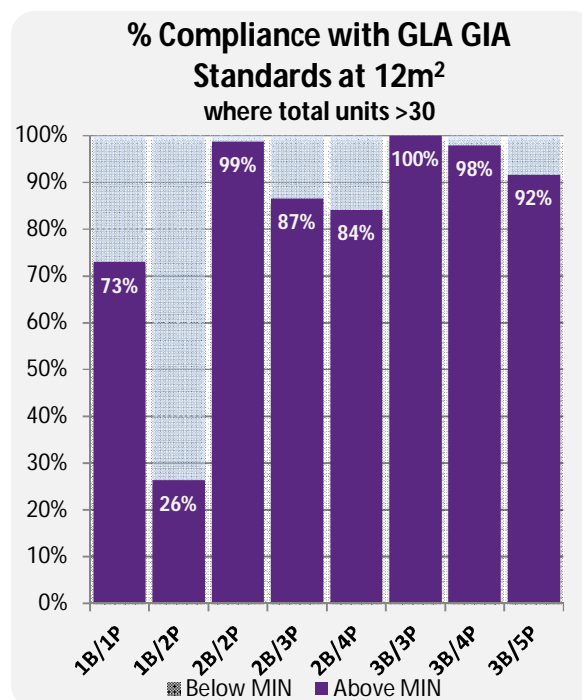


Figure 15A: Total units



Compliance by Scheme Size

173. This assessment was made on the basis that occupancy level was determined in accordance with the report method. As with the overall compliance results, it can be assumed that compliance levels would increase as the assumption about the bedroom occupancy threshold increases. However, this comparison was undertaken to see if there is a noticeable difference in levels of compliance between small schemes and large schemes (i.e. the schemes in the sample of the largest 1% of the study population and the schemes in the sample drawn from the remaining 99% of the study population).

174. On large schemes, 37% of units types (29% of total units) complied with the Standard whilst on small schemes 39% of unit types (45% of total units) complied.

175. Figures 16 & 16A show the difference in compliance levels between large schemes and small schemes. Figure 16 shows the level of compliance with the GLA GIA standards of the 740 unit types in both samples, whilst Figure 16A provides the same information, but calculated on the 3,775 total units.

176. The level of compliance for all dwellings was lower in larger schemes than smaller schemes with the exception of the 2B3P type.

Figure 16: Unit types

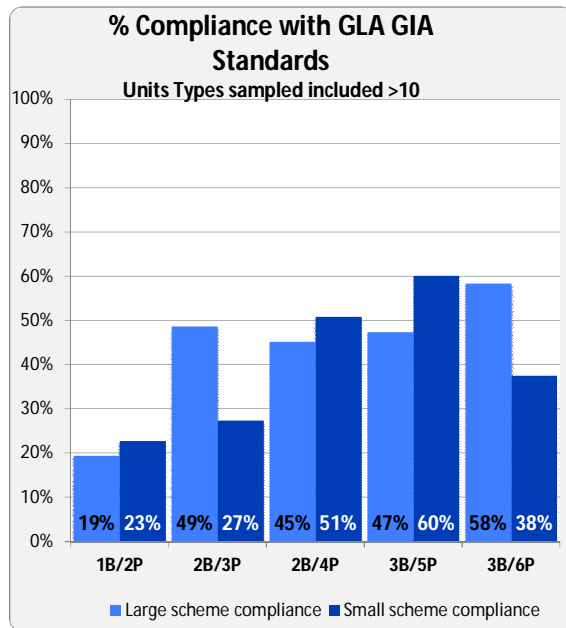
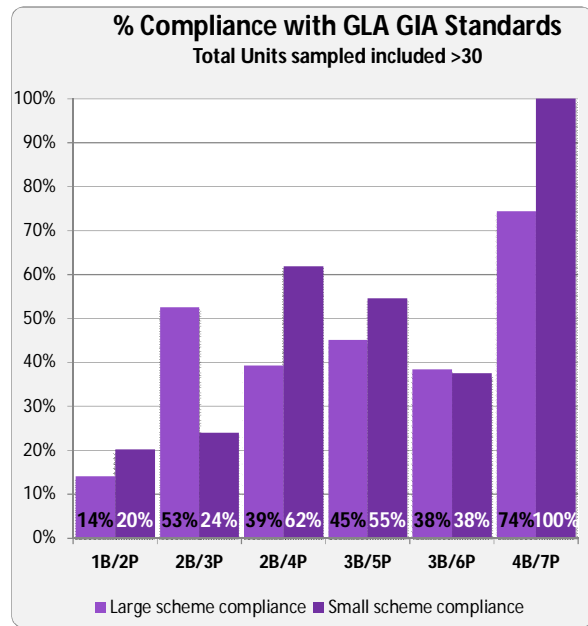


Figure 16A: Total units



177. Figure 17 & 17A show the level of compliance or units types and total units within large schemes, small schemes broken down by sub-region.

Figure 17: Unit types

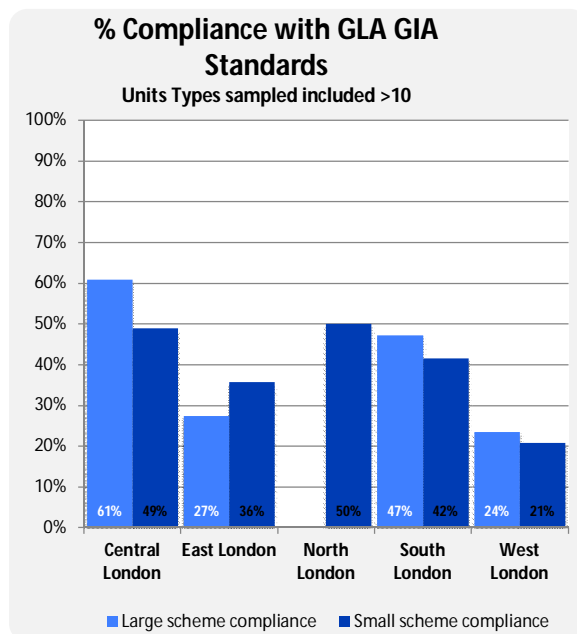
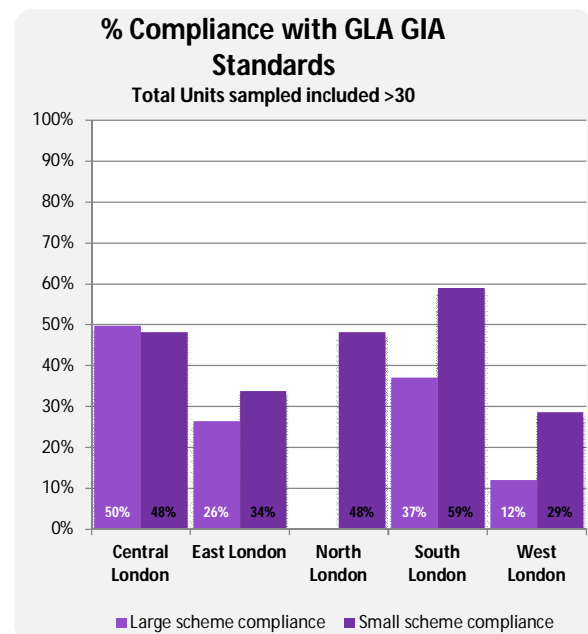


Figure 17A: Total units



178. Only 25% of unit types on large schemes in East London met the GLA GIA standards, whilst 60% did in Central London. As previously noted East London schemes formed nearly two thirds of the sample, and so these figures are based on a large number of

schemes and unit types. Very few schemes from North London were included in the sample and relatively few schemes from West London. It is therefore harder to draw conclusions from these sub-regions.

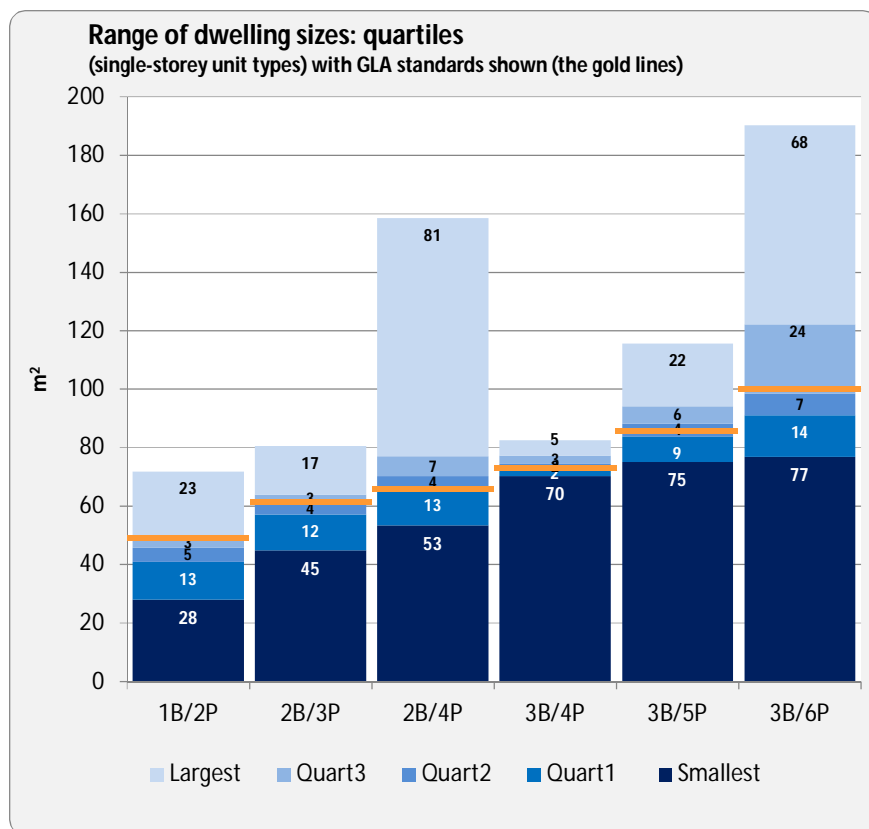
Range of Dwelling Sizes

179. The study looked at the range of sizes of dwellings to indicate how close designs are to the GLA GIA minima.

180. It can be seen from Figure 18 that for most unit types (where there was more than a handful of examples) the inter-quartile range is relatively narrow. There are, unsurprisingly, some extremely large dwellings available in the market. It is also noticeable that there is a large difference between the smallest dwelling and the first quartile dwellings for the 1-bed and 2-bed dwelling types (28m², 45m² & 53m² for 1b2p, 2b3p & 2b4p flats respectively).

181. For the 2b4p and larger dwellings, the GLA standard is close to the median size in the sample, whilst for the 1b2p and 2b3p unit types, the GLA standard is close to the upper quartile of the sampled units.

Figure 18: Range of dwelling sizes by unit mix



Variance from GLA Standards

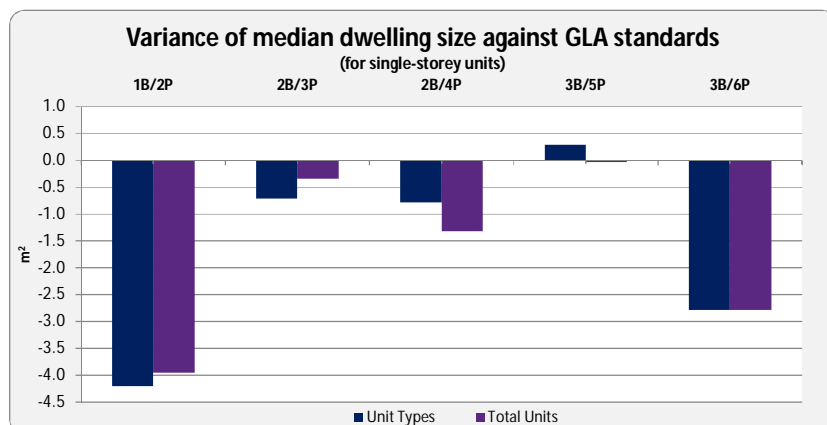
Using the self-declared/8.7 m² bedroom threshold

182. The study then considered the variance between the GLA standards and the dwellings in the sample. Figure 19 shows the variance between the median GIA of different unit types and the GLA standards for single-storey dwellings (flats, bungalows etc), which represented 90% of the total sample.

183. When the median is calculated from the range of dwelling sizes exhibited by unit type¹ the median is below the GLA standard for 4 out of the 6 dwelling types, with 1 dwelling type fractionally above the standard. However, when the median is calculated from the total number of units in the sample of those dwelling sizes, the median of all dwelling types is below the GLA standard.

184. The largest variance is with the 1b2p unit type; in floor area terms this equates to the median dwelling of this type being 4.2m² undersized. The median floor areas of dwelling types were undersized by less than 1m² although the smallest examples of 1b2p dwellings was undersized by 22m², and that of the 2b3p and 2b4p types by 16m².

Figure 19: Variance of median GIAs from GLA minima.

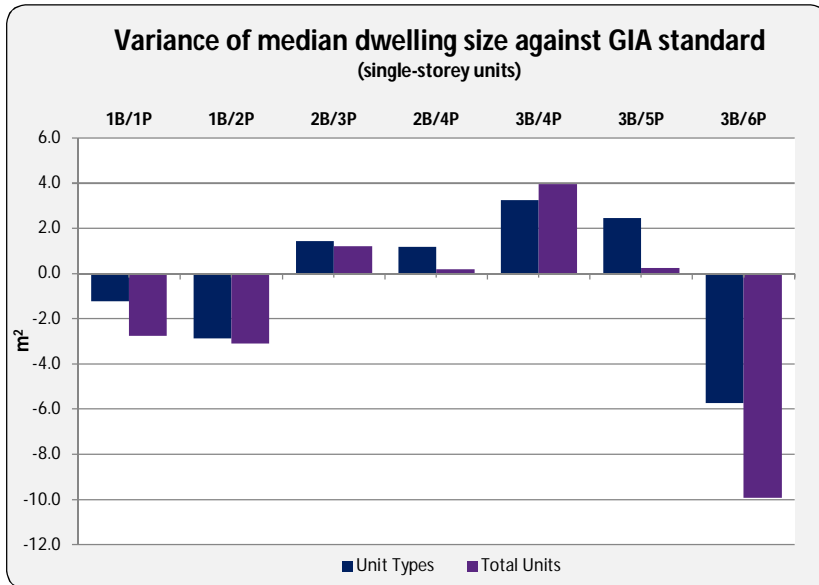


Using the 10.2 m² bedroom threshold

185. using the definition of occupancy, the median GIA of the sampled 1-bedroom flats still fell below the GIA standard, although by about 3m² rather than 4m². However the median sizes of the 2-bedroom flats and most of the 3-bedroom flats was above the GIA standard. This "improved" position is to be expected - and is consistent with the high levels of compliance are shown in Figures 13 & 13A - as it is driven by some of the dwellings in the sample being reclassified as lower occupancy, and therefore being assessed against a lower GIA benchmark.

