HOUSING DENSITY STUDY

Maccreanor Lavington Architects
Emily Greeves Architects
Graham Harrington Planning Advice

Final Document: 30th August 2012

Front Cover: Sketch views from illustrations
Right: SRQ Density Matrix as table 3.2 from the London Plan (July 2011)

	0 to 1	2 to 3	4 to 6
Suburban	**150-200 hr/ha**	**150-250 hr/ha**	**200-350 hr/ha**
3.8-4.6 hr/unit	35-55 u/ha	35-65 u/ha	45-90 u/ha
3.1-3.7 hr/unit	40-65 u/ha	40-80 u/ha	55-115 u/ha
2.7-3.0 hr/unit	50-75 u/ha	50-95 u/ha	70-130 u/ha
Urban	**150-250 hr/ha**	**200-450 hr/ha**	**200-700 hr/ha**
3.8-4.6 hr/unit	35-65 u/ha	45-120 u/ha	45-185 u/ha
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Central	**150-300 hr/ha**	**300-650 hr/ha**	**650-1100 hr/ha**
3.8-4.6 hr/unit	35-80 u/ha	65-170 u/ha	140-290 u/ha
3.1-3.7 hr/unit	40-100 u/ha	80-210 u/ha	175-355 u/ha
2.7-3.0 hr/unit	50-110 u/hr	100-240 u/ha	215-405 u/ha

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The Consultant Team

The lead consultant is Maccreanor Lavington Architects (MLA), a London and Rotterdam based architectural practice with over forty employees. Current work ranges from housing projects and urban plans to individual arts, leisure and commercial buildings. MLA has a particular experience in housing and residential led masterplans and has worked on a wide range of regeneration projects, through which we have built up a diverse portfolio of projects in different London contexts and of varying densities. MLA staff working on this project were Richard Lavington, Anna Tenow and Jamie Wallace. MLA was supported by two sub-consultants; Emily Greeves and Graham Harrington.

Emily Greeves established Emily Greeves Architects in 2010. The practice offers a full range of architectural services and undertakes specialist research and consultancy projects focusing on housing design policy and the architectural history of housing.

Graham Harrington is a sole practitioner, trading under the name Graham Harrington Planning Advice. He has been a practicing planner in London for over 25 years; working in both development management and policy/ guidance formation.

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- Outer London Commission
- Planning Officers' Society London
- URS Corporation (Patrick Clarke)

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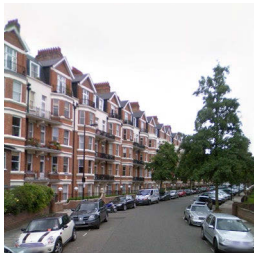

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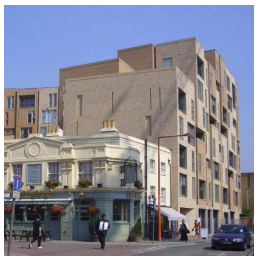

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Executive summary

This report sets out the findings of a study commissioned by the Greater London Authority on behalf of the Outer London Commission to help secure the effective implementation of London Plan Policy 3.4 (Optimising housing potential).

Residential density policy is about everything and nothing. On the one hand it informs everything to do with housing design and management. On the other hand, the actual density calculation of an acceptable development (in terms of units or habitable rooms per hectare) is a product of all of the relevant design and management factors; if they are all met, the resultant density figure is what it is and is arguably irrelevant. Anyone grappling with the thorny issue of density tends to go around in circles – moving between these two extreme positions.

Density calculations (XX u/ha and XX hr/ha) on their own are perhaps most useful in helping to estimate the capacity/development potential of a particular site before a scheme has been designed. Using an appropriate point in the relevant indicative range in the density matrix as a guide, density calculations can:

- help the GLA and boroughs identify and deliver sources of new housing to meet strategic and local demand/need (e.g. Strategic Housing Land Availability Assessments and affordable housing and Community Infrastructure Levy viability assessments);
- inform estimates of likely future population changes and demand for school places, health services etc.; and
- help landowners and prospective developers identify development potential and undertake initial land valuations.

The report uses illustrations of hypothetical housing schemes and images of actual built examples in different character settings with different levels of public transport accessibility to discuss a wide range of relevant issues. Its objectives can be summarised as to inform the London Plan Housing SPG, guide the interpretation of "optimising" density and draw out design and management pointers for optimising density and making higher density development "fit" into different contexts.

The report sets out the background to the London Plan density policy and how the policy has changed over the three published versions of the Plan before reviewing borough density policies. This highlights:

- the shift in objective away from "maximising" to "optimising" density;
- the different ways of measuring density;
- the fact that currently over 50% of all homes permitted are at densities that exceed the indicative density ranges; and
- the importance of understanding local character and context in how boroughs frame their local density policies.

It goes on to establish the common issues that need to be taken into account when considering the optimal amount of housing on a particular site and sets out how the London Development Database was used to identify representative "real" sites in Suburban (PTAL 0-1, 2-3 and 4-6), Urban (PTAL 0-1, 2-3 and 4-6) and Central (PTAL 2-3 and 4-6) character settings and the methodology for preparing illustrative schemes for these sites. It also makes clear how built examples were identified and explains the separate invitation to officers in the boroughs to identify further schemes that they think optimise density. In total, there are 10 illustrations and 22 built example schemes in the report, and 44 developments chosen by the boroughs, some of which are illustrated, in Appendix 2.

The report uses the illustrations and built examples to demonstrate the type of building typologies, dwelling mix, car parking and open space that can be delivered at different densities and ways of addressing common issues encountered.

The illustrations investigate the building typologies, parking arrangements, scale and massing and character of development that is typical at or most suitable to the different indicative density ranges in suburban, urban and central character settings.

The built scheme examples are not held up as exemplars, but identify both good and bad aspects of developments at particular densities and ways of dealing with common issues.

The report then discusses some of these cross-cutting general issues, different locations and building typologies and the technical application of density policy – drawing on the earlier discussion of the illustrations and built examples.

In total, the report makes 29 recommendations for changes to the draft Housing SPG, the interpretation of 'optimising' density and ways that housing design and management can help achieve it. These are identified under various topic headings and are set out in one place at the end of the report.

6 Central PTAL 4-6

BSE 19 - St Andrews, Bromley-by-Bow

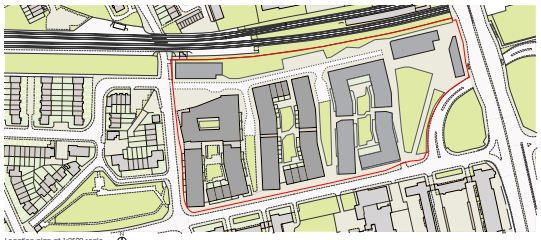
Reasons for selection
- The scheme provides 30% family housing (homes with 3 or more bedrooms) at high densities and offers lessons for combining family housing and smaller dwellings within high density perimeter blocks.
- The design demonstrates creative ways of incorporating private open spaces, in the form of balconies, gardens and large roof terraces.

Site and context
- Inner East London.
- Central setting due to the location within 800m of the town centre boundary of Stratford, a Major Centre.
- The site of the former St Andrews Hospital in Tower Hamlets, which was previously LDA-owned.
- Located adjacent to Bromley-by-Bow underground station.
- The site was severed from its immediate context by the A12 motorway and railway embankment, which are both elevated several metres above the site.

Uses, typology, structure and massing
- The masterplan consists of three perimeter courtyard blocks in the centre of the site and two towers located to the north against the railway. The landscaped open space rises up to provide a new pedestrian connection to the station. Block C incorporates a health centre for Tower Hamlets Primary Care Trust.
- The north-south orientation of the courtyard blocks avoids overshadowing of the courtyard. All dwellings are dual aspect or east/west facing.
- Ground floor dwellings on both street and garden sides are entered from the public open space and a special typology of interlocking 3-bedroom maisonettes increases the number of private front doors at street level.
- Tenures are separated by core but a mix of tenures is included within each block, sharing the central courtyard gardens.

Car parking
- Basement car parking.

Open space and public realm
- 30% of the total site area is landscaped open space.
- Communal amenity spaces are provided in the courtyards.
- Every dwelling has a private open space in the form of a garden, patio, balcony or roof terrace.



Location plan at 1:2500 scale

- The stepping form of the block provides maisonettes with large roof terraces over the upper two floors.

Other comments
- The tenure mix is 50% private and 50% affordable (of which 69% is social rented and 31% is shared ownership).

Location	Bromley by Bow, London E3
Planning Authority	London Borough of Tower Hamlets
Completed	2011 (first phase)
Developer	Barratt Homes
Architect	Allies and Morrison (Masterplan, Block A), Maccreanor Lavington (Block B), Glenn Howells (Block C)

Site area (ha)	3.01
PTAL	4-6
Total dwellings	924
Density u/ha	**320**
Density hr/ha	**930** approx
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	151
Car parking ratio per unit	**0.16**
Private amenity space	
Publicly accessible open space	
Amenity space ratio per unit	

Dwelling mix	
1b1p	10%
1b2p	31%
2b3p	29%
2b4p	
3b5p	26%
4b5p	3%
4b6p	
5b6p	1%
Total	100%
Family dwellings (3b5p+)	30%
Wheelchair user dwellings	10%
Dual aspect dwellings	

Example of a built scheme example page layout

5 Urban PTAL 2-3

Illustration 6

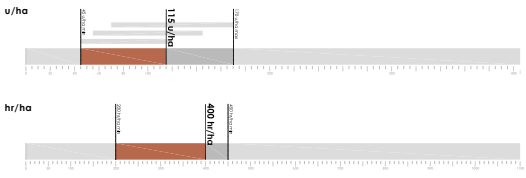
Location and context
- Outer North London.
- Former hospital site close to an Underground station and District Centre and with a short frontage to a main road.
- Main hospital building Grade II Listed.
- A number of existing trees are protected by a Tree Preservation Order.
- Railway to the west and residential apartment buildings and park to the north.