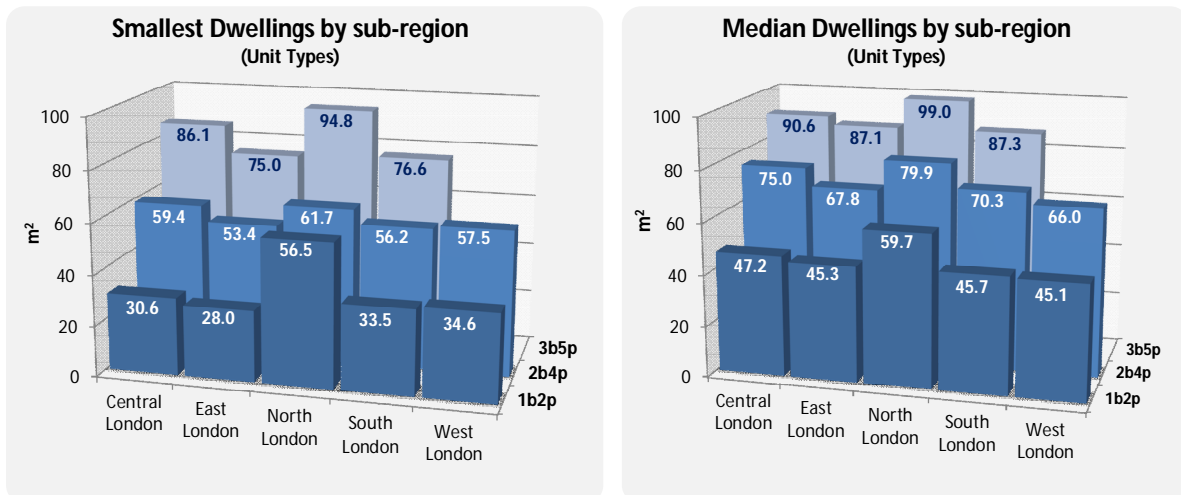
¹ Excluding those dwelling types where there was only one or two examples of each dwelling type in the sample.

Figure 19A: Variance of median GIAs from GLA minima (assuming 10.2 m² bedroom occupancy threshold).



186. Figure 20 shows the smallest units included in the sample for three different unit types by sub-region, whilst Figure 21 shows the median sizes of unit types by sub-region.

Figure 20: Smallest GIAs by unit mix & sub-region **Figure 21: Median GIAs by sub-region**



187. For all 3 dwelling types East London contains the smallest dwelling in the sample, not Central London, as might be supposed. Figure # shows the median size of the same dwelling types by sub-region. All four sub-regions have almost identical median sizes for the 1b2p dwellings, but Central London median sizes are higher than other sub-regions for the other two dwelling types.

Estimating the Population Mean GIAs

188. Where samples are large in statistical terms (>30) it is possible to estimate the mean of the population from which the sample was drawn by using the Standard Error. Identifying the ranges that contain the population mean of the GIA of dwellings receiving planning permission between July 2009 – June 2010 sets a statistically robust benchmark against which the population mean of dwelling GIAs can be assessed in the future. The population mean GIAs of the more common dwelling types were estimated at a 95% confidence limit.

189. However, as this study assesses dwelling occupancy using three different methods (as described in the *Bedroom Occupancy* section), then three different estimates of the population mean GIAs have been generated. This provides a range of benchmarks to maximise the probability that they will be relevant and helpful to future studies.

Frequency Distributions

190. The following charts (Figures 22 to 26) illustrate the frequency distributions for sampled units types, with bedroom occupancy determined by the main report method, namely in accordance with furniture layouts or with a threshold of 8.7m² for those units where no furniture layout was provided. The "spread" of the distributions varies widely. The 1B/2P distribution shows one obvious outlier at 108m². The 2B/4B distribution has 6 very large dwellings; these are large units on small schemes. The 3B/5P also has 3 are large units on small schemes. The 3B/6P distribution has 5 large units which are from a tower block top floor (penthouses).

Figure 22: Frequency of 1b2p GIAs

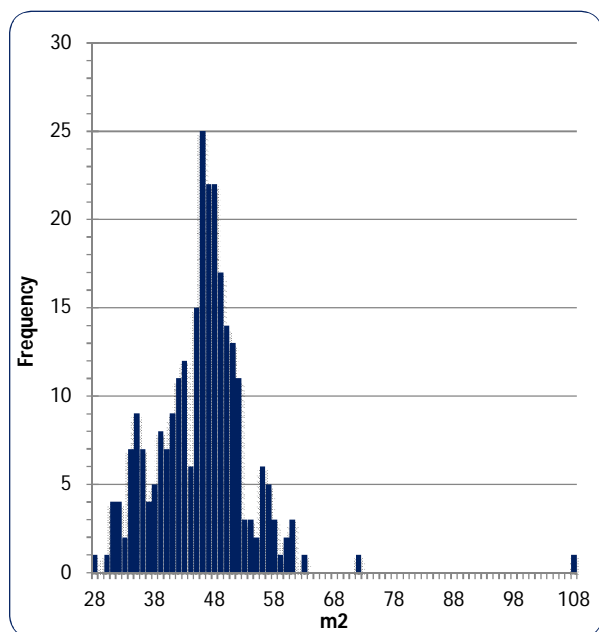
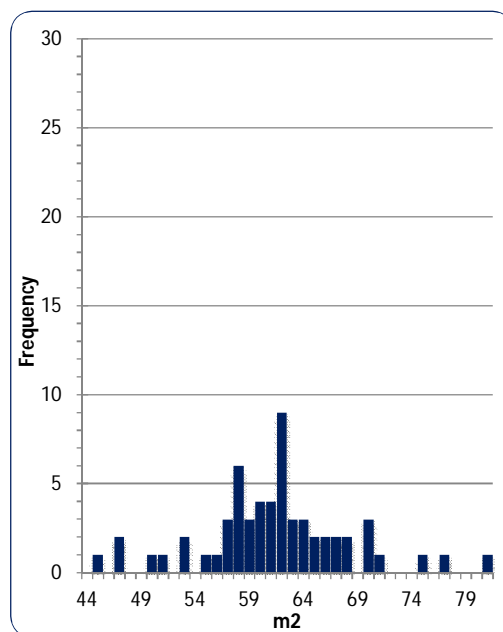


Figure 23: Frequency of 2b3p GIAs



**Figure 24: Frequency of 2b4p GIAs
3b5p GIAs**

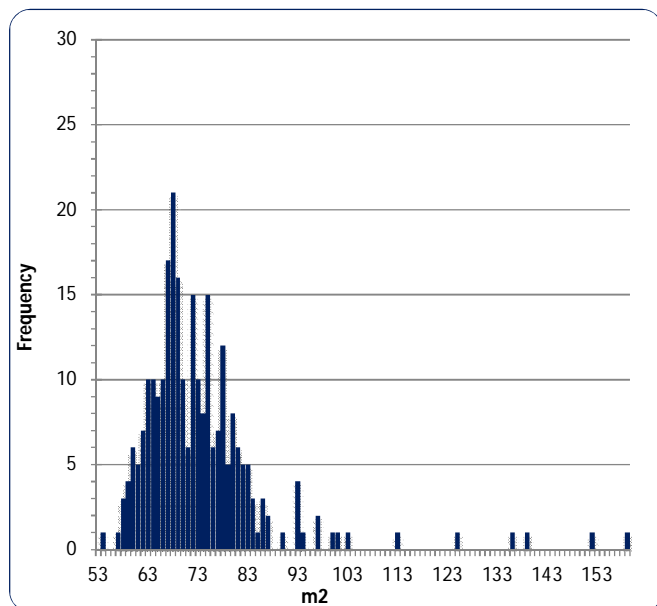


Figure 25: Frequency of

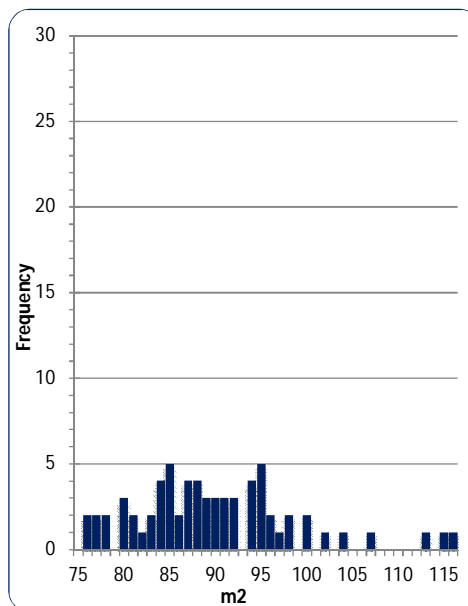
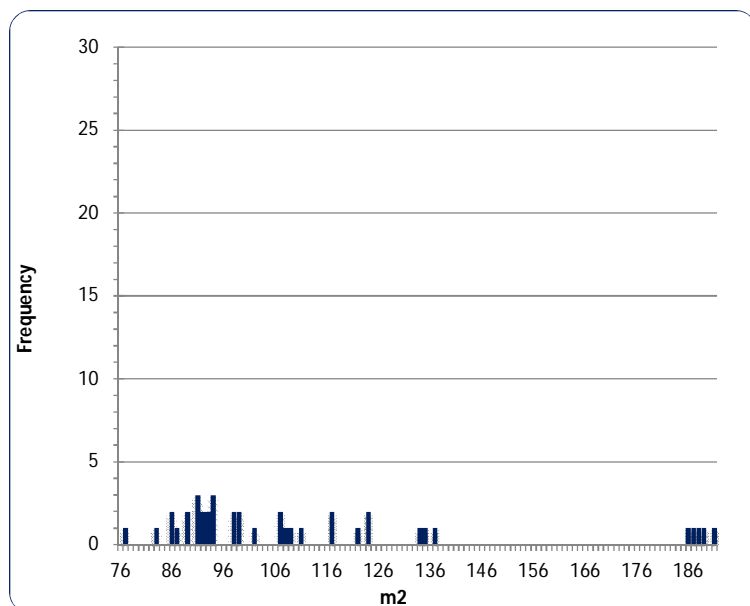


Figure 26: Frequency of 3b6p GIAs



191. Overall, as the distributions become progressively flatter as unit type increases in size, outliers become progressively less obvious. This would be an issue if the standard deviation of the samples were particularly important.

192. However, the purpose of this exercise is to estimate the population means, using the standard error of the samples, and outliers are therefore not an issue.

193. Table 12 sets out the mean GIAs for different units types together with their standard deviation (to indicate "spread"), the standard error and the consequential range of dwelling sizes for each unit type within which the population mean lies, at a 95% confidence level. The following two tables (12A and 12B) provide the same information but with unit mix determined by bedroom occupancy thresholds of 10.2m² and 12m²

respectively. The ranges within which the population mean for each unit type lies are then shown in Figures 27 – 29 .

Table 12 showing the spread of key dwelling types: occupancy calculated by the report method i.e. furniture layout or 8.7m² threshold (unit types in grey; total units in white).

	1B/2P		2B/3P		2B/4P		3B/5P		3B/6P	
No of Dwellings	267	1452	59	141	264	1251	67	217	40	81
Sample mean GIA	45	45	61	61	73	71	89	87	112	106
Standard Deviation	7.9	7.3	6.8	5.0	13.1	9.5	8.7	6.6	32.4	24.6
Standard Error	0.5	0.2	0.9	0.4	0.8	0.3	1.1	0.5	5.1	2.7
95% Confidence Upper Limit	46	45	63	62	74	72	91	88	122	112
95% Confidence Lower Limit	44	44	59	60	71	71	87	87	102	101

Table 12A showing the spread of key dwelling types: occupancy calculated by 10.2m² threshold (unit types in grey; total units in white).

	1B/1P		1B/2P		2B/3P		2B/4P		3B/5P		3B/6P	
No of Dwellings	82	364	198	1101	102	394	204	967	63	205	31	61
Sample mean GIA	36	35	48	48	64	63	75	73	91	89	115	108
Standard Deviation	8.1	6.0	6.9	5.3	7.1	5.3	14.0	9.6	9.9	7.7	35.8	27.8
Standard Error	0.9	0.3	0.5	0.2	0.7	0.3	1.0	0.3	1.3	0.5	6.4	3.6
95% Confidence Upper Limit	38	36	49	48	66	64	77	74	94	90	128	115
95% Confidence Lower Limit	35	35	47	47	63	63	73	72	89	88	103	101

Table 12B showing the spread of key dwelling types: occupancy calculated by 12m² threshold (unit types in grey; total units in white).

	1B/1P		1B/2P		2B/2P		2B/3P		2B/4P		3B/4P		3B/5P	
No of Dwellings	158	843	122	622	93	352	142	654	88	386	46	148	34	84
Sample mean GIA	41	41	49	49	64	64	69	68	80	78	89	87	96	94
Standard Deviation	8.1	7.0	7.5	6.0	7.0	5.2	9.0	7.5	17.5	10.4	11.0	7.4	10.0	9.6
Standard Error	0.6	0.2	0.7	0.2	0.7	0.3	0.8	0.3	1.9	0.5	1.6	0.6	1.7	1.0
95% Confidence Upper Limit	42	42	51	49	66	65	71	69	84	79	93	88	99	96
95% Confidence Lower Limit	39	41	48	48	63	64	68	68	76	77	86	86	93	92

Figure 27: Estimate of population means (self-declared / 8.7m² threshold)

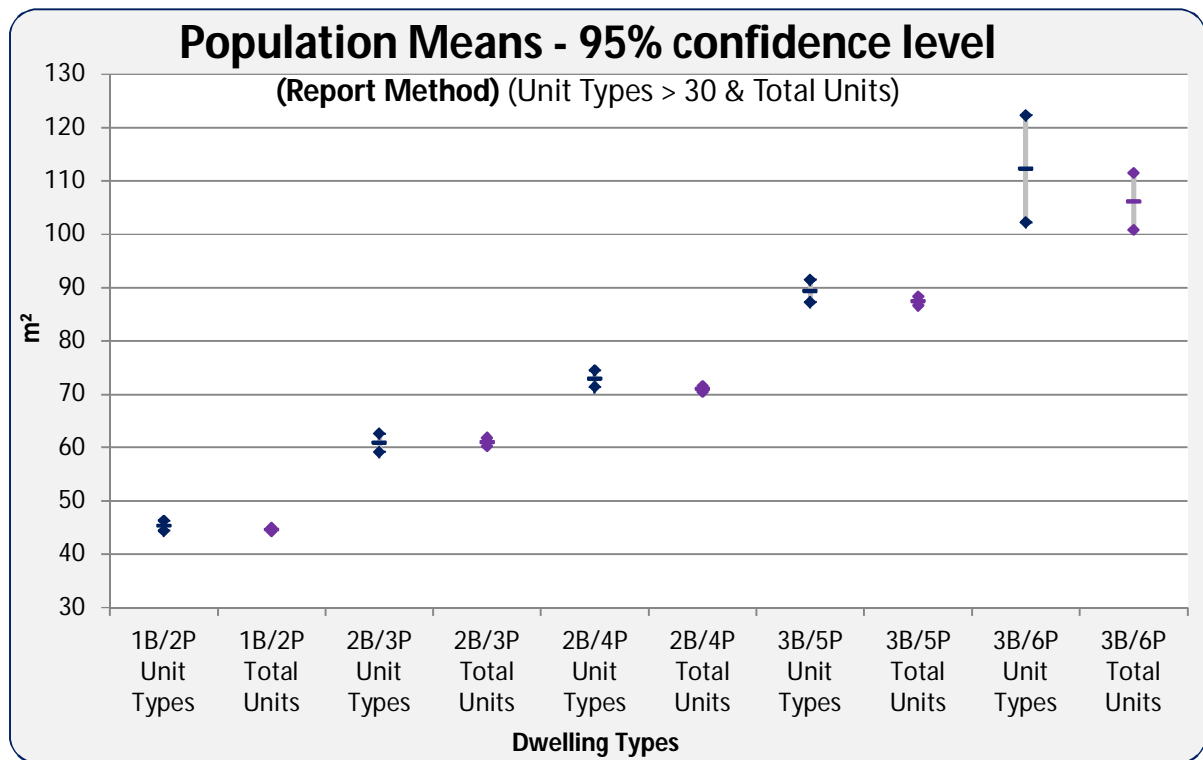


Figure 28: Estimate of population means (10.2m² threshold)

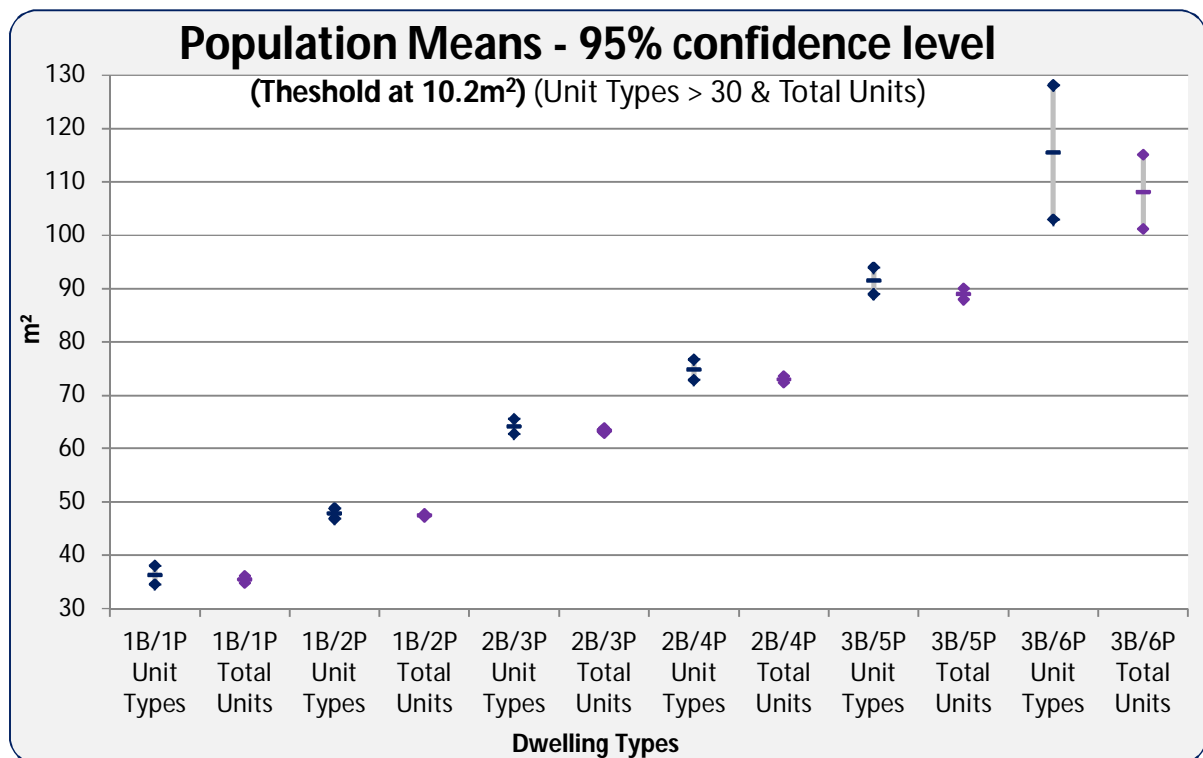
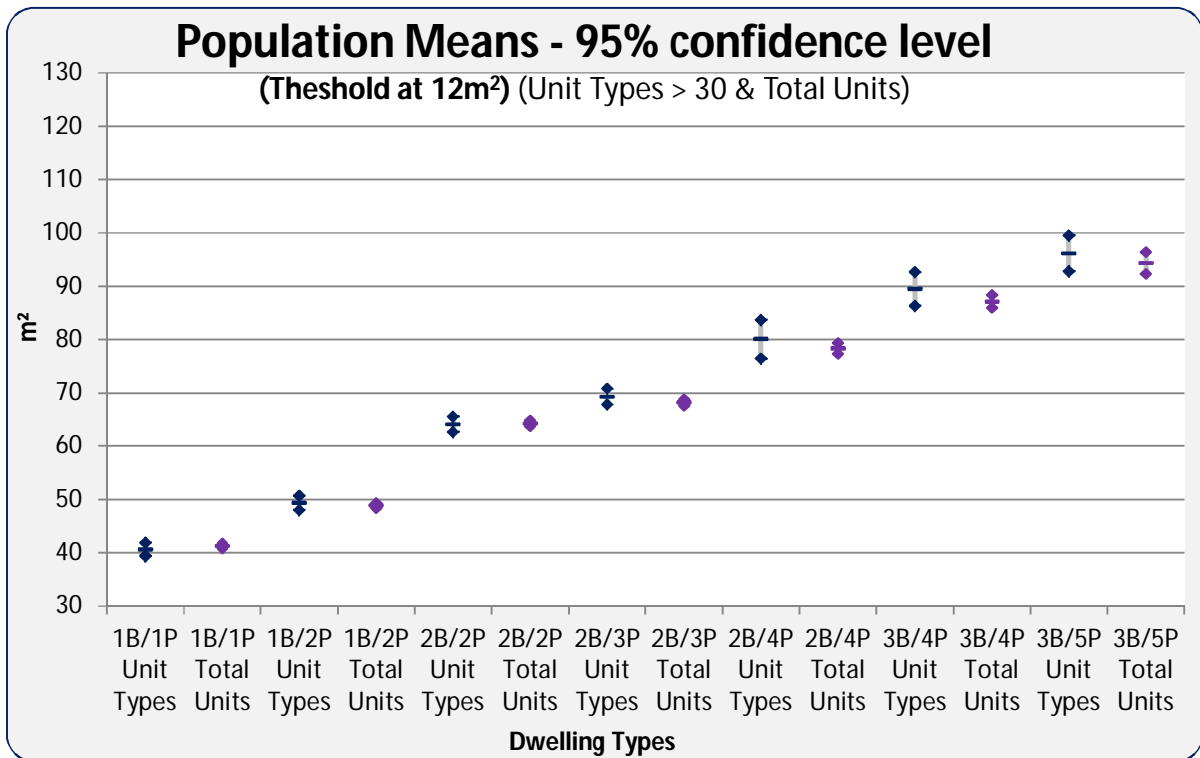


Figure 29: Estimate of population means (12m² threshold)



194. The average size of dwellings by bedroom (ignoring occupancy level) was also measured. The results are shown in Figure 30, supported by Tables .

Figure 30: average dwelling GIAs by number of bedrooms only.

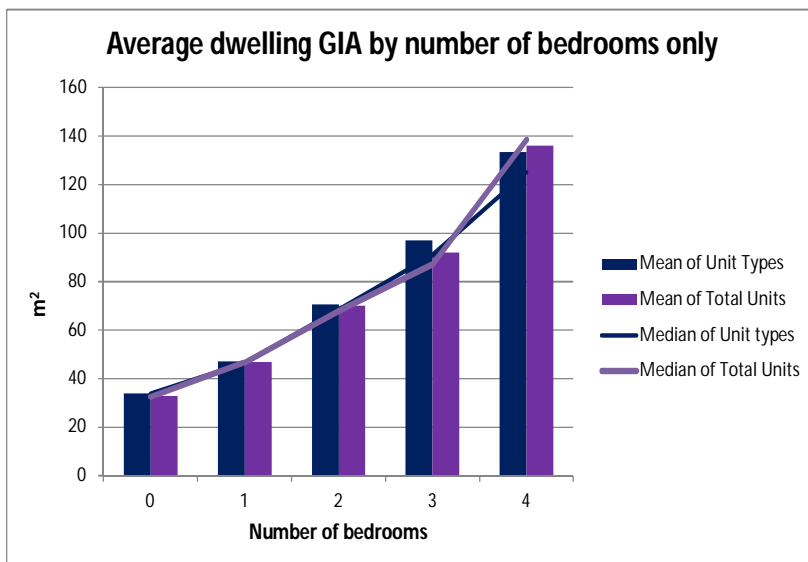


Table 13: Mean and median dwelling GIA by bedroom number (ignoring occupancy): Unit Type

No. Bedrooms	Median	Mean	Number
0	33.8	33.8	55
1	46.5	47.0	225
2	68.5	70.7	323
3	90.9	97.1	111
4	125.2	133.6	20
Total			734

Table 13A: Mean and median dwelling GIA by bedroom number (ignoring occupancy): Total Units

No. Bedrooms	Median	Mean	Number
0	32.5	32.8	245
1	46.7	46.9	1220
2	67.9	70.0	1392
3	87.0	92.0	307
4	138.5	136.2	69
Total			3233

Living / Dining / Kitchen areas

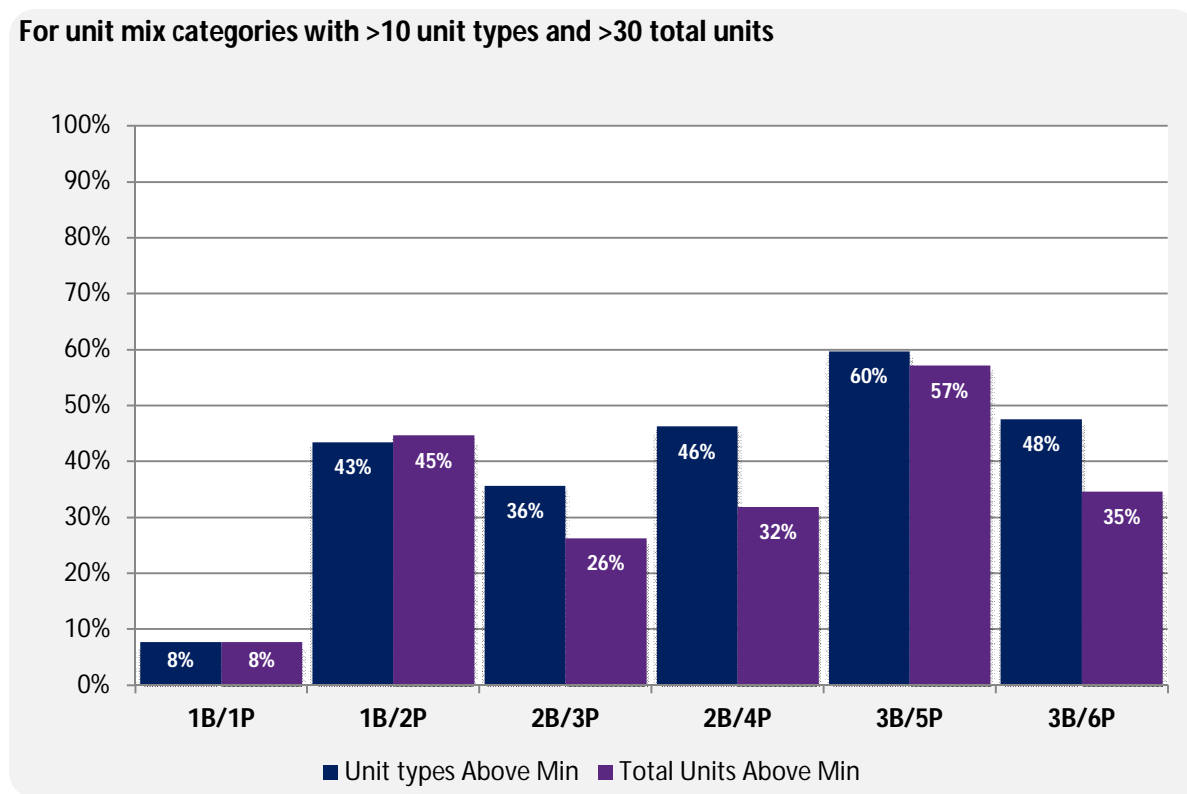
195. 33% of unit types (40% of total units) complied with this Standard.

196. Figure 31 shows the extent to which the sample unit types and total units in the sample complied with the *Supplementary Planning Guidance* minimum standards for combined living, dining and kitchen areas of 23m², 25m², 27m², 29m² & 31m² for 2, 3, 4, 5 & 6-person dwellings respectively.

SPG Standard 4.4.1	
Designed Occupancy	Minimum combined floor area of living, dining and kitchen space (sq m)
2 person	23
3 person	25
4 person	27
5 person	29
6 person	31

Figure 31: Compliance with living/dining/eating standards, by unit mix

For unit mix categories with >10 unit types and >30 total units



197. Compliance levels are generally low. Approximately one third of most dwelling types comply. However more than half of the 3b5p unit types and total units met this standard.

198. The *Supplementary Planning Guidance* does not currently provide a standard for 1-person accommodation which is why compliance for that type of dwelling was so low - it was assessed against the standard for 2-person accommodation.

Living Rooms / Spaces

Sitting Room Width

199. The *Supplementary Planning Guidance* sets a minimum width requirement for the main sitting area of 2.8m in 2 & 3 person dwellings, and 3.2m in dwellings designed for 4 or more people.

SPG - Standard 4.4.2

The minimum width of the main sitting area should be 2.8m in 2-3 person dwellings and 3.2m in dwellings designed for 4 or more people.

200. It also includes a requirement that the minimum width of double and twin bedrooms should be 2.75m for most of the length of the room.

201. 69% of the 326 sitting rooms in 2-person and 3-person unit types (66% of the 1592 total sitting rooms) in the sample met or exceeded the Standard regarding sitting room width.

202. 63% of the 401 sitting rooms in 4-person unit types (56% of the 1634 sitting rooms in total) in the sample met or exceeded the Standard regarding sitting room width.