Development assumptions
- Phased, mixed-tenure development.
- The majority of the streets and publicly accessible open space are to be privately maintained by management company.
- The street that services affordable housing is adopted by Borough, to minimise service charges for tenants.
- Underground car parking is not viable.

Illustration showing house fronts facing residential street

Location plan at 1:10000 scale

Illustration showing new apartment buildings fronting new primary residential street



Site area (ha)	5.20
PTAL	3
Total dwellings	601
Density u/ha	**115**
Density hr/ha	**400**
GEA residential (m²)	69,400
GEA non-residential (m²)	0
GEA total (m²)	69,400
Plot ratio	**1.3**
Total no. car parking spaces	498
Car parking ratio per unit	**0.8**
Icly accessible open space(m²)	3,030

1b1p	-
1b2p	32%
2b3p	-
2b4p	33%
3b5p	29%
4b5p	-
4b6p	6%
5b6p	-
Total	100%
Family dwellings (3b5p+)	34%
Wheelchair user dwellings	10%
Dual aspect dwellings	60-70%

Example of an illustration page layout

1 Introduction

Purpose and timing of research

1.1. The client is the Greater London Authority (GLA) on behalf of the Outer London Commission (OLC). The client brief makes clear that the purpose of the research is to help secure the effective and balanced implementation of London Plan Policy 3.4 (Optimising housing potential).

1.2. The first element of the brief is to provide good quality illustrations, and explanation, of how the London Plan's density policy 3.4 including the Sustainable Residential Quality matrix can be used most effectively to optimise housing output on a broadly representative range of sites in different types of location across London. In developing these illustrations account should be taken of the 'real world' spectrum of strategic and local planning policies and SPG which will bear on development in these locations e.g. for mixed use, dwelling/social mix, affordable housing, viability, housing standards, the need to encourage rather than restrain development and to achieve or exceed the Plan's housing targets, as well as the explicit concerns of density policy per se which are: taking into account local context and character, the design principles in Chapter 7 and public transport capacity, development should optimise housing output for different types of location within the relevant density range shown in Table 3.2.

1.3. The second element of the brief is to advise the GLA and the Outer London Commission on implementation of the policy which will in turn inform finalisation of the Housing Supplementary Planning Guidance (SPG). For this purpose, the consultant team provided comments on the draft Housing SPG (December 2011), including illustrations and examples of best practice and clarification in relation to financial viability. The results of the project will also be taken into account in the preparation of the Outer London Commission report, the new SPG on Understanding Character and Context, and the forthcoming London-wide Strategic London Housing Land Availability Assessment.

1.4. The brief includes a list of general issues which may have to be resolved in securing a development which optimises output in different types of location within the terms of the density and other relevant policies. These are set out in Appendix 1. The brief also stresses that it is particularly important that the illustrations demonstrate that higher densities do not have to mean high rise; can enhance rather than compromise the character of the area; and can achieve thriving sustainable neighbourhoods where people want to live. The basis for preparing the illustrations and explanation was the published London Plan (July 2011). A revision of Policy 3.4 or Table 3.2 (the sustainable residential quality density matrix) was not part of the study brief.

1.5. In summary, the objectives of the study are to:

- inform the final Housing SPG;
- guide the interpretation of "optimising" density both in a generic sense, and in different parts of London defined by character setting and accessibility levels; and
- draw out design and management pointers for optimising density and for promoting design solutions appropriate to different levels of density in various contexts.

1.6. The study was undertaken over a relatively short timeframe, between mid December 2011 and the middle of March 2012 when a draft report was prepared and the summer of 2012 when a final report was published.

Relationship with other research

1.7. The research on housing density takes account of two other related pieces of research being undertaken on behalf of the GLA, namely:

- the preparation of a draft Understanding Character SPG (by Land use Consultants); and
- the impact of residential parking provision in new developments and draft interim recommendations to the OLC on residential car parking standards.

Status of document

1.8. This report sets out the findings of the research outlined above. The Mayor of London intends to publish it to help prospective developers, architects, planners and decision-makers to optimise development on a particular site or more generally through local policy and guidance.

Structure of report

1.9. The remainder of this report is set out as follows:

- Section 2 – 'Background: London's housing density policy' outlines the development of Sustainable Residential Quality (SRQ) principles, the shift towards optimisation and reviews borough policy;
- Section 3 – 'Optimising density – Illustrations and Built Scheme Examples' outlines the overall approach and methodology of the study;
- Section 4 – 'Suburban Settings' discusses the characteristics of this setting before discussing Illustrations and Built Scheme Examples in areas of different public transport accessibility (PTAL 0-1, PTAL 2-3 and PTAL 4-6).
- Section 5 – 'Urban Settings' adopts the same structure as above;
- Section 6 – 'Central Settings' adopts the same structure as above;
- Section 7 – 'Cross-cutting issues' discusses key issues that are relevant to all settings, drawing on the illustrations and Built Scheme Examples in earlier sections, and makes specific recommendations;
- Section 8 – 'Locations and typologies' discusses issues relating to some key locations and housing typologies, drawing on the illustrations and Built Scheme Examples in earlier sections and makes specific recommendations;
- Section 9 – 'Application of density policy' discusses issues relating to the practical implementation of London Plan Policy 3.4 and makes specific recommendations; and
- Section 10 – 'Conclusions/Recommendations' sets out all of the study's recommendations in one place and draws some general conclusions.

2 Background

London's housing density policy

Density

2.1. Different measures of density provide different readings of a development. If the objective is to understand the population of a development (the number of people that will use common spaces and local amenities including transport, schools, health and leisure services), then the number of habitable rooms per hectare and people per hectare (the actual occupied density) will be most relevant. If the interest is the overall massing, how dense a development will feel, and its impact on the surrounding context, then plot ratio, habitable rooms per hectare and units per hectare will all be relevant measures.

2.2. UNITS PER HECTARE (u/ha) is a measure of the number of dwellings and the number of households. HABITABLE ROOMS PER HECTARE (hr/ha) is a measure of the density of habitable rooms and gives a better impression of a potential density of occupation. Hr/ha gives a better indication of built volume of the development; however there is no straight correlation. Developments with predominantly small dwellings will have a greater built volume than developments at the same habitable rooms per hectare and predominantly larger dwellings. This is because larger dwellings have proportionally less non-habitable space than smaller dwellings.

2.3. FLOORSPACE (GEA)[1] PER HECTARE, or plot ratio, is the most accurate measure of built volume and how dense a development is likely to appear, although the floor to ceiling height (and hence scale) of non-residential uses in vertically mixed buildings will vary depending on the use. For this reason measures of residential and non-residential floorspace and overall plot ratio have been included for the illustrations and built example projects.

2.4. The perceived density of a development in relation to the surrounding context will be influenced by a number of design factors in addition to its actual built volume. For example, if a development does not affect the amount of sky seen from an existing house or street, it is much less likely to be perceived as overly dense or having a large effect on the surrounding context. If the developable area of the site is smaller (due to access roads or the presence of trees and other natural features), the developable area of the site will

2.9 The original London Plan (2004) (Table 4B.1)

- included Location, Accessibility Index (PTAL), Setting and car parking (related to PTAL, Setting and predominant housing type). See below.

		Car parking provision	High 2 – 1.5 spaces per unit	Moderate 1.5 – 1 space per unit	Low Less than 1 space per unit
		Predominant housing type	Detached and linked houses	Terraced houses & flats	Mostly flats
Location	**Accessibility Index**	**Setting**			
Sites within 10 mins walking distance of a town centre	6 to 4	**Central**			**650 – 1100 hr/ha 240 – 435 u/ha** Ave. 2.7hr/u
		Urban		**200 – 450 hr/ha 55 – 175 u/ha** Ave. 3.1hr/u	**450 – 700 hr/h 165 – 275 u/ha** Ave. 3.0hr/u
		Suburban		**200 – 300 hr/ha 50 – 110 u/ha** Ave. 3.7hr/u	**250 – 350 hr/ha 80 – 120 u/ha** Ave. 3.0hr/u
Sites along transport corridors & sites close to a town centre	3 to 2	**Urban**		**200 – 300 hr/ha 50 – 110 u/ha** Ave. 3.7hr/u	**300 – 450 hr/ha 100 – 150 u/ha** Ave. 3.0hr/u
		Suburban	**150 – 200 hr/ha 30 – 65 u/ha** Ave. 4.4hr/u	**200 – 250hr/ha 50 – 80 u/ha** Ave. 3.8hr/u	
Currently remote sites	2 to 1	**Suburban**	**150 – 200 hr/ha 30 – 50 u/ha** Ave. 4.6hr/u		

2.10 The London Plan (Consolidated with Alterations since 2004) (2008) (Table 3.2) included the following changes, as set out below:

- Location removed (but definition of character Settings increased to refer to 800m walking distance from town centres);
- Character Settings and density ranges in the matrix are expanded to include average dwellings size (with a higher number of habitable rooms per dwelling assumed for lower density development within each Setting); and
- Car parking removed (addressed in Policy 3C.23 and Annex 4).