203. Approximately one third of dwellings, therefore, do not comply with this Standard.

204. There was very little variation by sub region, as shown in Figures 32 and 33.

Figure 32: Percentage of sitting rooms \geq 2.8m wide for 2p & 3p dwellings

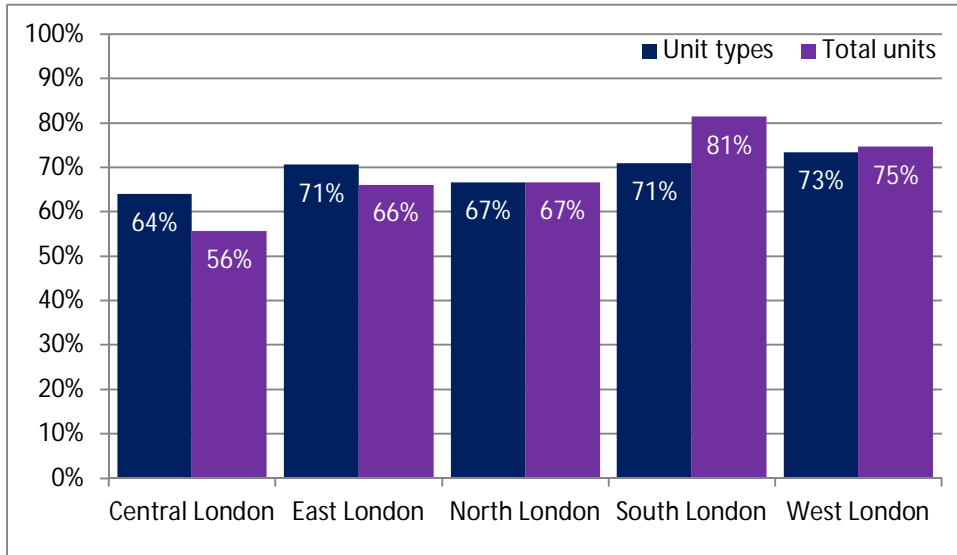
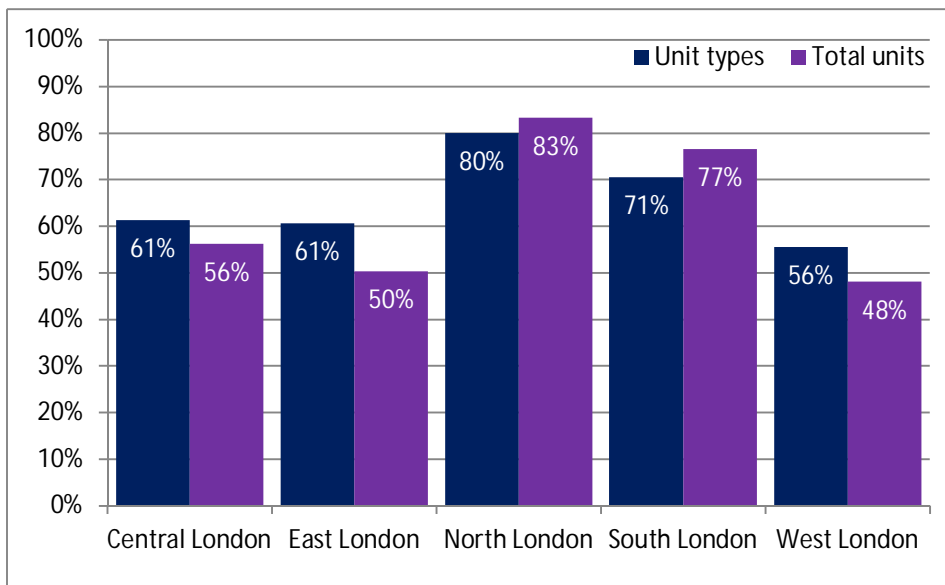


Figure 33: Percentage of sitting rooms \geq 3.2m wide for 4p and larger dwellings



Entrance-level Socialising Space

205. The *Supplementary Planning Guidance* adopts the Lifetime Homes standard that there should be a living room, living space or kitchen/dining space at entrance level so that there is somewhere for residents to socialise with visitors who are unable to use stairs.

SPG –Standard 4.4.5

A living room, living space or kitchen-dining room should be at entrance level [Lifetime Homes Standard 8].

206. As only 4% of the sample unit types were houses with all other unit types being flats, this Standard has a very high level of compliance. Some flats did not comply because they had steps within the dwelling between entrance doors and socialising areas, and information was not available to show whether they were "easy-going" in accordance with the definition in Appendix 1 of the Lifetime Homes Standard.

207. However, of the 740 unit types, 737 complied (99.5%).

208. Of the 3239 units in total, only 3 did not comply with a resulting compliance rate of 99.9%.

3-bed dwellings with 2 Living Spaces

209. Of the 137 unit types that were 3-bedroom or larger (1,775 total units), 42 unit types (representing 9%) and 120 units in total (representing 7%) complied with the requirement to have a second living area. Where a separate living area was provided it always had an external window.

SPG –Standard 4.4.3

Dwellings with three or more bedrooms should have two living spaces, for example a living room and a kitchen-dining room. Both rooms should have external windows. If a kitchen is adjacent to the living room, the internal partition between the rooms should not be load-bearing, to allow for reconfiguration as open plan arrangement. Studies will not be considered as second living spaces.

210. There is a wide disparity in levels of compliance between different sub regions (see Figure 34). However this should be read in conjunction with Figure 35, which shows the sub-regional distribution of the dwellings. Nearly two thirds of the total dwellings are in the East London region (50% of the unit types are in East London) which has the lowest level of compliance with this Standard. This drags down the overall (mean) level of compliance. The figures for North London are more subject to chance variation because the sample contains fewer instances, but there does appear to be a noticeable difference in compliance levels between South London and - in particular - East London.

Figure 34: 3-bed and larger dwellings with 2 living spaces

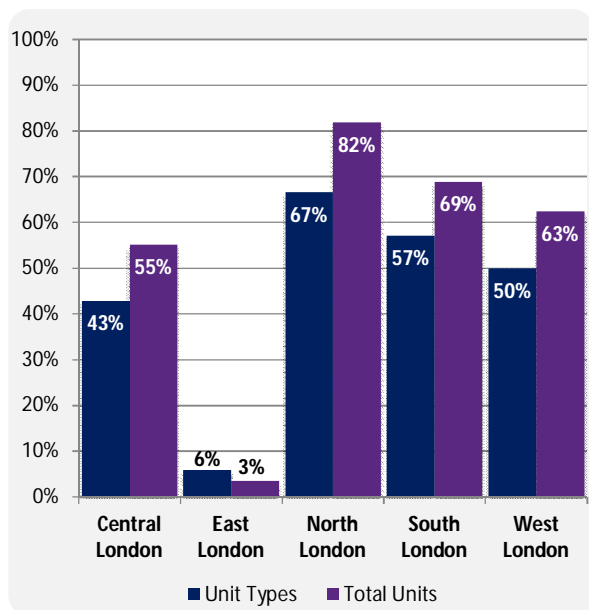
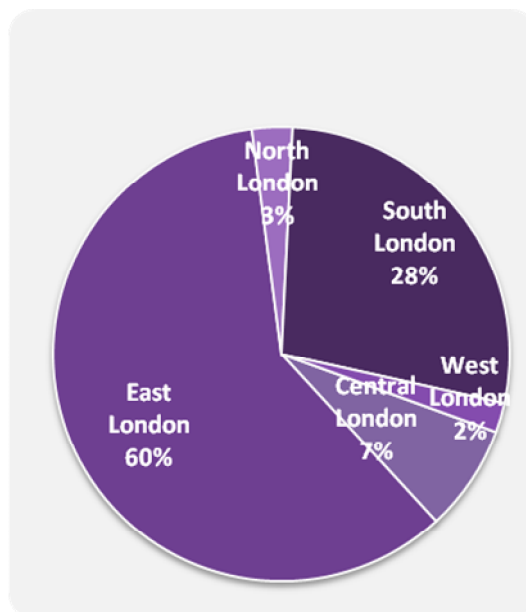


Figure 35: Sub-regional distribution of 3-bed and larger dwellings



Bedrooms

211. Compliance with the *Supplementary Planning Guidance* Standards on minimum bedroom size was assessed. This assessment necessarily judged bedroom occupancy by the furniture layouts provided on plans.

SPG Standard 4.5.1

The Minimum area of a single bedroom should be 8m². The minimum area of a double or twin bedroom should be 12m².

Single Bedrooms

212. 44% of single bedrooms by unit type and 57% by total units were 8m² or larger.

213. The smallest single bedroom in the sample was 4.1m², and the largest was 15.1m².

214. Table 14 sets out the quartile information for single bedrooms, in m², for unit type (not by total units).

Table 14: single bedroom size range showing quartiles (m²)

Smallest	Quart1	Quart2	Quart3	Largest	Count
4.1	7.0	7.9	8.7	15.1	149

215. The second quartile (the median) is very close to the GLA standard of 8m², showing that just over half of the single bedrooms fell below this standard.

2-person Bedrooms

216. 64% of 2-person bedrooms by unit type and 60% by total units were 12m² or larger.

217. The smallest 2-person bedroom was 5.5m² and the largest was 41.9m².

218. Table 15 sets out the quartile information for 2-person bedrooms, in m², for unit type (not for total units).

Table 15: 2-person bedroom size range showing quartiles (m²)

<i>Smallest</i>	<i>Quart1</i>	<i>Quart2</i>	<i>Quart3</i>	<i>Largest</i>	<i>Count</i>
5.5	10.8	12.2	13.9	41.9	1117

219. Again, the second quartile (the median) is very close to the GLA standard of 12m².

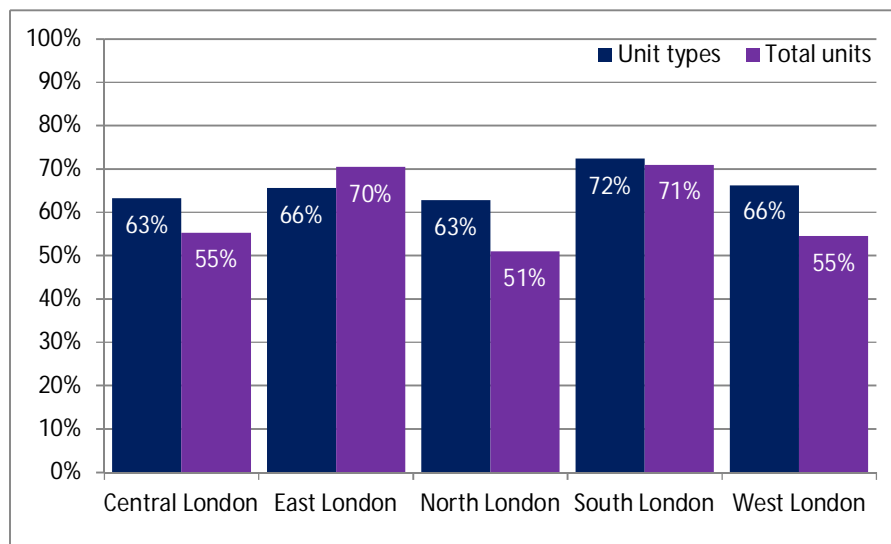
Bedroom Width

220. 66% of the 1147 2-person bedrooms by unit types (67% of 4855 2-person bedrooms by total units) in the sample met or exceeded the Standard regarding 2-person bedrooms width. So one-third of the dwellings did not comply with the standard.

SPG – Standard 4.5.2
The minimum width of a double and twin bedroom should be 2.75m for most of the length of the room.

221. As shown in Figure 36 there was little variation between sub-regions.

Figure 36: Percentage of 2-person bedrooms ≥ 2.75m wide



WCs in 5+ Person Dwellings

222. The *Supplementary Planning Guidance* also adopts the Lifetime Homes standard that there should be at least two WCs in dwellings designed for occupancy of five people or more.

223. Of the 133 unit types and 374 total units, 96% and 99% respectively complied.

224. Only five of the unit types did not comply, and they were all flats, not houses, maisonettes or duplex apartments. Two of the units came from large schemes and three from small schemes. The large-scheme units and one of the small-scheme units were new-build with the remaining two small schemes being a change of use.

SPG – Standard 4.6.1

Dwellings designed for an occupancy of five or more people should provide a minimum of one bathroom with WC and one additional WC.

Storage Space

225. The minimum storage space Standard includes (inter alia) 0.8m² floor area for 2-person dwellings (for market housing) or 1.5m² floor area (for subsidised housing) with an additional 0.5m² for each additional occupant.

226. Where bedrooms had built-in wardrobes with a floor area larger than that assumed in the SPG (i.e. 0.36m² per person) the "excess" area was counted as general storage space. This is a slight variation on the standards set out in the SPG, meaning that the results tend to over-state the level of compliance. However the difference is very small, as noted at paragraph 179.

227. 30% of the unit types in the sample had no storage at all.

228. 88% of units types (87% of total units) had less than 0.5m² storage per person.

229. Only 17% and 19% of unit types and total units (respectively) complied with the market housing standard.

230. Only 5% and 6% of unit types and total units (respectively) complied with the subsidised housing standard.

231. None of the units met the Parker Morris requirement of storage space consisting of at least 10% of the dwelling floor area.

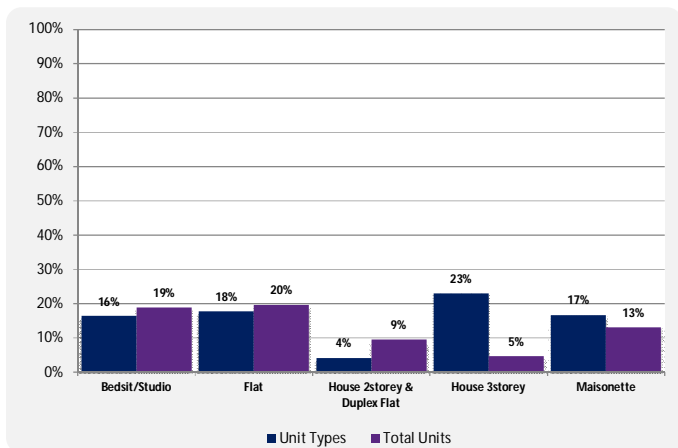
232. Figure 37 shows the level of compliance with the market housing standard. Bungalows are excluded as there were only 3 in the sample. 80% of the unit types and 89% of the total units were flats, which showed a compliance level of 18%/20% respectively.

SPG – Standard 4.7.1

Built-in general internal storage space free of hot water cylinders and other obstructions, with a minimum internal height of 2m and a minimum area of 0.8m² should be provided for 2 person dwellings, in addition to storage provided by furniture in habitable rooms. For each additional occupant an additional 0.5m² of storage space is required.

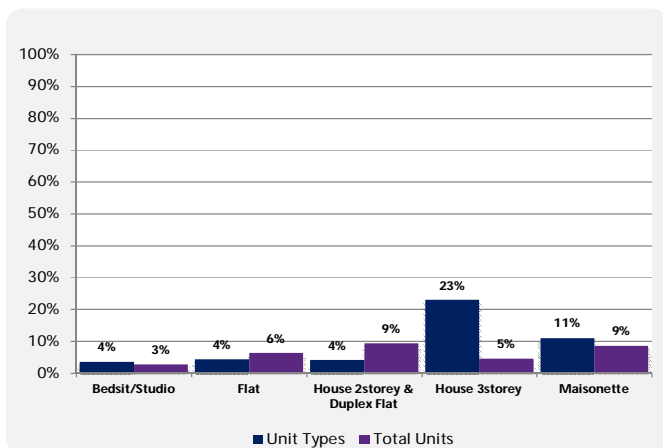
[NB: for subsidised housing the minimum storage floor area for 2 person dwellings is 1.5m², not 0.8m²]

Figure 37: compliance with market housing storage Standards by typology



233. Figure 38 shows a level of compliance with the subsidised housing storage standard (which was the standard applied to all housing in the *Interim London Housing Design Guide*). Whilst it appears that the three-storey houses performed best in terms of unit types, and this is because 3 out of the 13 unit types in this category complied with the storage Standards. However they were again bespoke designs that were not repeated in schemes, and therefore accounted for only 3 out of the 65 three-storey town houses in the sample.

Figure 38: compliance with subsidised housing storage Standards by typology



234. The range of floor area devoted to general storage, and the inter-quartiles, were calculated. These calculations excluded all of the unit types/units which had no storage space at all. They therefore slightly over-state the position compared to the inter-quartiles that would be produced if unit with no storage space at all were included in the calculations.

235. Although there is a high level of non-compliance with noticeable gaps between the median level of provision and the GLA standards it is possible that many of those unit types delivering more storage space than the median may comply with the standards. The results of the analysis are shown at Figures 39 & 39A.

Figure 39: Storage quartiles (m²) for unit types, by unit mix (for those mix categories where there were >10 unit types)

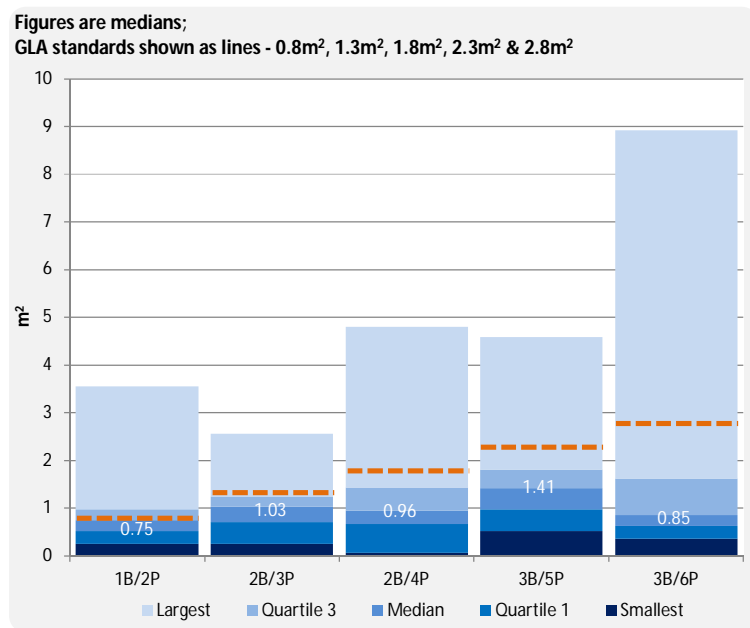
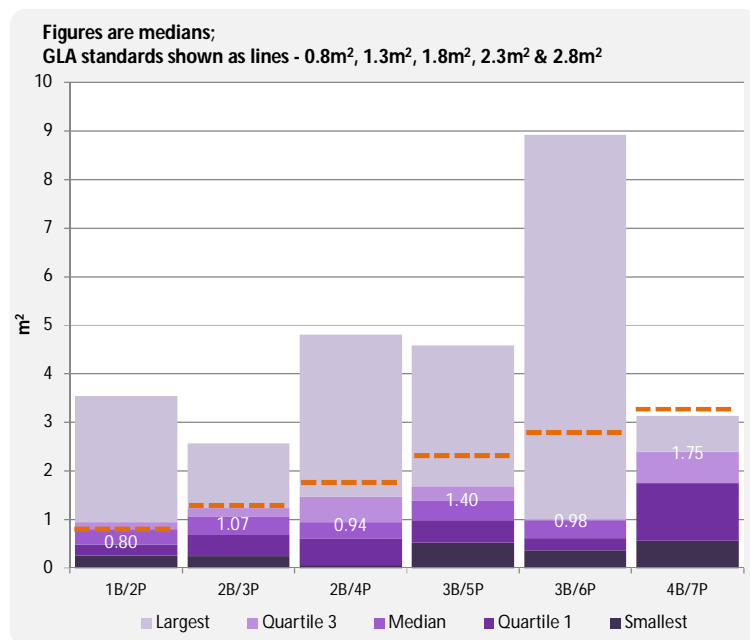


Figure 39A: Storage quartiles (m²) for total units, by unit mix (for those mix categories where there were >30 units)



236. These Figures show that the GLA standard is usually only met by schemes in the top quartile. This suggests that the discrepancy between current provision and the GLA standard for this Standard is more stark than for others.

237. The data was re-analysed without scoring the "excess" storage space in built-in wardrobes as general storage. The results are not shown as they are only very slightly different from the results reported above.

Cores / Lifts

Number of Dwellings accessed from One Core

238. The *Supplementary Planning Guidance* requires that no more than 8 dwellings should be accessed from a single core. Table 16 shows the number of floors in blocks of flats where more than 8 dwellings were accessed from only one core.

SPG – Standard 3.2.1

The number of dwellings accessed from a single core should not exceed 8 per floor.

239. The sample included 527 floors in blocks of flats.

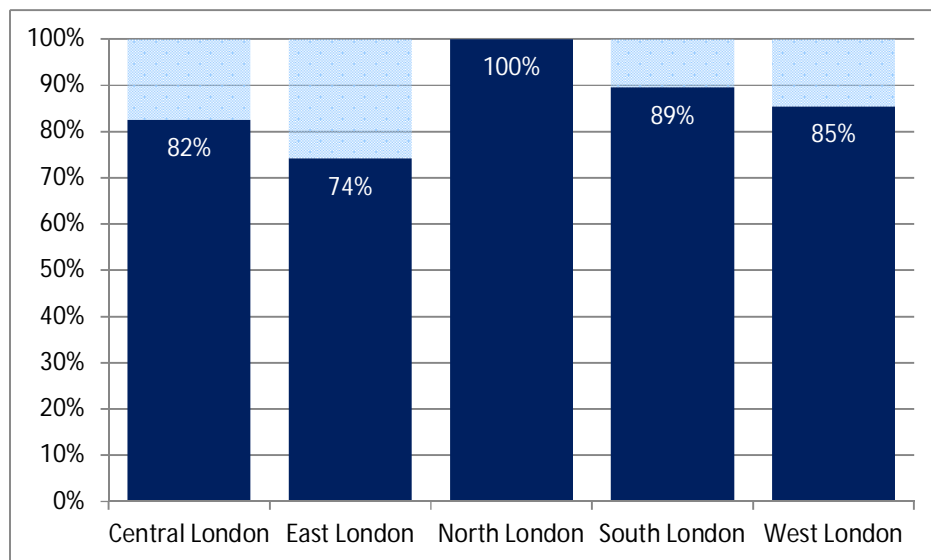
Table 16: Incidence of floors with 8 or fewer dwellings accessed from one core

	≤ 8 flats?	%
Yes	412	78%
No	115	22%
Total	527	

240. **The sample showed a rate of compliance of 78%.** In approximately 1 a 5 cases (115) there are more than 8 flats served by a single core in blocks of flats in the sample.

241. The level of compliance was reasonably consistent across all sub-regions, as shown in Figure 40.

Figure 40: compliance by sub-region with the standard of ≤ 8 flats per core



242. The study checked the incidence and percentages where more than 12 and more than 16 flats were served by a single core. There were only 8 floors servicing more than 12 units, and 2 floors servicing more than 16 flats (**1.5% and 0.4% respectively** of the total of 527 floors).

Number of Lifts Provided

243. The *Supplementary Planning Guidance* Standards regarding lift access can be summarised as dwellings being accessible by a lift if they are:

- on the third floor (fourth storey) [desirable];
- on the fourth floor (fifth storey) [essential];
- on the seventh floor (eighth storey), but serviced by two lifts [essential].

244. Compliance with these Standards was determined by identifying the number of four storey/five-storey/8+ storey blocks that had no lift, one lift or two lifts. The results are:

- Of the 45 blocks of 4 storey and above, 44 had a lift and 1 did not, i.e. **98% compliance**;
- Of the 37 blocks of 5 storey and above, all 37 had a lift, i.e. **100% compliance**;
- Of the 20 blocks of 8 storey and above, 13 had two lifts, i.e. **65% compliance**;

SPG – Standard 3.2.6

All dwellings entered at the fourth floor (5 storey) and above should be served by at least 1 wheelchair accessible lift, and it is desirable that dwellings entered at the third floor (fourth storey) are served by at least one such lift. All dwellings entered at the seventh floor (eighth storey) and above should be served by at least 2 lifts.

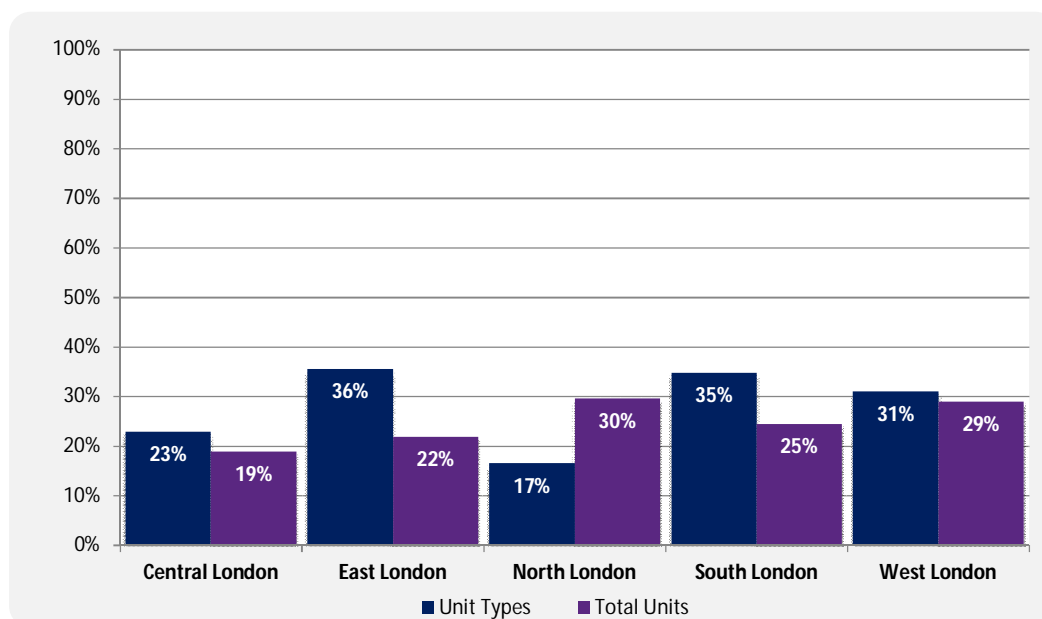
Private Outdoor Space

Total Private Outdoor Space

245. Overall, **32% of unit types and 22% of total units complied** with the Standards on the minimum amount of private outdoor space, where the occupancy level has been calculated in accordance with this report method.

246. The levels of compliance by region is shown in Figure 41.

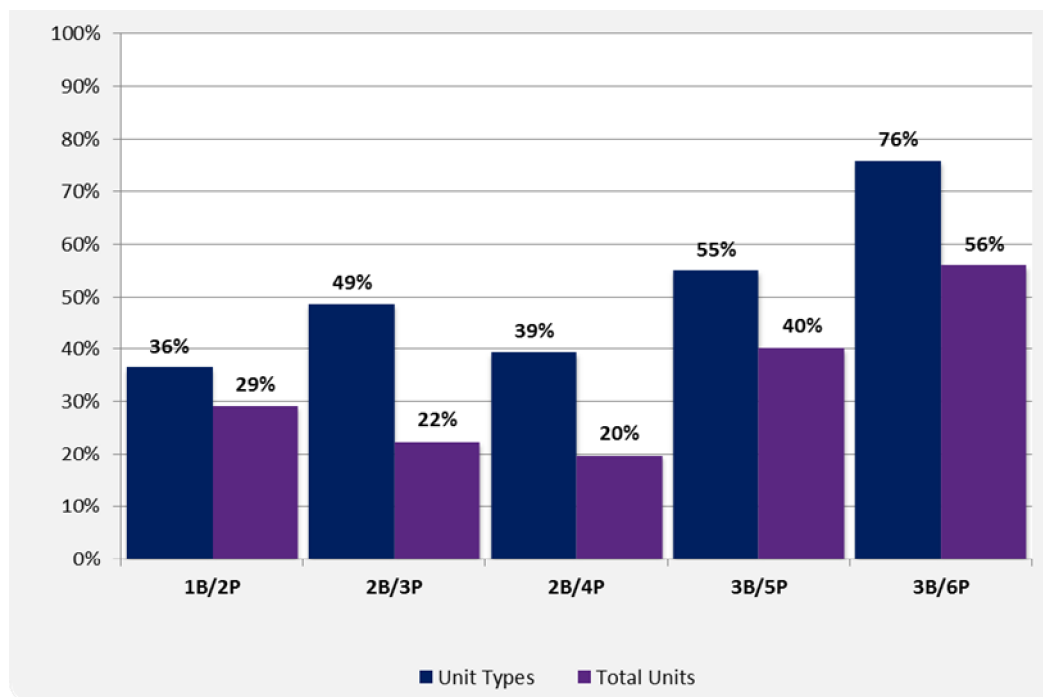
Figure 41: compliance with private outdoor space standard by sub-region



247. However, 220 of the 740 unit types in the sample (**30%**) had no private outdoor space at all.

248. For those dwellings that did have private outdoor space, **45% of units types (27% of total units) complied with the GLA Standard.** Figure 42 shows compliance by unit types and total units.

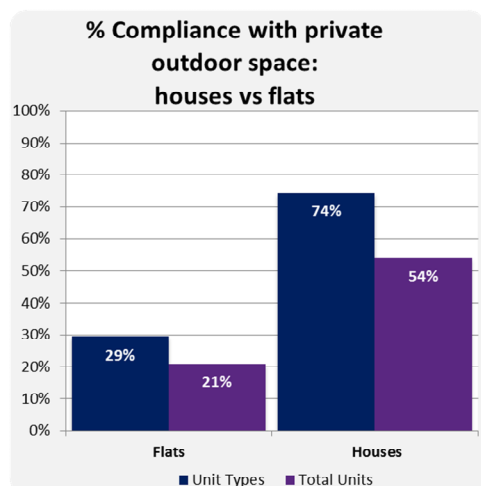
Figure 42: compliance with private outdoor space standard by unit mix



249. The level of compliance in terms of total units is noticeably lower than that for unit types. This suggests that non-compliant unit types were also highly repetitious, whilst compliant unit types had low levels of repetition.

250. Typologies were aggregated to produce an approximate analysis between those dwellings where the private open space is a balcony, or regard. In Figure 43 the "house" typology included bungalows, 2-story and 3-story houses as well as duplex flats (2-story flats with ground floor entrance level). The "flat" typology included bedsit/studios, apartments and maisonettes (a 2-story flat where the entrance level is about ground floor). **74% of house unit types (54% of total house units) complied with this Standard compared with 29% for flat unit types (21% of all flats).**

Figure 43: compliance with private outdoor space standard by typology¹



251. The Standard for private outdoor space starts at 2.5m² per person (5m² for a 2 person dwellings) progressively falling so that for (say) 6 person dwellings the Standard is 1.5m² per person. Table 17 shows the median amount of private outdoor space per person for different dwelling typologies. The great majority of dwellings in the sample were flats, with median space per person of 1.7m² or 1.5m² (unit types and total units respectively). As the occupancy level of the overwhelming majority of these dwellings will be many fewer than 6 people, it appears that the median level of total private space provision is below, or well below, the Standard.

Table 17: Median private outdoor space per person

Dwelling typology	Unit Types (m ²)	Total Units (m ²)
Bedsit/Studio	2.1	1.8
Flat	1.7	1.5
Maisonette	4.3	4.5
House 2 storey & Duplex Flat	4.0	1.7
House 3 storey	4.3	3.5
Bungalow	62.1	34.3

Gardens & Terraces

252. Table 18 shows the median size of garden or terrace for the dwellings in the sample in terms of unit types and total units. **For all regions, the median was 16m² (unit types) or 9m² (total units).**

Table 18: Median garden/terrace size by sub-region

Sub-region	Unit Types (m ²)	Total Units (m ²)
Central London	16	15
East London	24	10
North London	68	68
South London	9	6
West London	12	11
All Regions	16	9

253. The range of sizes of private gardens or terraces was very large, particularly in East London and South London with the largest spaces being in excess of 300m² and 400m² respectively.