Setting	**Public Transport Accessibility Level (PTAL)** 0 to 1	2 to 3	4 to 6
Suburban	**150 – 200 hr/ha**	**150 – 250 hr/ha**	**200 – 350 hr/ha**
3.8 – 4.6 hr/unit	35 – 55 u/ha	35 – 65 u/ha	45 – 90 u/ha
3.1 – 3.7 hr/unit	40 – 65 u/ha	40 – 80 u/ha	55 – 115 u/ha
2.7 – 3.0 hr/unit	50 – 75 u/ha	50 – 95 u/ha	70 – 130 u/ha
Urban	**150 – 250 hr/ha**	**200 – 450 hr/ha**	**200 – 700 hr/ha**
3.8 – 4.6 hr/unit	35 – 65 u/ha	45 – 120 u/ha	45 – 185 u/ha
3.1 – 3.7 hr/unit	40 – 80 u/ha	55 – 145 u/ha	55 – 225 u/ha
2.7 – 3.0 hr/unit	50 – 95 u/ha	70 – 170 u/ha	70 – 260 u/ha
Central	**150 – 300 hr/ha**	**300 – 650 hr/ha**	**650 – 1100 hr/ha**
3.8 – 4.6 hr/unit	35 – 80 u/ha	65 – 170 u/ha	140 – 290 u/ha
3.1 – 3.7 hr/unit	40 – 100 u/ha	80 – 210 u/ha	175 – 355 u/ha
2.7 – 3.0 hr/unit	50 – 110 u/ha	100 – 240 u/ha	215 – 405 u/ha

be restricted and the development will appear to be denser.

2.5. Low-rise, high density developments work by increasing the site coverage and limiting separation distances, bringing buildings closer together.

2.6. Actual densities of occupation are defined in terms of the number of people in a dwelling, development or neighbourhood. Densities of occupation vary greatly in relation to income, tenure, age and household structure. Occupancy levels are generally higher in social housing. In private housing, higher densities of occupation are associated with younger, smaller and less established households and tend to be a reflection of low incomes.

2.7. Actual densities are constrained by the relative cost of living in different locations. Preferences relate to income and the capacity to pay, and also reflect different priorities and the trade-offs with respect to space and location [2].

Sustainable Residential Quality

2.8. Current density policy was originally developed from the mid 1990s by the boroughs, under the auspices of the former London Planning Advisory Committee (LPAC). LPAC commissioned a number of studies from Llewellyn-Davies on density and housing supply. In December 1997, LPAC published 'Sustainable Residential Quality (SRQ): New Approaches to Urban Living' and in January 2000 'SRQ: Exploring the Potential of Large Sites'. The then new SRQ approach was design-led and sought to provide greater flexibility than historic, mechanistic standards and to better relate development potential to public transport accessibility in different places (including recognition of differences in the need for provision for cars) and neighbourhood character, including town centre location. In other words its objectives related to managing activity and scale as well as massing. The first study focused on small sites in and around town centres and showed how housing capacity could be increased by between 50 and 100% by relating location to relaxed car parking standards. The second study applied the approach to large sites and proposed a Location, Car Parking Density Matrix.[3] This matrix has formed the basis of matrixes in all three versions of the London Plan (2004, 2008 and 2011), as set out below.

2.11 The London Plan (July 2011) (Table 3.2)

– includes the same matrix, with no change to the definitions of character Settings.

2.12 The indicative density ranges in the matrix are relatively large allowing for a wide range of possible outcomes and overlap across the three identified character settings.

Setting	Public Transport Accessibility Level (PTAL)		
	0 to 1	2 to 3	4 to 6
Suburban	**150-200 hr/ha**	**150-250 hr/ha**	**200-350 hr/ha**
3.8-4.6 hr/unit	35-55 u/ha	35-65 u/ha	45-90 u/ha
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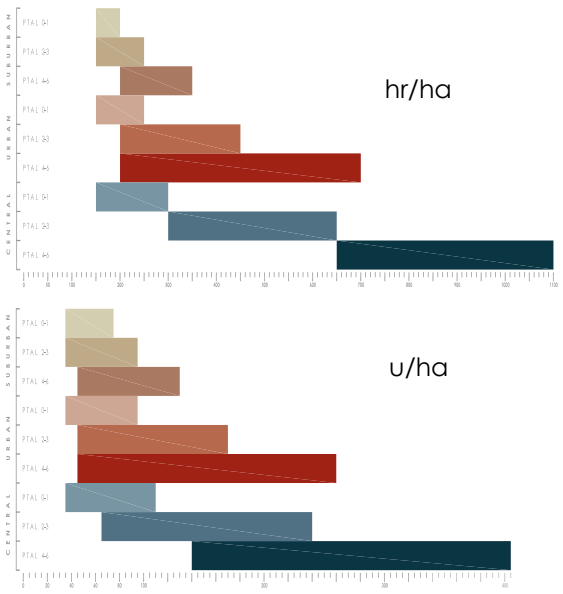


2 Background

London's housing density policy

Current London Plan policy and the shift towards 'optimising' density

2.13. Objective 1 of the London Plan 2011 is to accommodate London's growth within its boundaries without encroaching on open spaces. Given this objective and London's constrained land supply, London Plan Policy 3.4 (Optimising housing potential) is as follows:

"Taking into account local context, the design principles in chapter 7 and public transport capacity, development should optimise housing output for different types of location within the relevant density range shown in Table 3.2. Development proposals which compromise this policy should be resisted."

2.14. This is a shift in focus from the 2008 Consolidated London Plan, where former Policy 3A.3 sought to "… ensure that development proposals achieve the maximum intensity of use compatible with local context, the design principles in Policy 4B.1 and with public transport capacity. …"

2.15. The current policy recognises that while the best use should be made of development opportunities, proper account must be taken of the range of factors which have to be addressed to "optimise," rather than simply maximising, housing potential. In its report into the Examination into the London Plan, the Panel described optimising density as meaning to develop land to the fullest amount consistent with all relevant planning objectives (Paragraph 3.46, EiP Report). Policy 3.4 draws on the SRQ approach outlined above and is particularly concerned to ensure that the quality of housing output is not compromised by the need to make the most efficient use of land. The policy therefore takes into account:

- the need to secure residential quality (including respect for local context) through Policies 3.5 (Quality and design of housing developments), 7.1 (Building London's neighbourhoods and communities), 7.2 (An inclusive environment) and 7.4 (local character);
- optimising the relationship between transport and land use to secure sustainable development through London Plan Policies 6.1 (Strategic approach – to transport), 6.2 (Providing public transport capacity and safeguarding land for transport and 6.3 (Assessing effects of development on transport capacity); and
- the density ranges set out in a density matrix (Table 3.2) – which are designed to accommodate local variations in three broad types of urban setting and public transport accessibility.

2.16. Despite the change in policy away from 'maximising' to 'optimising' housing output, as outlined above, the London Plan density matrix itself has remained unchanged from the London Plan (Consolidated with Alterations since 2004) (2008)); although the Plan (paragraph 3.28) makes clear that the density matrix should not be applied mechanistically. This is assumed to mean that the matrix should not be applied to proposed development in isolation from considering other key issues, the most common of which are identified in Table 4 on page 10.

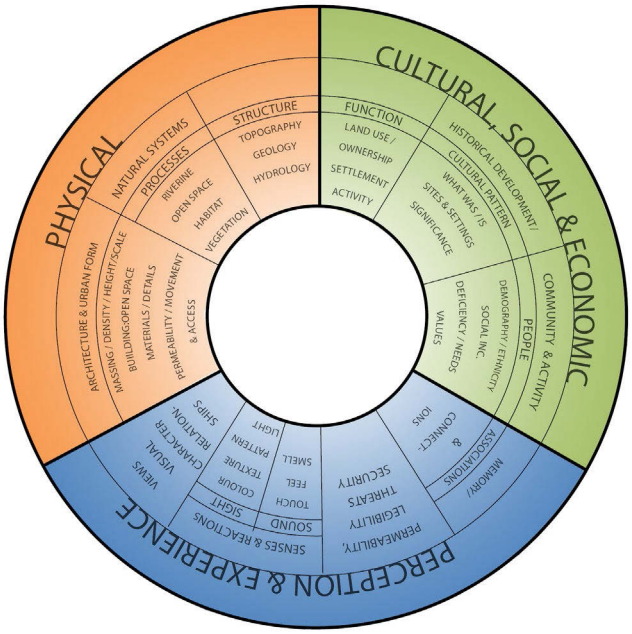
2.17. Paragraph 3.31 of the London Plan makes clear that residential density is to be based on net site area, which includes internal roads and ancillary spaces. The draft Housing SPG (1.3.9) expands on this definition of net site area and this is discussed below in Section 7A.6 ('Social infrastructure and open space') The notes to Table 3.2 in the London Plan include definitions for central, urban and suburban settings and the draft Housing SPG (1.3.24) provides guidance on how boroughs should determine which setting a particular site falls within. However, some sites do not fall neatly in to one existing/expected PTAL rating and/or any one setting and this is discussed further in Section 9B.

2.18. It should be noted that the density matrix, which is based on assumptions of number of habitable rooms per unit, focuses on dwelling houses (Use Class C3) and is not appropriate for use in assessing the optimal density for other forms of housing (including student accommodation and residential institutions (Use Class C2)). In addition, there is no prescribed way of applying the matrix to vertically mixed-use buildings. Paragraph 3.30 of the London Plan refers to further guidance being provided in the Housing SPG and this report also makes some recommendations in Section 9D.

Character

2.19. The emerging Understanding Place SPG sets out the key principles for understanding place and defining character; based on consideration of cultural, social & economic, physical, and perception & experience elements (as shown in the illustration below taken from the emerging SPG) . The definition of 'Suburban', 'Urban' and 'Central' settings set out in the notes associated with Table 3.2 of the London Plan include a

brief description of character. These definitions and the role of characterisation in optimising density is discussed in Sections 7, 8 and 9 when considering relevant topics.



National Planning Policy Framework

2.20. The National Planning Policy Framework (NPPF) was adopted in March 2012, whilst this research was being undertaken. The NPPF (para. 47, bullet point 5) states that to boost significantly the supply of housing, local planning authorities should (amongst other things) set out their own approach to housing density to reflect local circumstances. The NPPF replaces previous Planning Policy Statements and does not include the detailed guidance on the definition of net site area for density purposes that was in PPS 3: Housing (June 2010).