254. To make the data easier to read, the range up to the third quartile is shown in Figures 44 & 44A i.e. excluding the largest spaces.

Figure 44: Garden areas (up to 3rd quartile) by subregion for unit types

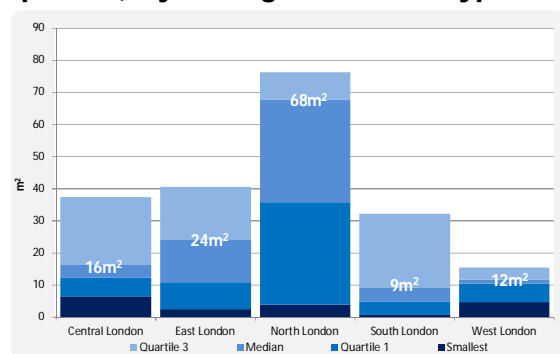
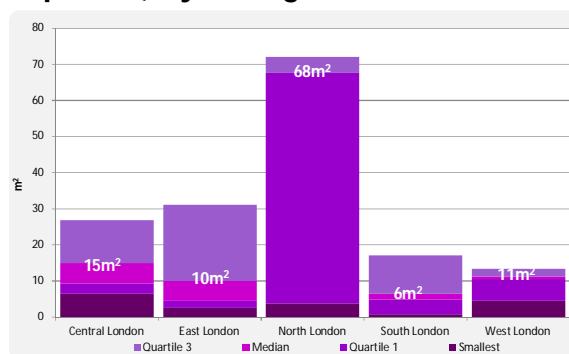


Figure 44A: Garden areas (up to 3rd quartile) by subregion for total units



255. It should be noted that 75% of the total units that had gardens were located in only two sub regions - East and South. These are the two sub regions with the lowest median level of provision. There were very few units in the North region, the region with the highest level of garden provision.

Balconies

256. There was a wide range of sizes of balconies. Figure 44 shows the range of total balcony area including quartiles, by sub-region. Only 2 individually-designed units out of the 481 unit types and 2,480 total units with balconies were in the North region. They have therefore been omitted from this report.

257. A very few luxury dwellings had very large balconies (74m², 42m², 49m² and 11m² in the Central, East, South & West sub regions respectively). Including these figures in the range/inter-quartile grafts would make it difficult to distinguish between the different quartiles, and so these have been omitted from Figure 45.

258. Figure 45 shows that **total balcony area medians are approximately 5m² when assessed by unit type, and 4.5m² when assessed by total units**. Thus, the median is our at or below the SPG standard for 1 all 2 person accommodation, even though there is medians include large numbers of 3 person or more dwellings.

Figure 45: quartiles of total balcony area (up to 3rd quartile only), by subregion (unit types)

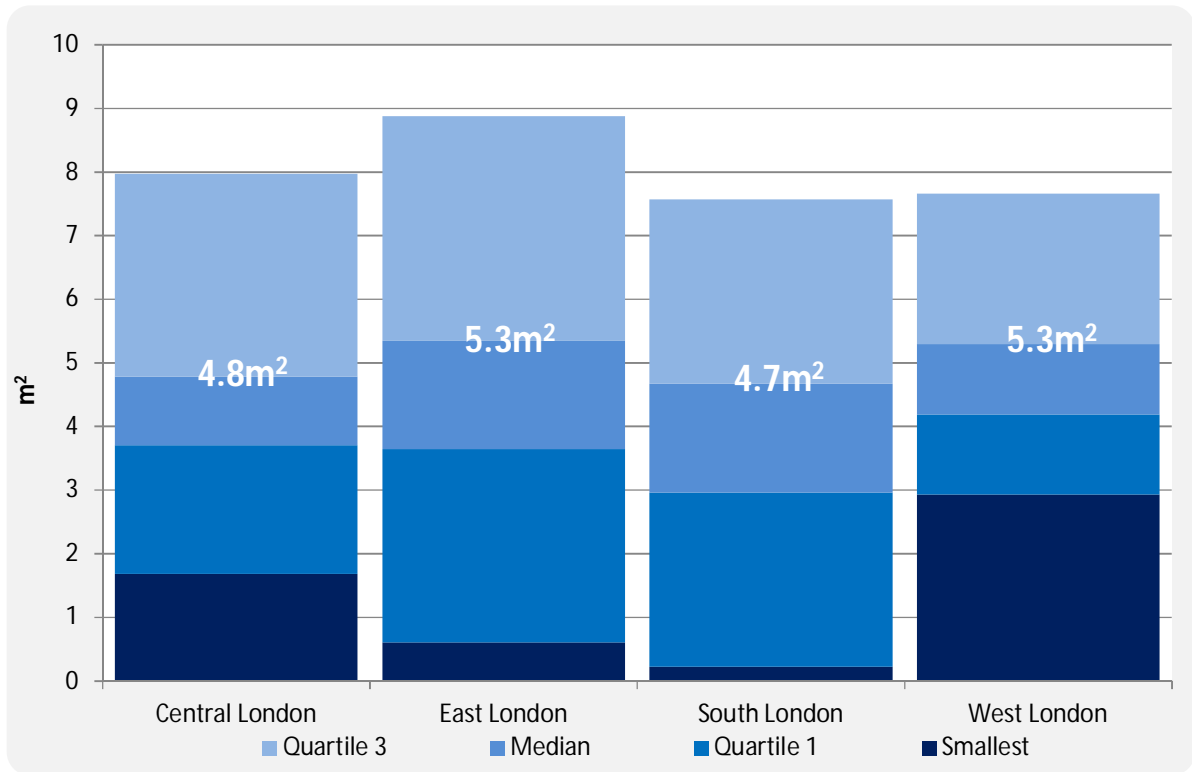
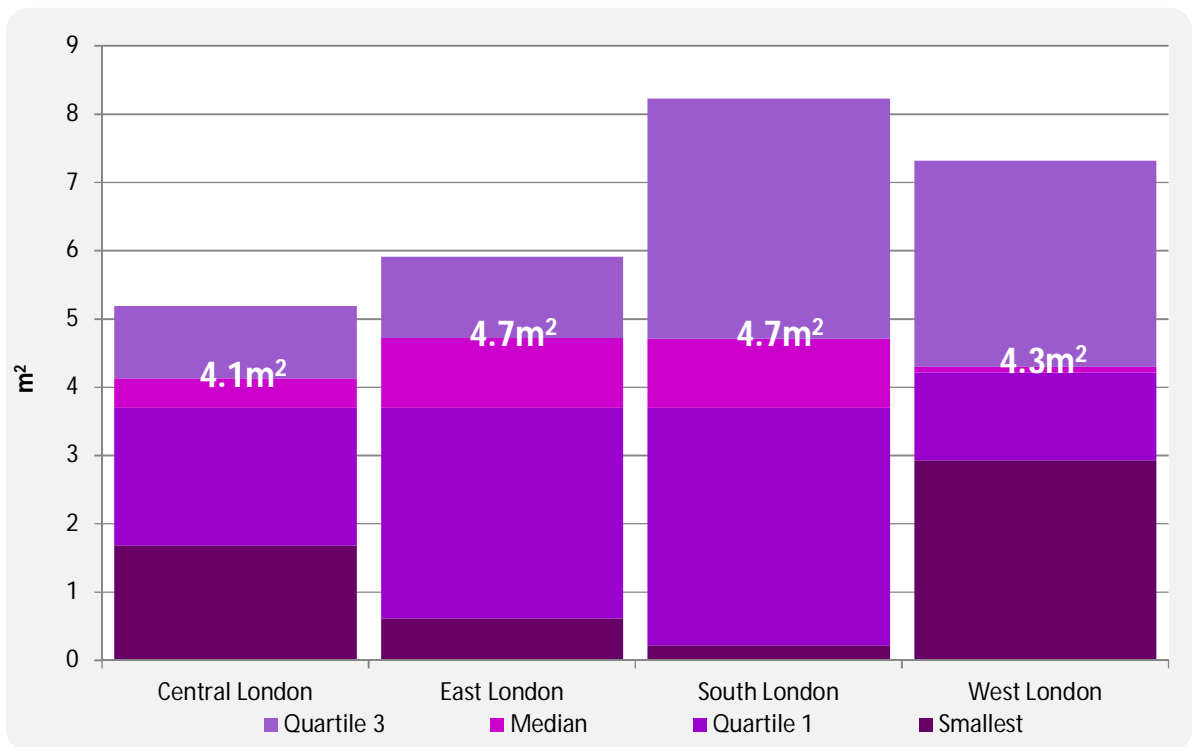


Figure 45A: quartiles of total balcony area (up to 3rd quartile only), by subregion (total units)



259. As shown in Table 19 approximately 85% of balconies were of regular (rectangular) shape, with approximately 15% being irregular.

Table 19

	Unit Types %	Total Units %
Regular balcony	84%	86%
Irregular balcony	16%	14%

Useable Private Outdoor Space

260. Usable space is that area which is both wider and deeper than 1.5m.

261. For regular (rectangular) shaped balconies of width and depth greater than 1.5m then the usable area and total areas are the same.

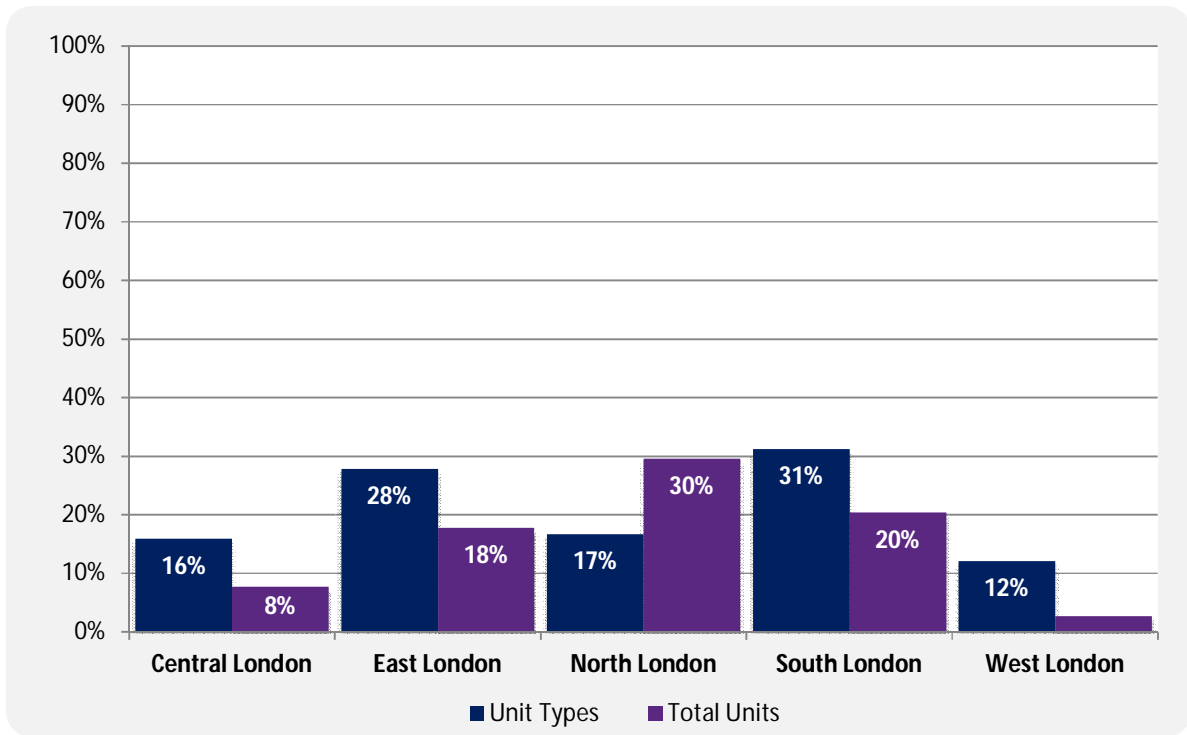
However, the usable area is less than the total area for balconies that are irregularly shaped, and/or where one of the dimensions is less than 1.5m.

262. There was a lower level of compliance when the SPG Standards 4.10.1 and 4.10.3 are read in conjunction with one another - in other words, assessing whether at least 5 m² of *usable* space has been provided for 1 & 2 person dwellings with an extra 1m² for each additional person in the dwelling. **24% of units types (15% of total units) complied with the Standards of 4.10.1 and 4.10.3 together.** The sub-regional levels of compliance are shown in Figure 46.

SPG – Standard 4.10.3

The minimum depth and width of all balconies and other private external spaces is 1500 mm

Figure 46: compliance with minimum outdoor space standard assessed against usable area not total area (by sub-region).



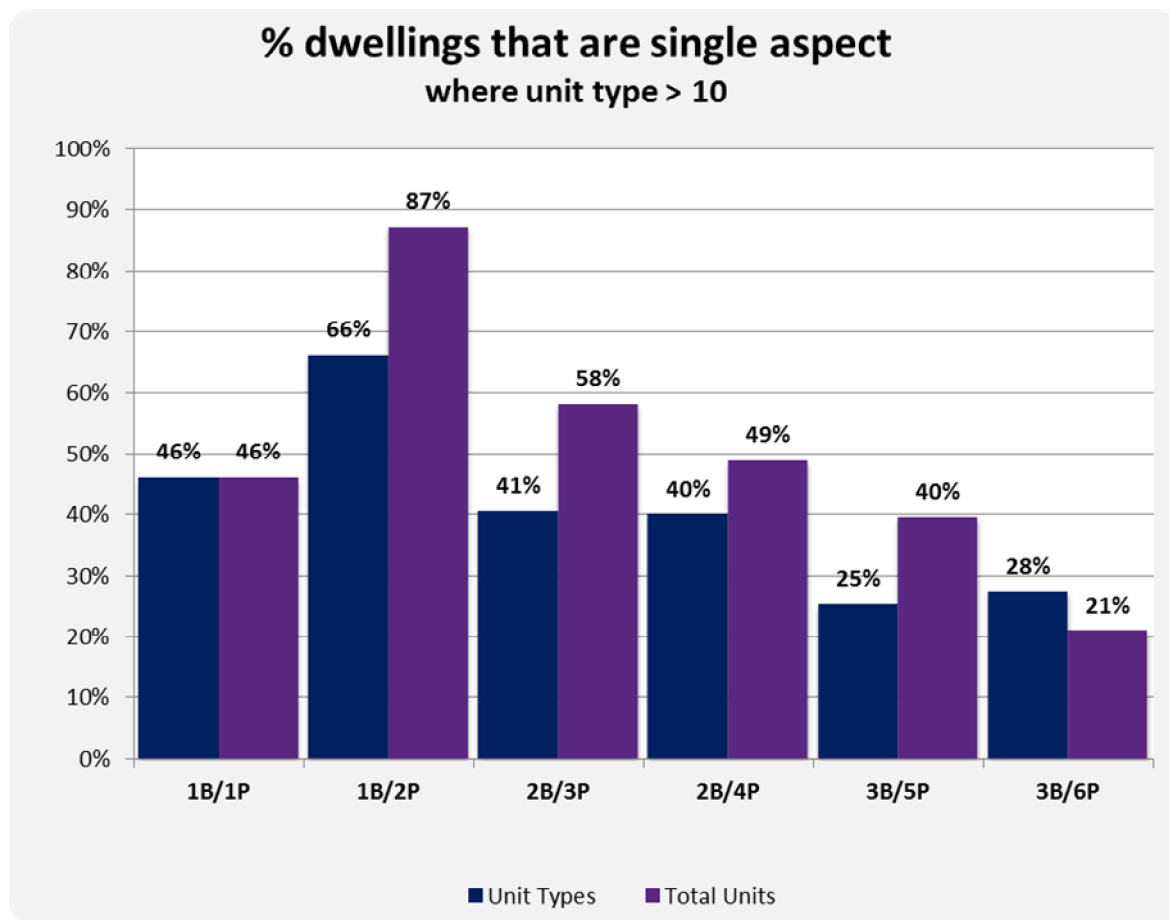
Single Aspect Dwellings

263. 46% of unit types (representing 64% of total units) were classified as single aspect.