Outcomes

2.21. The London Plan Annual Monitoring Report 8 (March 2012) reports in relation to Objective 1 of the London Plan that in 2010/11, 58% of all units in permitted residential/mixed-use schemes exceed the suggested maximum density level, as set out in the appropriate range in the density matrix. Further analysis of the LDD shows that 37% of permitted units were within the appropriate density range and 5% of permitted schemes were below the appropriate density range. This can be broken down by Outer and Inner London as follows:

Table 1: Permitted residential density

	Within appropriate range	Above appropriate range	Below appropriate range
All	37%	58%	5%
Outer London	43%	50%	7%
Inner London	32%	64%	4%

2.22. The above needs to be seen in the context of the London Plan target of 95% of all permitted units being within the appropriate density range. The guidance in the Housing SPG and in this report is intended to help meet the London Plan target.

2.23. Discussions with Borough officers highlight a perception that there has been an increase in the number of houses being permitted and built and a corresponding decrease in the number of flats. The LDD collects information on houses and bungalows together, although the number of new bungalows in London is likely to be negligible. Analysis of available data suggests that, whilst approval and completion rates vary from year to year, there is no clear upward trend in the delivery of houses in London.

Table 2: Houses/bungalows - approvals

Approvals 2004 to 2010 (7 years)		
	Number of houses/ bungalows	Houses/bungalows as % of all completionsapprovals
2004	5,643	9.2%
2005	5,053	8.4%
2006	6,496	9.9%
2007	5,733	6.6%
2008	4,592	8.1%
2009	4,042	7.6%
2010	4,928	9.3%

Table 3: Houses/bungalows - completions

ompletions 2007 to 2010 (4 years)		
	Number of houses/ bungalows	Houses/bungalows as % of all completions
2007	3,528	10.6%
2008	2,741	8.1%
2009	2,767	9.5%
2010	2,384	11.1%

2 Background

London's housing density policy

Review of borough policy

2.24. In order to inform the consultant team's work, a review was undertaken of borough policies relating to density. This considered the overall approach and specific density related policies set out in the Local Development Frameworks (LDFs) of 20 London boroughs. The review was restricted to Core Strategies, Development Management Development Plan Documents (DPDs) and relevant SPGs and Supplementary Planning Documents (SPDs).

2.25. The sample of boroughs chosen represents:
- 13 Outer London (68% of Outer Boroughs);
- 7 Inner London (54% of Inner Boroughs);
- 20 overall (62% of all Boroughs);
- a range of political administrations; and
- a range of geographical locations across the capital.

2.26. The review considered the overall approach to development management, the role played by characterisation, the scope of any density specific policies and how they relate to London Plan policies. The key findings are set out below.

OVERALL APPROACH

2.27 All Local Development Documents (LDDs) that make up an LDF are required to be in 'general conformity' with the London Plan[4] and Boroughs formally consult the Mayor of London on draft documents as part of the preparation process. This has ensured that Borough's spatial strategies and density policies are generally aligned with those in the London Plan. However, different Boroughs have different emphasises and approaches to issues that relate to density.

2.28. Given the emphasis in national guidance on place making and locally distinctive policies, it is not surprising that the spatial strategies for all of the boroughs are based to a greater or lesser extent on 'places', 'areas' or 'neighbourhoods'. In line with national guidance and the London Plan spatial strategy, Borough policies direct new development to town centres, London Plan Opportunity Areas and Areas of Intensification, local growth areas or corridors and areas of relatively good Public Transport Accessibility Levels (PTAL). These areas can and do overlap. Outer London Boroughs, in particular, tend to stress the suburban character of other areas and the need to protect and enhance the character of these areas.

2.29. Not all core strategies refer to London Plan policy on density or to the density matrix (as discussed below). However, this is understandable given the advice to write succinct plans and no need to repeat policies that are set out in other documents. In addition, it is expected that a number of Boroughs will include more detailed policies relating to density in future development management DPDs.

2.30. In line with London plan policies and national guidance, all of the reviewed DPDs direct new housing to identified growth areas and town centres and a number make it explicit that this is partly to safeguard the existing character of suburban areas.

THE ROLE PLAYED BY CHARACTERISATION

2.31 Given that all of the reviewed Core Strategies focus on the different needs of different parts of the Borough, they all include some sort of 'spatial portrait'. Characterisation studies are a relatively recent tool and only the core strategies of Barnet, Croydon, Harrow and Sutton are supported by them. None of these try to define the area as 'central', 'urban' or 'suburban'.

2.32. The most explicit attempts to define a borough in terms of 'Central', 'Urban' or 'Suburban' is undertaken by Havering and Southwark – which both have clear density policies related to identified character settings (in Havering's case, its core strategy includes its own density matrix based on the 2004 London Plan). Hackney also states that much of the borough is classified as 'Urban'.

2.33. In all other cases, boroughs generally describe the differing character of the borough as context and frame policies in terms of preserving and enhancing locally distinctive character – as described.

THE SCOPE OF DENSITY POLICIES

2.34 A number of boroughs raise specific issues in their LDDs about the application of London Plan density policy:

- Barnet and Harrow make clear that it will not aim to maximise density (London Plan Policy since changed to optimise);
- Ealing makes clear that it should not be applied mechanistically;
- Greenwich makes clear that it does not consider that the definition of 800m radius around Major and District town centres reflects the abrupt change in character that takes place;
- Hammersmith and Fulham notes that whilst most of the borough is within 800m of a Metropolitan or Major Centre, only limited areas meet the remaining criteria of the 'central' area definition;
- Havering explicitly excludes estate renewal schemes from its density policy ; and
- Sutton's Proposal Map identifies Sutton Town Centre as a 'central setting' and its Core Strategy states that the London Plan 'Urban' density range will only be applied within 400m from district centre boundaries.

2.35. Bexley appears to give weight to its own indicative density range, set out in its Residential Design Guide. Lambeth is the only borough to refer to long-term management (noise disturbance, overlooking and poorly maintained shared areas) when considering appropriate density.

3 Optimising density

Introduction

Overall approach

3.1. The overall approach has been to focus on helping to provide effective planning guidance which is clear and helpful for both those designing and promoting housing and mixed-use schemes (developers and their consultants) and those that are shaping and assessing them (councillors, the Mayor and officers in the Boroughs and at the GLA). The objective is to help implement London Plan Policy 3.4 and to secure high quality development that optimises residential density by providing appropriately scaled development that responds well to its context and creates attractive housing for the people that need it.

3.2. With the above in mind, and in the time available, the consultant team has worked collaboratively with officers at the GLA and a number of London Boroughs[5], the OLC (workshop on 25 January) and the London Planning Officers Society (meeting on 27 January) in an effort to communicate the findings of their research in a visual and written form which is tailored to its target audience and their work. The consultant team also met with a representative of a residential developer who is active in London to discuss financial viability issues, draft illustrations and built examples.

Format for Illustrations/Explanations and Built Scheme Examples

3.3. The common format adopted for the illustrations/ explanations and built scheme examples that follow for the various settings is set out below.

Selected Sites:

- Location/context plan and description (Location in London, local context, immediate site context, particular issues and constraints and PTAL; and any particular local policy context);
- Scheme profile(site area, dwelling mix, total dwellings, non-residential floorspace, units per hectare, habitable rooms per hectare, total car parking, parking per dwelling ratio, Lifetimes Homes %, wheelchair accessible %, amenity space sqm publicly accessible open space sqm, total floorspace (GEA) and plot ratio);
- Relevant density range (as set out in Table 3.2 of the London Plan);
- Development assumptions (Appropriate dwelling mix, financial viability considerations - mix of sizes, mix of tenures, density, parking arrangement and; consolidation or growth – any planned change in context - e.g. improvements in PTAL, estate renewal or growth area);
- Uses, typology, structure and massing – diagram and notes
- Car parking – diagram and notes
- Open space and public realm – diagram and notes
- Ground floor site plan and illustrative view(s);
- Design response (How the design seeks to optimise density in relation to local context, PTAL and viability and how problems and constraints are addressed);and
- Development alternatives

Built scheme examples:

- Name of scheme and location;
- Site plan (all at 1:2500, to allow comparison)
- Density achieved; and
- Discussion of scheme in relation to issues identified in the specification of requirements.

Common issues

3.4. There are a number of common issues that need to be taken into account for all sites when considering the optimal amount of housing and these are set out opposite in Table 4. Please note, this is one long list of common issues which are set out in no particular order

3.5. In a discretionary planning system, where development proposals are considered against a set of policies and guidance and other material considerations, there are likely to be some trade-offs between different policy objectives in most schemes. Any trade-offs need to be made in the context of a particular proposal, policy framework and circumstances and it is not considered possible (or desirable) to seek to identify what these may be. Where the site is located in an area with a strong existing character, this should always be a key consideration in optimising density; noting that density calculations for small sites can be disproportionately high where there is an absence of open space and roads on the site itself.

The need to respect local context and ensure inclusive development through London Plan Policies 7.1, 7.2 and 7.4 (including 'place making' and 'place shielding).

Access to social infrastructure and services.

Optimising the relationship between transport and land use to secure sustainable development through London Plan Policies 6.1, 6.2 and 6.3.

Financial viability issues to ensure that the there is a reasonable prospect of a scheme being built and delivering new homes and other policy objectives in the context of the development economics of a particular scheme.

The need to safeguard the development potential of adjoining land.

Long-term management of communal areas and spaces.

Indicative density ranges in the density matrix (Table 3.2).

The need to secure residential quality through Policy 3.5 and the standards in the Housing SPG (summarised in I to VI below).

- I. Shaping Good Places
  - o Defining Good Places
  - o Outdoor spaces including gardens
  - o Play space
  - o Designing out crime
- II. Housing for a diverse city
  - o Density
  - o Residential mix (dwelling sizes and tenure)
  - o Social infrastructure
- III. From street to front door
  - o Entrance and approach
  - o Shared circulation
  - o Car parking
  - o Cycle storage
  - o Refuse facilities
- IV. Dwelling space standards
  - o Internal Floor Area
  - o Flexibility and adaptability
  - o Circulation in the home
  - o Living rooms, dining rooms, kitchens
  - o Bedrooms
  - o Bathrooms and WCs
  - o Storage and utility space
  - o Study and work
  - o Wheelchair user dwellings
  - o Private open space
- V. Homes as a place of retreat
  - o Privacy
  - o Dual aspect
  - o Noise
  - o Floor to ceiling heights
  - o Daylight and sunlight
  - o Air quality
- VI. Climate change mitigation and adaptation
  - o Environmental performance
  - o Energy and CO2
  - o Overheating
  - o Water
  - o Flooding and drainage
  - o Materials
  - o Ecology (including trees)

Table 4- Common Issues

3 Optimising density

Introduction

Site selection for Illustrations and explanations

3.6. The purpose of the illustrations is to show and discuss how the illustrative schemes for particular representative sites take account of the common factors outlined above and setting/site-specific issues in order to optimise housing output. They also provide a vehicle for discussing the range of issues identified in the client's brief and summarised in Appendix 1. With the above in mind, the criteria for selecting sites for the preparation of illustrations were as follows:

- Make sure that at least one illustration and explanation was prepared for each of the 9 cells of the London Plan density matrix (i.e. sites with a PTAL of 0-1, 2 to 3 and 4-6 in each of the Suburban, Urban and Central settings);[6]
- Identify 'real', rather than potential or contrived, development sites in order that the illustrations and explanation can take account of actual local policy considerations, comments from consultees, challenges and design solutions;
- Look for sites that would be helpful in considering the key issues set out in the brief and Appendix 1, such as edge of centre, backland sites, sites which straddle different character areas etc. etc.;
- Choose sites of different sizes, defined as those that have been the subject of successful planning applications for 1-9 additional homes ('small' sites); 10-149 homes ('medium' sites) and 150 plus homes ('large' sites);[7]
- Choose sites that are in different geographical locations 'outer' and 'inner' London and north, east, south and west of the River Thames;
- Disregard sites formed from rear gardens, given the London Plan's support for a locally justified presumption against their development; and
- Ensure that a proportion of the sites were the subject of permission for a mixture of uses, not just housing.

3.7. In order to meet these objectives, the London Development Database (LDD) was used to identify planning permissions that were granted in 2009/10 for residential and mixed-use developments. All the relevant permissions were allocated to one of the three size categories ('small', 'medium' and 'large') and located on to a map of London that included the relevant PTAL categories (0 to 1, 2 to 3 and 4-6) and town centres (Central Activities Zone, Metropolitan, Major and District). The character map in the Mayor of London's Strategic Housing Land Availability Assessment (SHLAA) (2009) was also taken into account.

3.8. Using these maps, together with aerial photographs and street views, a long-list of 40 sites was identified. The key planning application information for each of these sites was then reviewed. This included the Design and Access Statement, key drawings, transport assessment, financial viability assessments (where available), borough officer reports and, where appropriate, GLA Planning Decisions Unit (PDU) officer reports and Planning Inspector reports. This review was augmented by discussions with the client, PDU officers and the planning officers of the London Boroughs of Bexley, Croydon, Havering, Redbridge and Sutton. This resulted in some sites being rejected and sites that had not previously been identified being included. The process resulted in a short-list of 40 sites, which in discussion with the client was reduced to the chosen nine, set out below in Table 5.

Site and scheme analysis

3.9. The chosen nine sites and associated development schemes were analysed in greater detail using aerial photographs and street views, the key planning application material outlined above and a review of the relevant borough's key planning policies. This analysis

	PTAL 0-1	PTAL 2-3	PTAL 4-6
Suburban	**Illustration 1. Outer West** (Medium) 40 u/ha, 200 hr/ha **Illustration 2. Outer West** (Medium) 40 u/ha, 200 hr/ha	**Illustration 3. Outer South** (Small) 55 u/ha, 250 hr/ha	**Illustration 4. Outer West** (Large) 90 u/ha, 325 hr/ha
Urban	**Illustration 5. Inner South** (Medium) 70 u/ha, 250 hr/ha	**Illustration 6. Outer South** (large) 115 u/ha, 400 hr/ha	**Illustration 7. Outer North** (Large) 185 u/ha, 620 hr/ha
Central		**Illustration 8. Outer East** (Medium) 220 u/ha, 650 hr/ha	**Illustration 9. Outer West** (Large) 280 u/ha, 820 hr/ha **Illustration 10. Inner North East** (Large) 400 u/ha , 1080 hr/ha

Table 5 - List of Illustrations

sought to identify site-specific physical and policy constraints and whilst the specification of requirements for the study does not require financial viability appraisals (which would not be possible or helpful in any event given the number of unknown variables), the scheme design was informed by the team's experience and judgment on issues relating to viability.

Scheme design

3.10. The analysis described above was used to prepare short site-specific briefs for the sites. These required compliance with the Mayor's housing floorspace, floor to ceiling heights and amenity standards as set out in the draft Housing SPG (December 2011) and key local planning policies. They also assume 100% Lifetime Homes, the inclusion of 10% wheelchair accessible units (which are 15% larger than 'standard' homes), a set of assumptions in terms of dwelling mix, car and cycle parking, no single-aspect homes facing north or main roads/railway lines and a maximum of eight flats per floor served from a stair/lift core. Design work was carried out at a scale of 1:500 and is at feasibility level only.

3.11. The scheme profile for each illustration sets out figures for site area, total dwellings (density in units and habitable rooms), Gross External Area (GEA) (residential, non-residential and total), plot ratio, total car parking spaces (and ratio per unit), and publicly accessible open space (where included). These are approximate rounded figures based on the feasibility design studies. Play space is not identified separately in the scheme profile, but the proposed level of amenity space and publicly accessible open space, where provided, is deemed sufficient to allow for doorstep and local playable space for 0-11 year olds that meets the requirements of the draft Shaping Neighbourhoods: Children and Young People's Play and Informal Recreation SPG (February 2012).

3.12. The draft Housing SPG sets out a more flexible/ design-led response to safeguarding privacy, rather than proscribing particular standards (for example, the careful placement of windows serving habitable rooms can allow for separation distances to be reduced). However, the following approach has been taken when preparing the illustrations:

- Maintain at least 21m between habitable rooms in existing properties that adjoin the site and those in the proposed scheme;
- Maintain at least 18m between proposed habitable rooms at the rear of properties in the proposed scheme (i.e. back-to-back distances); and
- Maintain at least 12m between proposed habitable rooms at the front of properties where they face each other across streets, assuming that all proposed homes in these locations are dual aspect.

3.13. The dwelling mix assumed for the schemes take account of London Plan Policy 3.8 (Housing choice) to ensure a range of housing choice, the relevant borough policies relating to housing need and the character of the surrounding area. As a result, the illustrative schemes include proportions of family-sized housing (3-bed plus) of between 78 and 100% for Suburban sites, 30 to 38% for Urban sites and 14 to 17% for Central sites. In reality, this would be refined further, to take account of up to date evidence of local housing need.

3.14. All medium and large schemes (10 units or more) were assumed to include a mixture of private and affordable housing, with the affordable housing content representing the 'maximum reasonable amount' (taking account of the requirements of London Plan Policy 3.12). In accordance with London Plan policies 3.5 and 3.8 the size, amenity standards and appearance of affordable housing has been assumed to be the same as for private housing (i.e. the designs are 'tenure blind'). If HCA London required minimum standards for individual rooms are met where grant is being sought for affordable housing this may have a minor affect on the schemes as illustrated. However the layouts allow for housing in different tenures to be served by separate stair and lift cores.

3.15. Scheme design has also sought to take account of financial viability issues in terms of the following: dwelling mix and customer choice; the efficiency of site layout and access arrangements; the amount and type of car parking (restricting schemes in Suburban and Urban settings to surface and undercroft parking areas); choice of external materials for elevations and public realm areas; external landscaping; any obvious potential rights of light and party wall issues; general 'build ability; and on-going management arrangements and costs.

3.16. All the designs result in illustrative schemes that fall within the relevant indicative density ranges as set out in the Table 3.2 of the London Plan.

3.17. Where flat roofs are shown, these are assumed to be laid out as either private/communal amenity spaces or as 'living roofs' ('brown' or 'green' roofs where access is limited to maintenance).

3.18. Where separate access is shown to rear gardens it is assumed that these would serve a limited number of homes and that entrance from the street to these gardens would be gated.

3.19. The shared surface arrangements shown on the illustrations are indicative only. Detailed design and material specification of such spaces would need to take full account of safety, security issues and accessibility for disabled people.

3.20. To ensure anonymity of the selected sites, the orientation and/or surrounding context has been adjusted, for example by handing the site, and place and street names have been avoided. However, they do identify which part of London (Outer/Inner, north, east, south or west) the site is located in as this is considered relevant for considering issues associated with their development. The illustrations and explanatory text have been prepared for the purposes of this study only and should not be taken as commenting on the quality or acceptability of consented schemes or the residential densities that have been permitted for the selected sites.

Built Scheme Examples

3.21. In addition to the use of real sites for the preparation of Illustrations and explanations, a number of Built Scheme Examples were identified to help provide vehicles for discussing one or more of the issues identified in the specification of requirements. These include historic developments identified by the consultant team in discussion with the client and contemporary built developments based on a review of winners and commended schemes for the Housing Design Awards and Mayor of London Planning Awards over the last five years, discussions with the chief planning officers of the London Boroughs of Croydon, Havering, Redbridge and Sutton and the London Planning Officers' Society at its meeting on 27 January 2012.