264. 52% of 1-bed and 2-bed unit types (69% of total units) fell into this category, and 28% of 3-bed or larger unit types (38% of total units) were single aspect.

265. Figure 47 shows the percentage of dwellings that are single aspect (where there were more than 10 examples of the unit type).

Figure 47



266. The SPG includes a Standard that single aspect dwellings should be particularly avoided when North facing, in noisy areas or for 3-bed or larger dwellings. Information regarding noise levels was not available however the analysis shows that:

- For the combination of single aspect and 3-bed or larger dwellings:
 - **28% of the 3-bed or larger unit types (38% of 3-bed or larger units) were single aspect** (30/107, and 105/278, respectively);
 - 9% of single aspect units types (5% of all single aspect units) were 3 bed or larger (30/343 and 105/2072 respectively);
 - 4% of all unit types (3% of total units) were both single aspect and 3 bed or larger (30/740 and 105/3240 respectively).
- For the combination of single aspect and North-facing dwellings:
 - Of the 2072 dwellings that were single aspect, 373 (**18%**) were also **north facing**
 - Of the entire sample of 3,240 11.5% were both single aspect and north-facing.

Recommendations

For GLA & LB Planning Policy Officers

Gross Internal Area Definition

267. The GLA should set out its definition of the term "gross internal area". Unless otherwise defined developers are likely to adopt the definition set out in the RICS *Code of Measurement Practice* 6th edition. The RICS definition is drafted to apply as much to office, retail, storage buildings as it is residential. It therefore includes the following:

- a. "...lift rooms, plant rooms, fuel stores, tank rooms which are housed in the cupboard structure of the permanent nature...";
- b. Garages;
- c. Conservatories;
- d. Areas with a headroom of less than 1.5m;
- e. Pavement vaults

268. The *Code of Measurement Practice* does contain two special residential definitions, the Net Sales Area and the Effective Floor Area. The Net Sales Area appears to offer a definition that exactly reflects the intent of the SPG. The Net Sales Area is the GIA of a new or existing residential dwelling, subject to the following conditions:

- a. Including:
 - i. basements,
 - ii. mezzanines,
 - iii. galleries and
 - iv. hallways;
- b. Excluding:
 - i. areas with headroom less than 1.5m where the dwelling does not have usable space vertically above;
 - ii. garages;
 - iii. conservatories;
 - iv. external open-sided balconies;
 - v. greenhouses, garden stores, fuel stores and the like in residential properties;
 - vi. terraces.

269. We therefore **recommend** that the SPG either refers to the Net Sales Area (NSA) rather than GIA, or provides a definition of GIA (for the purposes of the SPG) that follows that for the Net Sales Area.

Threats to Effective Implementation of GIA Policy

Gross Internal Area & Unit Mix Policies

270. If applied in isolation, Policy 3.5 will be very easily circumvented by planning applicants. Rather than having the desired effect of reducing the number of "hobbit homes", it will simply result in homes of the same size being classified by the applicants as intended for lower occupancy. For example, the 53m² 2b4p flat that was the smallest example of its type in our sample, and which is well below the policy figure of 70m² could simply be described as a 2b2p, for which the policy requirement is 52m². Suddenly this seriously non-compliant dwelling, complies. It would be easy to see all of the 2-bedroom flats in a development being declared as 2b2p dwellings. Similarly, all 4-bedroom dwellings could be declared as 4-person dwellings.
271. This policy, therefore, will only be effective if combined with policies on unit mixes. London Boroughs will need to set policies on acceptable unit mixes. This must be expressed in terms of both bedrooms and persons. e.g. X% to be 1b2p; Y% to be 3b5p; Z% to be 4b6p etc. We therefore **recommend** that the GLA emphasise the necessity for London Boroughs to include unit mix policies in their Development Plan Documents.

Unit Mix Policies & Bedroom Occupancy

272. Unit mix policies themselves, need to be supported by clear criteria for determining bedroom occupancy, namely whether the bedroom is to be classified as single occupancy or a double/twin.
273. Whilst the SPG focuses on setting minimum standards, the GLA should give consideration to setting an upper limit when categorising bedrooms as 1-person. An 11m² bedroom that is categorised as a 1-person bedroom in the planning application may well be marketed as a double or twin, allowing the applicant to partially subvert the GIA standard.
274. We therefore **recommend** that the SPG includes guidance that well-proportioned bedrooms¹ of floor area greater than 10.2m² are classified as 2-person bedrooms, not singles. This figure has been drawn from the Housing Act 1985 provisions relating to overcrowding, and as the threshold above which a room is considered suitable for 2 people. This is the only bedroom size threshold defined in primary or secondary legislation. Whilst significantly higher than the self-assessed threshold of the designs in the study sample,
275. It could be argued that the bedroom occupancy threshold should be what the market itself decides - the self-declared threshold, evidenced by either furniture layouts on submitted drawings or by analysis such as undertaken in this report and shown at Figure 8. However, such a self-declared threshold will be a movable target, and does not therefore provide a robust benchmark against which compliance can be assessed.
276. It could also be argued that the threshold should be set at 12m², the Good Practice minimum area for a double bedroom in the SPG. We would support this only when the 12m² minimum becomes mandatory. Until then we note from Table 14 that a threshold at 12m² would mean that nearly half of all the bedrooms currently designed for 2-person

¹ rectangular in shape, with length : width proportions no greater than 2:1.

occupancy would be classified as 1-person rooms. We consider that this would lead to too much opportunity for subverting the intention of Policy 3.5.

Room Categorisation: Study, 2nd Living Area or Bedroom?

277. How unserviced rooms¹ are used when the properties are built and occupied is, of course, entirely up to the residents - they may be used for sleeping, eating, living or other activities. However, planning officers will need to check that rooms very likely to be used as bedrooms are not categorised by applicants as non-bedroom use, in order to minimise the declared occupancy - and therefore the minimum GIA - of the dwelling. This is an obvious way to subvert the intent of Policy 3.5, and we therefore **recommend** that the GLA publish appropriate guidance for Borough Planning Officers.

Marketing Details

278. Finally, LPA's should be aware - perhaps through liaison with Local Trading Standards Officers - whether the approved dwellings are being marketed at same level of occupancy for which planning permission was granted, or for different (higher) levels of occupancy. This point is considered in more detail in the *Further Research* Section below.

Minimum Kitchen Areas

279. The plans for some unit types gave no information about which room/space was to be designed as the kitchen, and across all the unit types sample, the area designed as kitchen space (where shown) varied greatly, and not necessarily in proportion to the level of occupancy.

280. The SPG contains no minimum Standards for kitchen areas preferring to allow designers the freedom to allocate space between the cooking/dining/living aggregate areas are set out at standard 4.1.1. This follows the recommendations of the 2006 HATC report for the GLA *Housing Space Standards*.

281. However, a functioning kitchen is an essential part of any home, and the space needed for a functioning kitchen is linked to occupancy levels. There is an argument that it is important enough to warrant its own standard. Many instances of under-provision, poor design and occasional over-provision were noticed during this study. We therefore **recommend** that the GLA give consideration to establishing a minimum standard for kitchen space in dwellings.

Definition of Family Housing

282. The London Plan definition of family housing is currently expressed in terms of bedrooms. We **recommend** that it should be expressed in terms of occupancy, not just numbers of bedrooms to avoid classifying (for example) 3b3p dwellings as contributing towards the provision of family accommodation.

Bedsit / Studio Bedroom Areas

283. Checking compliance with the cooking/eating/living standard (SPG 4.4.1) for bedsit/studio flats involves identifying the floor area that equates to the bedroom. The SPG does not currently provide any guidance on how this is to be done. As outlined in

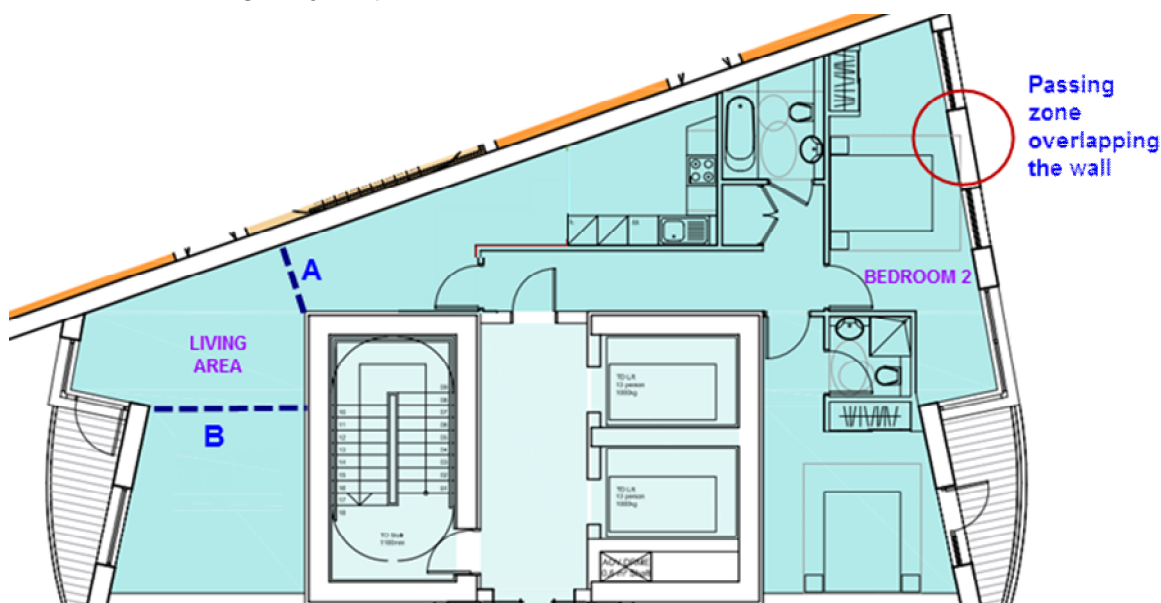
¹ i.e. rooms that are not supplied with water, drainage and fittings such as kitchens, bathrooms and utility areas stop

paragraphs 59 - 69, this report has developed an approach, but we **recommend** that the GLA develop guidance for London Boroughs on this subject.

Width in Irregular Rooms

284. The SPG sets minimum widths for living areas and bedrooms. This standard is easily understood and applicable for rectangular rooms, but becomes harder the more the shape of the room deviates from a rectangle. Many units types, however, had irregularly shaped bedrooms and/or living areas which introduces uncertainty into the point at which the minimum width is reached. An example is shown at Illustration 14.

Illustration 14: irregularly shaped rooms



285. There is some uncertainty over where the residents are likely to sit and eat, and where the living area lies. Is the minimum width of the living area line A line B? Similarly, there are options for "minimum width" candidates in Bedroom 2.

286. We therefore **recommend** that the GLA provide guidance on the underlying rationale to the minimum width standards. This should clarify whether the purpose of the standard is to facilitate the movement of furniture, to avoid feeling of being cramped and to close to the opposing wall in the room, or some other rationale. As noted in the Definitions, this study took the view that living area minimum width was primarily about being able to move furniture into and out of the room, and so was more about identifying "pinch points" than ensuring that opposing walls were generally far enough apart.

287. As an aside, Illustration 14 shows an example of poor attention to detail by a designer who was happy to show a passing zone merging into an external wall. This highlights that development control officers should not assume that designers have paid careful attention to detailed compliance.

Consolidating the Private Outdoor Space Standards

288. The SPG contains two standards relating to private outdoor space: one setting a minimum area and another setting minimum linear dimensions. The effect may cause some confusion, as the total area provided may exceed the 5m² plus required by one standard, and yet may fail to meet the linear standards. This is clearly demonstrated in Figures 41 & 45. These two standards may be perceived to be in conflict, and be the

cause of unnecessary disputes between applicants and development control officers We therefore **recommend** that these two standards are conflated into one expressed as:

289. All private outdoor spaces should be large enough to accommodate a rectangle with both width and depth of at least 1.5m, and with a minimum area of 5m² for 1 - 2 person dwellings and an extra 1m² per additional occupant.

Identifying north facing, single aspect dwellings

290. National requirements for a planning application required the site plan to show the direction North, but not other plans. We note that the Planning Portal guidance note says: "All plans and drawings must have a scale bar, key dimensions, the direction of North...", although many block plans and floor plans reviewed in this study did not show the direction North. We therefore recommend that the GLA and London Boroughs introduce local requirements that every block plan of the site and every proposed floor plan should also show:

- the direction North, and:
- the NW-NE quadrant that matches the SPG definition of "North facing".

291. The draft SPG defines North facing as "an orientation less than 50° either side of due north." As the relevant CAD-imported data will generally come from Ordnance Survey, we **recommend** that the definition of "North" is confirmed as meaning "grid North", as opposed to magnetic North or true North. We also **recommend** that the GLA reconsider whether "North" should be 50° either side of due north or the more common sense - based 45° either side of due north.

292. As noted in paragraphs 55 -58, the SPG definition of what is a dual aspect or single aspect dwelling is also open to interpretation on significant issues. We therefore **recommend** that the GLA consider amending the definition of a dual aspect window in accordance with that set out in paragraph 58.

For Development Control Officers

Gross Internal Area – Gathering the Data

293. Section 17 of 1APP¹ currently asks for a breakdown of the existing and proposed residential units by dwelling type (bedsits, flats, houses, sheltered housing etc), numbers of bedrooms and tenure. The GLA's gross internal area standards are expressed in terms of both numbers of bedrooms and persons, and therefore the unit mix needs to be introduced into an updated version of 1APP, and replace the requirement to declare the number of bedrooms. This revision should take the opportunity to also update the forms of tenure to reflect recent changes.

294. We therefore **recommend** that the GLA work with London Boroughs and the CLG to introduce suitable changes to 1APP to facilitate the assessment of compliance with Policy 3.5. We have suggested how this might be achieved in the following paragraphs.

¹ The National Standard Planning Application Form, or 1APP was introduced by Government in April 2008 consisting of a single set of standard forms for England which local authorities are unable to amend.

295. Table 1APP(1) shows how the existing series of tables covering tenure could be amalgamated into a single table combining dwelling type and tenure.