3.22. It should be noted that all of the above schemes were permitted and built prior to the adoption of the current London Plan (July 2011) and the publication of the Mayor of London's Interim Housing Design Guide (August 2010) and the densities of a number of them exceed the relevant indicative density range set out in the London Plan density matrix. They are not, therefore, held up as current policy/guidance compliant development. Their role is to illustrate ways in which a particular issue or issues have been addressed and to identify lessons that can be transferred to other situations.

3.33. It should also be noted that in the time and budget available, the consultant team has not been able to seek out the opinions of residents or people living close to these examples to ascertain what they think about the schemes.

Borough Examples

3.34. Chief planning officers in each of the 32 boroughs and the City of London were invited to put forward a built residential or mixed-use scheme that they thought represented a good example of where residential density had been successfully optimised. At the time of finalising this report, 18 of the 33 local planning authorities had nominated a scheme or schemes. In addition, GLA officers have nominated one scheme.

3.35. These schemes are set out in Appendix 2, together with a brief overview of the number of homes, number of car parking spaces, setting, PTAL and residential density. Some of these examples are illustrated with photos. As with the built scheme examples outlined above, it should be noted that these schemes were permitted and built prior to the adoption of the current London Plan (July 2011) and the publication of the Mayor of London's Interim Housing Design Guide (August 2010).

3.36. Furthermore, some of these schemes received planning permission on appeal and are not necessarily endorsed by councilors in the relevant borough, the Mayor of London or the consultant team. It should also be noted that it is not always clear whether the density quoted for vertically stacked mixed-use schemes takes account of the non-residential floorspace contained within the development. Even if such space were always accounted for, it is most likely that this has not been done in a consistent way.

3.37. Nevertheless, they represent an interesting collection of built schemes that professional planners working in the boroughs and the GLA consider optimise development potential – in the context of the policies, guidelines and standards that pertained at the time that they were granted planning permission. Some of these examples are also referred to in sections 4 to 9 where the consultant team considers that they help to illustrate a particular issue or issues.

	PTAL 0-1	PTAL 2-3	PTAL 4-6
Suburban	**BSE 1. St Bernards**, Croydon (Small) 35u/ha (approx. 160hr/ha) **BSE 2. Asmun's Place**, Barnet (Medium) 37u/ha (approx. 190hr/ha)	**BSE 3. Accordia**, Cambridge (Large) 40 u/ha **BSE 4. Academy Fields,** Havering (Medium) 40 u/ha (approx. 130hr/ha) **BSE 5. Walters Way and Segal Close**, Lewisham (Medium) (Historic) 41 u/ha (200hr/ha) **BSE 6. Queen Mary's Place**,Wandsworth(Large) 64 u/ha (approx. 242 hr/ha)	**BSE 7. Stanmore Place**, Harrow (Large) 128 u/ha (approx 410hr/ha)
Urban	**BSE 8. Oldfield Road**, Hackney (Medium) 65 u/ha (240 hr/ha)	**BSE 9. Frederick Mews,** Haringey (Small) 61 u/ha (292hr/ha) **BSE 10. Setchell Road**, Southwark (Large) (Historic) 97 u/ha (340 hr/ha) **BSE 11. Claredale Street**, Hackney (Medium) 202 u/ha, 652 hr/ha **BSE 12. Consort Road**, Lambeth (Medium) 185 u/ha (610 hr/ha)	**BSE 13. Whatcott's Yard**, Hackney (Small) 100 u/ha (300 hr/ha) **BSE 14. Elgin Avenue,** Maida Vale (Large) 145 u/ha (approx. 480 hr/ha) **BSE 15. Highwood Court,** Brent (Small) 153 u/ha (583 hr/ha) **BSE 16. Urban Housing, Finsbury Park**, Hackney (Medium) 200 u/ha (650hr/ha)
Central		**BSE 17. Peabody Avenue**, Westminster (Medium) 157 u/ha (approx. 650 hr/ha) **BSE 18. Colville Square**, K & C (Medium) 200 u/ha (620 hr/ha)	**BSE 19. St Andrews**, Tower Hamlets (Large) 320 u/ha (approx. 990 hr/ha) **BSE 20. Highbury Gardens** 346 u/ha (946 hr/ha) **BSE 21. Arundel Square**, Islington (Medium) 440 u/ha (approx. 1166 hr/ha) **BSE 22. Bear Lane,** Southwark (Large) 460 u/ha (1228 hr/ha)

Table 6 - List of Built Scheme Examples

4 Suburban Settings

Introduction

4.1. This section discusses the characteristics of this setting before discussing Illustrations and Built Scheme Examples in suburban areas of different public transport accessibility (PTAL 0-1, PTAL 2-3 and PTAL 4-6).

Setting characteristics

4.2. Suburban areas are defined in the London Plan as areas with predominantly lower density development such as, for example, detached and semi-detached houses, predominantly residential, small building footprints and typically buildings of two to three storeys. Based on the definitions of other settings, they are located further than 800m walking distance from District, Major, Metropolitan or International town centres, although they can include local centres.

	0 to 1	2 to 3	4 to 6
Suburban	**150-200 hr/ha**	**150-250 hr/ha**	**200-350 hr/ha**
3.8-4.6 hr/unit	35-55 u/ha	35-65 u/ha	45-90 u/ha
3.1-3.7 hr/unit	40-65 u/ha	40-80 u/ha	55-115 u/ha
2.7-3.0 hr/unit	50-75 u/ha	50-95 u/ha	70-130 u/ha
Urban	**150-250 hr/ha**	**200-450 hr/ha**	**200-700 hr/ha**
3.8-4.6 hr/unit	35-65 u/ha	45-120 u/ha	45-185 u/ha
3.1-3.7 hr/unit	40-80 u/ha	55-145 u/ha	55-225 u/ha
2.7-3.0 hr/unit	50-95 u/ha	70-170 u/ha	70-260 u/ha
Central	**150-300 hr/ha**	**300-650 hr/ha**	**650-1100 hr/ha**
3.8-4.6 hr/unit	35-80 u/ha	65-170 u/ha	140-290 u/ha
3.1-3.7 hr/unit	40-100 u/ha	80-210 u/ha	175-355 u/ha
2.7-3.0 hr/unit	50-110 u/hr	100-240 u/ha	215-405 u/ha

SRQ Density Matrix as table 3.2 from the London Plan (July 2011)

4 Suburban PTAL 0-1

Illustration 1

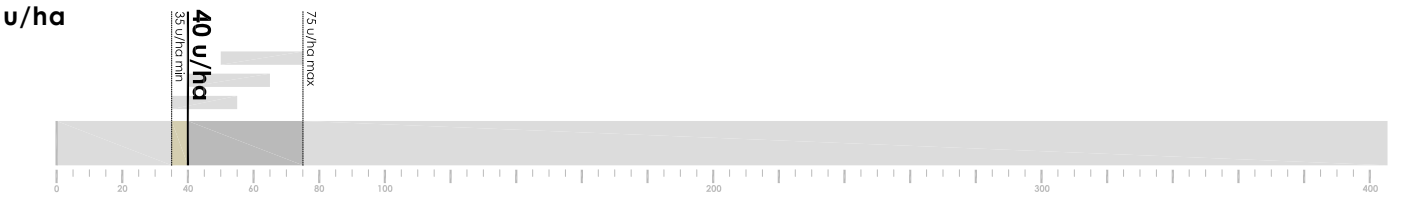
Location plan at 1:10,000 scale

Location and context

- Outer West London.
- One of three related sites on a 1950's housing estate involving the demolition and replacement of three-storey blocks of flats (this one containing 18 flats).
- Suburban setting, with a mixture of two-storey semi-detached houses and short two-storey terraces of houses immediately surrounding the site to the east, south and west. A post-war church is located to the north of the site and there are playing fields further to the east.
- The site is relatively poorly served by public transport (with a bus route along a main road about 800m to the south) and is some distance away from a local centre

Development assumptions

- The density, dwelling mix and tenure profile across the three sites ensure no net loss of affordable housing.
- Underground car parking is not viable.



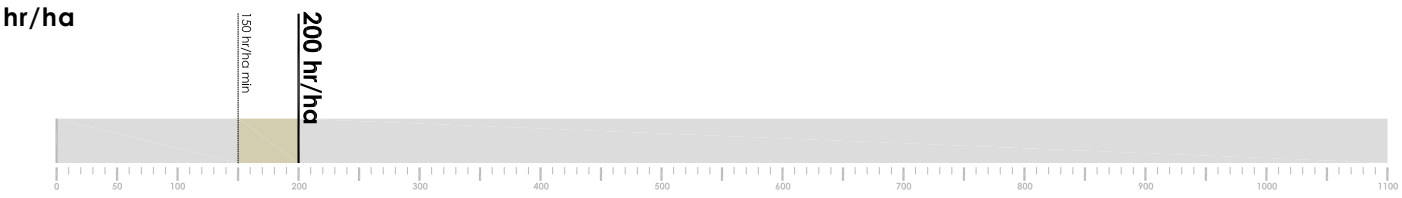


Illustration of new street between houses

Site area (ha)	0.47
PTAL	1b
Total dwellings	18
Density u/ha	**40**
Density hr/ha	**200**
GEA residential (m²)	2,600
GEA non-residential (m²)	0
GEA total (m²)	2,600
Plot ratio	**0.6**
Total no. car parking spaces	27
Car parking ratio per unit	**1.5**
Publicly accessible open space(m²)	150

1b1p	-
1b2p	0%
2b3p	-
2b4p	0%
3b5p	67%
4b5p	-
4b6p	33%
5b6p	-
Total	100%

Family dwellings (3b5p+)	100%
Wheelchair user dwellings	10%
Dual aspect dwellings	100%

4 Suburban PTAL 0-1

Illustration 1

Design response

The numbers below relate to the plan below.

1. Building lines fronting the road respect existing building lines.
2. Back gardens next to existing back gardens where ever possible.
3. No windows to habitable rooms in flank walls of houses to safeguard privacy of adjoining gardens, other than in houses either side of small play space (which includes windows to habitable rooms to provide natural surveillance).
4. Some existing gardens at the end of the proposed street are exposed.
5. Parking is perpendicular to the street to maximise front gardens and is designed to be integrated with planting and trees.
6. Buildings within the cul-de-sac form a strongly defined public / private boundary and create a public space that still addresses the external street.

Typology diagram at 1:1,250 scale

Uses, typology, structure and massing

1:2,500 scale 1-3

– Plot Ratio 0.6:1.
– Six short terraces of houses in three groups that form a defined building line to the new street.
– Two to three-storey.
– Rear access provided to all gardens.

Car parking

1:2,500 scale on street on plot

– Parking Ratio 1.5:1.
– Mixture of on-plot and on-street parking (some on-street spaces allocated to occupiers of particular houses).
– Designated parking spaces for wheelchair users are provided on-plot for those individual houses that are wheelchair accessible or 'easily adaptable'.

Open space and public realm

1:2,500 scale street playspace private garden

– Shared surface private street.
– Small informal play area for residents of scheme.
– Large private gardens.

4 Suburban PTAL 0-1

Illustration 2

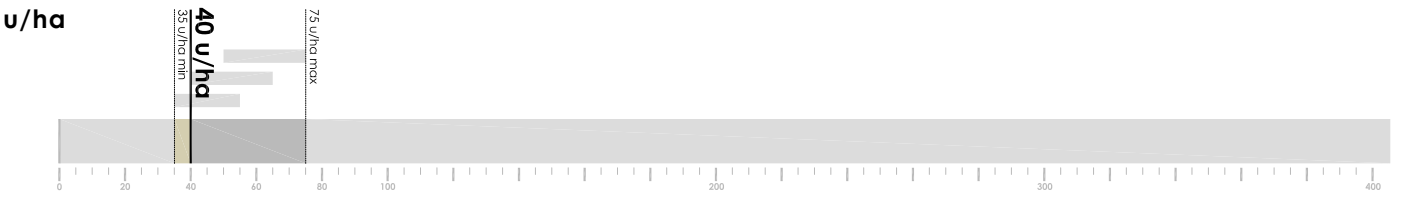
Location plan at 1:10,000 scale

Location and context

- Outer West London.
- One of three related sites on a 1950's housing estate involving the demolition and replacement of three-storey blocks of flats (this one containing 18 flats).
- Suburban setting, with a mixture of two-storey semi-detached houses and short two-storey terraces of houses immediately surrounding the site to the east, south and west. A post-war church is located to the north of the site and there are playing fields further to the east.
- The site is relatively poorly served by public transport (with a bus route along a main road about 800m to the south) and is some distance away from a local centre.

Development assumptions

- The density, dwelling mix and tenure profile across the three sites ensure no net loss of affordable housing.
- Underground car parking is not viable.



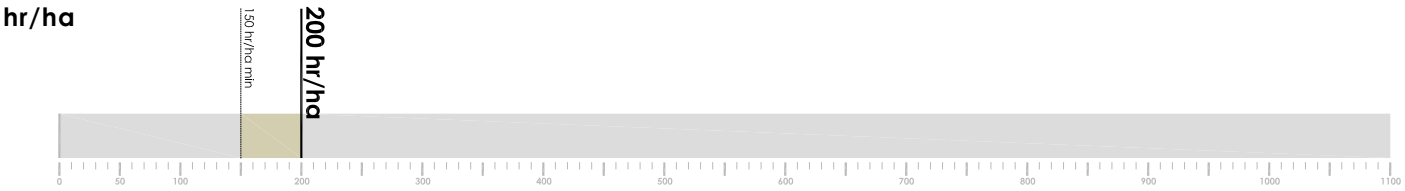


Illustration of new street between houses

Site area (ha)	0.47
PTAL	1b
Total dwellings	19
Density u/ha	**40**
Density hr/ha	**200**
GEA residential (m²)	2,600
GEA non-residential (m²)	0
GEA total (m²)	2,600
Plot ratio	**0.6**
Total no. car parking spaces	32
Car parking ratio per unit	**1.7**
Publicly accessible open space(m²)	125

1b1p	-
1b2p	0%
2b3p	-
2b4p	11%
3b5p	63%
4b5p	-
4b6p	26%
5b6p	-
Total	100%

Family dwellings (3b5p+)	89%
Wheelchair user dwellings	10%
Dual aspect dwellings	100%

4 Suburban PTAL 0-1

Illustration 2

Design response

The numbers below relate to the plan below.

1. Building lines fronting the road respect existing building lines.
2. Back gardens back on to existing back gardens where ever possible.
3. No windows to habitable rooms in flank walls of houses to safeguard privacy of adjoining gardens.
4. Single-storey elements to safeguard privacy and daylight/sunlight of adjoining gardens and to create a sense of enclosure/overlooking for the cul-de-sac.
5. Clear building lines help to define public and private amenity space; there is no ill-defined space.

Typology diagram at 1:1,250 scale

Uses, typology, structure and massing

1:2,500 scale 1-3

– Plot Ratio 0.6:1.
– Short terrace and semi-detached houses around a cul-de-sac.
– The width of the street is kept to a minimum to make efficient use of the site and give the street a positive sense of enclosure.

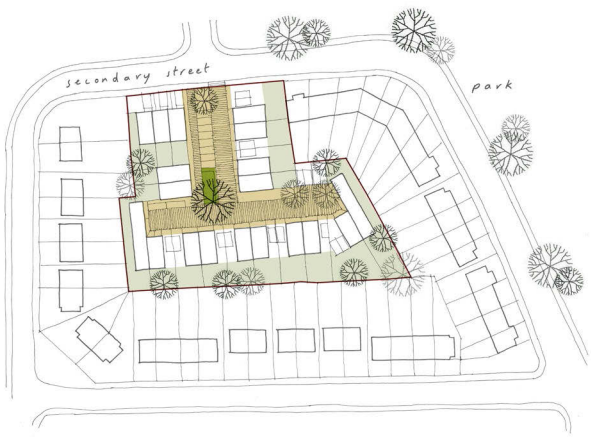
Car parking

1:2,500 scale on street on plot

– Parking Ratio 1.7:1.
– Mixture of on-plot and on-street parking (some on-street spaces allocated to occupiers of particular houses).
– On plot parking on drives reduces its impact on the streetscape.
– Designated parking spaces for wheelchair users are provided on-plot for those individual houses that are wheelchair accessible or 'easily adaptable'.

Open space and public realm

1:2,500 scale street playspace private garden



– Shared surface private street.
– Small informal play area for residents of scheme.
– Private gardens.

4 Suburban PTAL 0-1

BSE 1 - St Bernards

Reasons for selection

– The design creates a low-rise, compact development while at the same time ensuring high levels of privacy to dwellings and private gardens.
– The high plot coverage and small separation distances between the rows of terraced houses means that the development can achieve a moderate density of 35 u/ha despite the housing being predominantly single storey.

Location and context

– Outer South West London.
– A gently sloping site within a low-rise, low-density Suburban setting to the south of Croydon Town Centre.
– The private housing development was built by Wates Construction in the 1970s.

Uses, typology, structure and massing

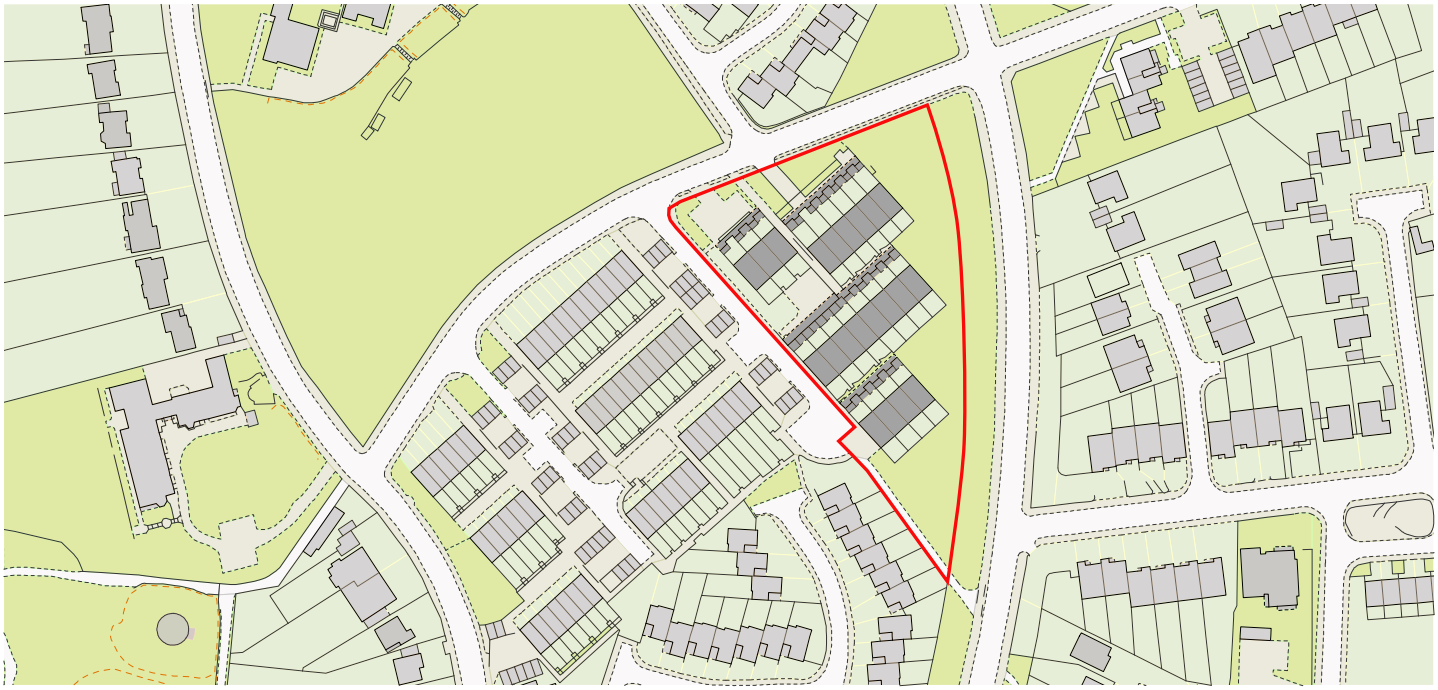
– Three parallel rows of terraced houses are arranged stepping down the slope. The houses are accessed from narrow pedestrian lanes and have small gardens to the front and rear.
– The arrangement gives long views from the upper floor of one house over the roof of the next, while avoiding any overlooking between adjacent houses and gardens.
– Houses are entered on the upper storey from a pedestrian lane through a private garden court. At upper level the living space opens onto a south-facing balcony, while bedrooms on the floor below have access to a second patio garden.
– Both gardens have access to pedestrian walkways and are completely screened from view.