Table 1APP (1)

PROPOSED HOUSING: number of units						
	Market	Affordable rented	Social rented	Shared Ownership	Equity share	Total
Houses	4	4				8
Flats and maisonettes	32	12		8		52
Live-work units						
Cluster flats						
Sheltered housing						
Bedsit/studios	6	2				8
Unknown type						
Totals	42	18		8		68

296. In order to make it as easy as possible for development control officers to identify unit types that do not meet the policy requirements for internal area, we suggest that applicants should be required to submit a schedule of the proposed unit mix that states the relevant GIA for that unit type as per the policy. This will need to reflect the possibility (or likelihood for larger schemes) that each dwelling type may come in a variety of forms with different areas. For example, there may be three different forms of a 1b2p flat in a scheme. An example table is shown at Table 1APP(2) below. We also suggest that non-compliant dwelling types should have their floor area highlighted. Providing information regarding both the number of each dwelling type alongside its floor area will allow development control officers to identify how common (or rare) each example of non-compliance is.

Table 1APP (2)

Unit Types	GLA policy (m ²)	Type A		Type B		Type C		Type D		Total (no.)
		No.	m ²	No.	m ²	No.	m ²	No.	m ²	
FLATS										
1b1p	37	6	34	2	38					8
1b2p	50	5	48	4	50	4	51			13
2b2p	52	30	53							30
2b3p	61	3	60	1	64					4
3b4p	74	4	73	1	72					5
Totals (no.)		48		8		4				60
3 STOREY HOUSES										
3b5p	102	6	103	1	101					7
4b6p	113	1	115							1
Totals (no.)		3		1						8
Grand total		51		9		4				68

297. Presenting a schedule of unit mix in this form will not only assist development control officers in assessing compliance with GIA policy requirements, but will also allow the scheme mix to be quickly grasped, so that compliance with the Borough's policy on unit mix can also be assessed. For example, in Table 1APP(2) above, it is apparent that 30 out of the 68 proposed dwellings are classified by the applicant as 2b2p.

Community Engagement & GPS

298. Planning officers may consider requesting GPS coordinates planning application sites. Having this information available on the LPA's website - combined with the smartphone app that would inevitably be developed - would allow local residents to quickly identify planning applications in their area. They could even subscribe to a text alert service.

Non-Standard Furniture sizes

299. Development control officers should be warned that items of furniture shown on plan is may be smaller than the standard dimensions used in design guidance such as the *Interim London Housing Design Guide*, from which the SPG standards were taken. This is important when assessing compliance with SPG standard 4.2.1. regarding flexibility of furniture layouts. We therefore **recommend** that the GLA highlights this issue to the London Boroughs.

Obtain CAD files not pdfs

300. Given that the assessment of compliance with some of the standards in the SPG will require development control officers to look in some detail at the dimensions and areas of proposed dwellings, we **recommend** that the London Boroughs request planning application drawings in CAD format rather than PDF format. This will make it much easier for them to assess compliance.

301. Whilst we believe that a few architectural practices would object to this suggestion, it may be prudent to consult on the proposal first.

Further Research

Policy Effectiveness - Identifying Trends In Housing Standards

302. The GLA will need to commission a follow-up study in circa 2 or 3 years, covering the same standards, in order to ascertain the effectiveness of Policy 3.5 and the associated standards in the SPG.

303. We would also **recommend** that research is undertaken into the accuracy of information provided in App1 applications by undertaking a detailed review of a sample of 1APPs and the associated application drawings. This will allow any systemic inaccuracies to be identified and remedied, as well as indicating the general level of accuracy in applications which is an important piece of contextual information for development control officers.

Consistency in Occupation Levels between Planning and Marketing

304. The purpose of Policy 3.5 (GIAs) is to ensure that dwellings are designed with sufficient space for the intended level of occupancy. It is true that occupancy levels of dwellings will fluctuate over the decades that the dwelling is in use, and that actual levels of occupancy is (quite rightly) beyond the scope of the planning system.

305. However, the "reach" of Policy 3.5 is clearly intended to go further than development control decisions, and reduce the incidence of Londoners living in newly-built, but instantly cramped, housing.

306. We therefore **recommend** that the GLA commission research into the degree of consistency between dwelling occupancy described on planning applications (and subsequently approved) and the dwelling occupancy described in the marketing information when those schemes are being initially sold and occupied. This will provide valuable information on the efficacy of Policy 3.5.

Affordable Housing

307. This study has excluded all forms of Affordable Housing included in planning applications in the sample (Social Rented, Shared Ownership, Intermediate Market Rent).
308. Whilst Social Rented housing has been subject to some space standards, other forms of affordable housing have not. Furthermore, the Social Rented space standards are expressed differently (through the Housing Quality Indicators) and are set at a different level from Policy 3.5. This is also true of the other standards set out in the GLA's SPG: not all forms of affordable housing were subject to HCA standards, and where they were, the standards were often different. As affordable units represented 24% of the total units in this study's sample, they are a significant part of London's housing supply.
309. We therefore **recommend** that the GLA¹ commission research into the standards of affordable housing, to complement this study in order to obtain a comprehensive understanding of housing standards across London.

Accessible & Wheelchair Housing

310. Another significant part of the housing supply-line that was excluded from the study is housing designed to accessibility and wheelchair-user standards.
311. The SPG contained Standards for dwellings to be designed to Lifetime Homes standards and in accordance with the Wheelchair Housing Design Guide.
312. As far as we are aware there is no information on the extent to which dwellings approved as being Lifetime Homes-compliant or suitable for wheelchair-users do in fact meet the standards.
313. We therefore **recommend** that the GLA commission a further study to complement this one, targeted at accessibility and wheelchair-user housing.

¹ in conjunction with the London office of the HCA (which is due to become part of the GLA in April 2012).

314.

Appendix 1: Rejected Schemes – reasons for rejection

Borough Name	Borough Reference	Units	Comments
Brent	92350	335	Poor quality pdfs which cannot be accurately measured
Greenwich	Aug-72	328	Plans not available online.
Hackney	2009/2711	294	No plans – only soft landscaping & trees. Probably a reserved matters application
Redbridge	0100/09	294	App for 15 additional units beyond those approved in 2003
Hackney	2007/2227	241	Outline application, not Full
Enfield	TP/09/1422	221	All social rent
Hackney	2009/2754	220	Reserved matters only AND all affordable housing
Kensington and Chelsea	PP/09/02786	919	None matching this ref of K&C website
Westminster	06/00929/FULL	212	Poor drawing quality
Barnet	W00198BT/07	190	No detail on application drawings
Greenwich	08/1013	397	Will not load.
Ealing	P/2008/0156	698	No detail on drawings.
Waltham Forest	2009/1028	34	Housing association (no private)
Barking and Dagenham	09/00859/REG3	4	Social rent only; no private sale
Hackney	2009/0562	2	No drawings online apart from location plan
Kensington and Chelsea	PP/09/00953	2	No kitchen details shown
Hounslow	00816/A/P13	1	No layouts, only eaves details & sections.
Bexley	09/00766/FUL	0	Conversion to a bar, not housing
Hillingdon	4607/APP/2008/1615	0	50 bed hotel, not housing.
Wandsworth	2009/0989	59	Part of an already large built schemes
Southwark	09-AP-2154	2	No kitchen detail to allow assessment
Barking and Dagenham	09/00202/FUL	1	Does not load
Islington	P090582	1	Conservatory extension
Westminster	09/07601/FULL	4	Alteration to prior application
Newham	09/00171	65	Addition of one flat to a previous application of 64
Bromley	09/01573/FULL1	1	No kitchen detail to work from..
Merton	09/P0193	1	Drawing is terrace single

Appendix 2: Definitions

TERM	DEFINITION
Area of outdoor space	The total area of the outdoor space.
Auxiliary leisure space	Is the combined areas used for entertaining and leisure outside of the previously stated Living / Dining rooms Examples are: gym, pool, cinema rooms, games rooms, projection rooms etc.
Balcony	A balcony is defined as an external recreational area which is not enclosed and is free standing from the ground below. All other external areas (such as roof terraces, roof top court yards etc.) were classified as gardens.
Bed Sit sleeping area	The bedsit sleeping area is taken as the area required for a single bed (900x2000) with one side-access zone (400mm wide) and one end-access zone (250mm wide) plus space for a 600mmx1200mm double wardrobe (in lieu of a 600mmx600 single wardrobe and a 450x750mm chest of drawers plus access zones) added i.e. 3.75m ² where no built in cupboards provided or 3.0m ² where built-in cupboards provided. If the bedsit is shown as a double, then the same approach is used, but with a double bed and two 600x1200mm wardrobes, giving an assumed area of 7.0m ² with no built-in wardrobes and 5.0m ² with built-in wardrobes. Bedsits were assumed to be 1p units, not 2p units, unless the plans show a double bed.
Bedroom occupancy (singles or twin/doubles)	As shown on drawings when furniture layouts are provided. Where not shown on the drawings, occupancy is assumed in accordance with the occupancy threshold derived from the sample (8.7m ² threshold)
Bedrooms	Bedroom area includes (where provided) a dressing room / area if it is attached to the bedroom and / or en-suite bathroom i.e. where the dressing room / area is clearly private to the bedroom and associated spaces(s). Built-in cupboards in a bedroom / dressing room are generally included as bedroom floor area (although see Storage)
Block	A self-contained building containing >1 self-contained dwellings. Does not share internal circulation areas with other blocks. May share external areas.
Circulation: Notional	Is the notional measurement of the area needed to move between two primary living areas of the dwelling. The notional corridor was assumed to be 750mm wide and was assessed as the shortest practical distance between the spaces.
Circulation: Partitioned	Partitioned corridors, stairs, lifts, hallways and lobbies.
Core	A stairwell and (where provided) lift(s) providing shared access to 2 or more dwellings above or below ground level
Depth of Outdoor Space	Is measured as the depth of the space, where rectangular. For irregular quadrangle spaces, the average depth was measured. For triangular, curved or other highly irregular shaped balconies no dimension was taken.
Dining Area	Measured area of the dining room (where it is separate) or the

TERM	DEFINITION
	deduced area for Kitchen/Diners, calculated as [K/D total area – Kitchen area]. Not separately measured or deduced for Living/Diners.
Dining Natural Light	If the room/space which included the likely dining area had a window, unless the dining area was shown in an unlit end of an L-shaped room.
Dining/Lounge area	Area of the dining space and lounge space combined, excluding any notional corridor area identified.
Dwelling Mix	Differentiates between unit types by the numbers of bedrooms and people e.g. a 1b2p dwelling verses a 2b3p dwelling or a 3b5p dwelling;
Dwelling Type	One specific design. For example, two 1b2p flats with different layouts and / or sizes would represent a single typology (flats) both be of the same unit mix (1b2p), but would be two different unit types.
Dwelling Typology	Dwellings of different forms such as flats (apartments), maisonettes, bungalows, 2-storey houses, 3-storey houses etc.
Kitchen	Self-explanatory where the kitchen is self-contained. Where it is part of a kitchen/diner (K/D) or open plan, the kitchen area includes the kitchen units + 1m clear working space in front of the worktop (but not to the side of the worktop i.e. no working space allowance on any 600mm projection into the dining space. Any separate breakfast bar is counted as kitchen area not dining (as there may be storage or appliances under the surface).
Kitchen 2	Is the second kitchen space or Pantry space (where it is indicated that the cupboard space is exclusively for storage of foodstuffs or kitchen utensils)..
Living Room 2	A second or subsequent room/area designated as relaxation space (other than dining)
Living Space at Entrance Level	A living room/area OR a dining room/area accessible from the dwelling's front (or other) door that can be reached by visitors without having to negotiate any steps. The dining area of a kitchen/diner counts if level access is provided.
Scheme	A development that received a full planning permission in the study population.
Separate living with windows	A living area that is additional to the primary living room/area or (if provided) a separate dining room/area and which has a window.
Storage	This includes built-in storage cupboards, wine cellar and storage space in under-stairs cupboards (counting only 1m of the length of the under-stairs cupboard because of the sloping ceiling). In dwellings which had built in wardrobes but no built-in storage it was assumed that the built-in cupboard of the smallest or most remote bedroom would be used as storage, and is classified as such. If that built-in cupboard were significantly larger than 0.36m ² (single person bedroom) or 0.72m ² (two person bedroom), those areas were scored as bedroom cupboards with the excess area counted as storage. If scored as storage, built-in wardrobes do not score as bedroom area. Storage indicated under the slope of the roof is not counted as the amount of useable floor area was not known.

TERM	DEFINITION
Useable area of outdoor space	Total outdoor area, but excludes areas where the width or depth is <1.5m. for highly irregular shaped balconies, a rectangle was drawn which, by it, provided the largest area within the boundaries of the outdoor space where both the depth and width of the rectangle was >1.5m.
Utility	The space inside utility rooms, airing cupboards, isolated washing machine spaces, boilers, cylinders or any combination. Linen/airing cupboards were included in the Utility category. However if there were two or more linen cupboards, one was classified as Utility and other(s) as Storage. Utility space in a garage is not counted.
Width Main of main Area	The narrowest point across the room that will affect the use of the room i.e. passing zones or moving furniture in/out of the room. The "pinch point".
Width of Outdoor Space	Is measured as the width of the space, where rectangular. For irregular quadrangle spaces, the average width was measured. For triangular, curved or other highly irregular shaped balconies no dimension was taken.

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Chinese

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Hindi

यदि आप इस दस्तावेज की प्रति अपनी
भाषा में चाहते हैं, तो कृपया निम्नलिखित
नंबर पर फोन करें अथवा नीचे दिये गये
पते पर संपर्क करें

Vietnamese

Nếu bạn muốn có bản tài liệu
này bằng ngôn ngữ của mình, hãy
liên hệ theo số điện thoại hoặc địa
chỉ dưới đây.

Bengali

আপনি যদি আপনার ভাষায় এই দলিলের প্রতিলিপি
(কপি) চান, তা হলে নীচের ফোন নম্বরে
বা ঠিকানায় অনুগ্রহ করে যোগাযোগ করুন।

Greek

Αν θέλετε να αποκτήσετε αντίγραφο του παρόντος
εγγράφου στη δική σας γλώσσα, παρακαλείστε να
επικοινωνήσετε τηλεφωνικά στον αριθμό αυτό ή ταχυ-
δρομικά στην παρακάτω διεύθυνση.

Urdu

اگر آپ اس دستاویز کی نقل اپنی زبان میں
چاہتے ہیں، تو براہ کرم نیچے دئے گئے نمبر
پر فون کریں یا دیئے گئے پتے پر رابطہ کریں

Turkish

Bu belgenin kendi dilinizde
hazırlanmış bir nüshasını
edinmek için, lütfen aşağıdaki
telefon numarasını arayınız
veya adrese başvurunuz.

Arabic

إذا أردت نسخة من هذه الوثيقة بلغتك، يرجى
الاتصال برقم الهاتف أو مراسلة العنوان
أدناه

Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਸ ਦਸਤਾਵੇਜ਼ ਦੀ ਕਾਪੀ ਤੁਹਾਡੀ ਆਪਣੀ ਭਾਸ਼ਾ
ਵਿਚ ਚਾਹੀਦੀ ਹੈ, ਤਾਂ ਹੇਠ ਲਿਖੇ ਨੰਬਰ 'ਤੇ ਫ਼ੋਨ ਕਰੋ ਜਾਂ ਹੇਠ
ਲਿਖੇ ਪਤੇ 'ਤੇ ਰਾਬਤਾ ਕਰੋ:

Gujarati

જો તમને આ દસ્તાવેજની નકલ તમારી ભાષામાં
જોઈતી હોય તો, કૃપા કરી આપેલ નંબર ઉપર
ફોન કરો અથવા નીચેના સરનામે સંપર્ક સાધો.