Car parking

– Car parking is provided in a basement car park beneath the terrace nearest the top of the slope. Additional visitor parking is provided by a small, on-site parking court.

Open space and public realm

– A small square in the centre provides a play and amenity space for the group of houses and the development also benefits from areas of landscaped open space immediately adjacent to the site.
– Each house has two courtyard gardens.



Location plan at 1:2500 scale

Other comments

- This model of stepped terraces is more often used on steeply sloping sloping sites, but is still effective in this scheme, despite the limited gradient.
- The split level plan results in an additional large, unlit storage room on the lower level. This proved popular with residents and many families used it as a hobby or games room.

Location	Chichester Road, Croydon, London CR0 5NS
Local Planning Authority	London Borough of Croydon
Completed	1978
Developer	Wates
Architect	Atelier 5

Site area (ha)	0.6		Dwelling mix	
PTAL	1		1b1p	
Total dwellings	21		1b2p	
Density u/ha	**35**		2b3p	
Density hr/ha	**160**	approx.	2b4p	
GEA residential	100%		3b5p	60%
GEA non-residential	0%		4b5p	40%
Total GEA			4b6p	
Plot ratio			5b6p	
Total no. car parking spaces			Total	100%
Car parking ratio per unit				
Publicly accessible open space			Family dwellings (3b5p+)	100%
			Wheelchair user dwellings	n/a
			Dual aspect dwellings	100%

4 Suburban PTAL 0-1

BSE 2 - Asmun's Place, Hampstead Garden Suburb

Reasons for selection

- This historical model of a suburban cul-de-sac of two-storey houses provides an example of how gardens, rather than the road space and car parking, have been designed to be the dominant feature of a suburban residential street.
- Arranging houses as short terraces allows density to be maintained despite generous separation distances.
- An example of a development providing only on-street car parking.

Location and context

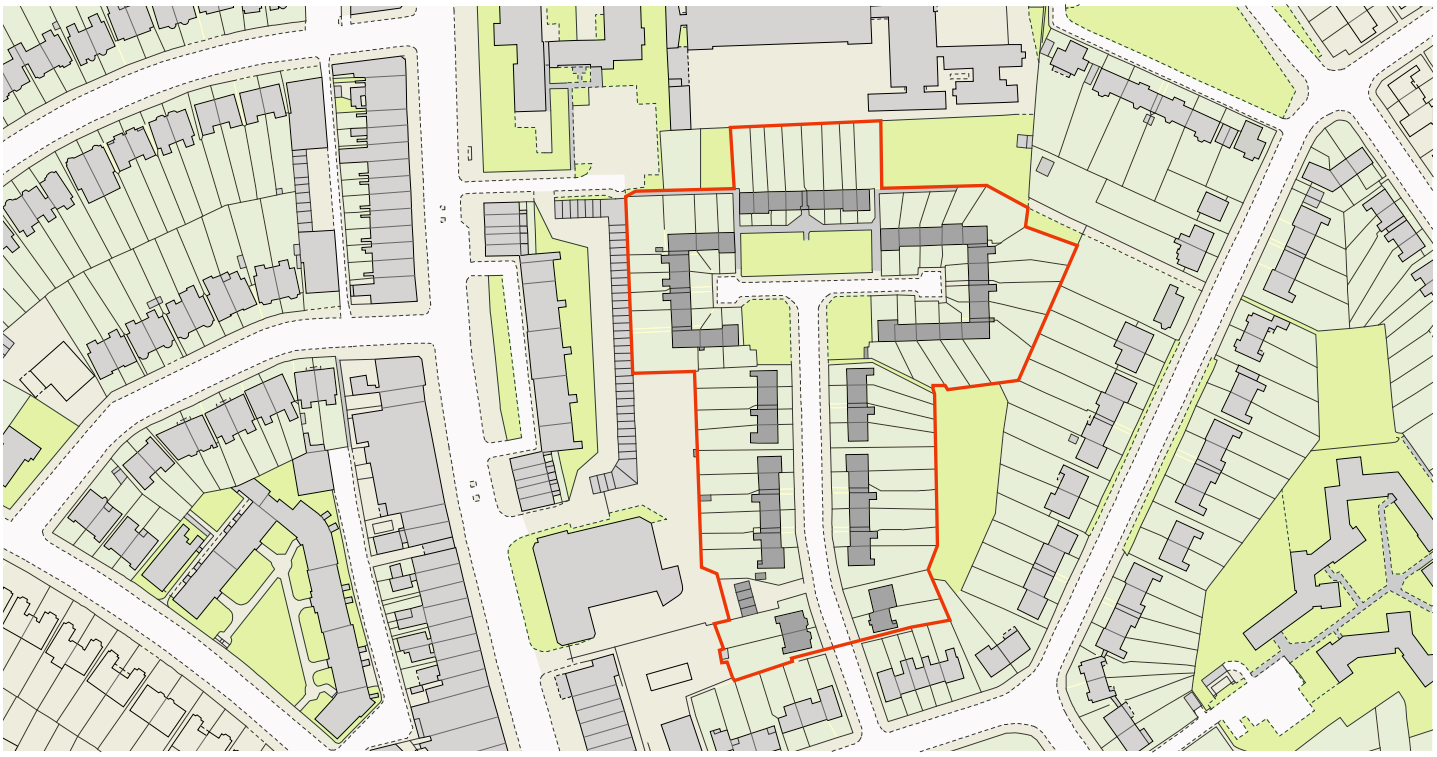
- Outer North London.
- Suburban setting in Hampstead Garden Suburb, surrounded by two-storey semi-detached and terraced houses.

Uses, typology, structure and massing

- Asmun's Place is a Grade II Listed cul-de-sac street dating from 1908.
- The housing is arranged as a series of linked cottages with generous front and rear gardens.
- Arranging houses as short terraces allows density to be maintained despite large separation distances (23m front to front and more than 30m back to back).
- The original development principles were to provide low densities, giving over the maximum area of land to gardens and open spaces, and to create a grouping of houses that would help foster a sense of community.
- The consistent and continuous treatment of hedges, gates and walls bounding the street help to create a strong public realm.

Car parking

- The development was not originally designed to accommodate parking and only on-street car parking is now provided.
- Approximately 70 on-street car parking spaces are provided and there are three additional privately owned garages. On-street parking has the advantage of maintaining the appearance of front gardens and is a space-efficient solution; a single space can be used by multiple occupants during the course of a day.



Location plan at 1:2500 scale

– On-street parking will generally only work in situations like this, where houses are maintained in single ownership rather than converted into flats, as the width of one house frontage allows for roughly one parking space. However, the street is not covered by any parking controls (such as a CPZ) and residents report competition for parking with shoppers visiting the neighbouring high street.

Open space and public realm

– The development provides large front and back private gardens as well as communal amenity space in a quadrangle at the end of the street.

Location	Asmun's Place, London NW11
Local Planning Authority	London Borough of Barnet
Completed	1908
Developer	Hampstead Garden Suburb Trust
Architect	Richard Barry Parker & Raymond Unwin

Site area (ha)	1.58	
PTAL	1	
Total dwellings	59	
Density u/ha	**37**	
Density hr/ha	**190**	approx.
GEA residential	100%	
GEA non-residential	0%	
Total GEA		
Plot ratio		
Total no. car parking spaces	70	
Car parking ratio per unit	**1.2**	
Publicly accessible open space		

Dwelling mix	
1b1p	
1b2p	
2b3p	
2b4p	
3b5p	
4b5p	
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)	100%
Wheelchair user dwellings	n/a
Dual aspect dwellings	100%

4 Suburban PTAL 2-3

Illustration 3

Location and context

- Outer South London.
- Suburban setting fronting a main road. A row of low-rise light industry and car dealerships to the south and 2-3 storey semi-detached and terraced houses to the west, north and east.
- A moderate public transport accessibility giving a PTAL of 3. A rail station is 300m to the south and there are buses along the main road. A small local centre is 600m to the north east along the main road and a recreation ground is 200m to the west along the secondary street.
- An area of family houses on relatively large plots.

Development assumptions

- Not possible to create an additional junction with the main road. Any new junction on the secondary street will need to be an acceptable distance from the existing road junction.
- Basement car parking is unlikely to be viable.
- Access will need to be retained to the rear of existing back gardens to the west.
- The second-hand value of family houses in the surrounding area (which will benefit from larger plots) will be a main determinant of the value of larger units. A mix of flats and houses will be necessary to make the scheme viable.

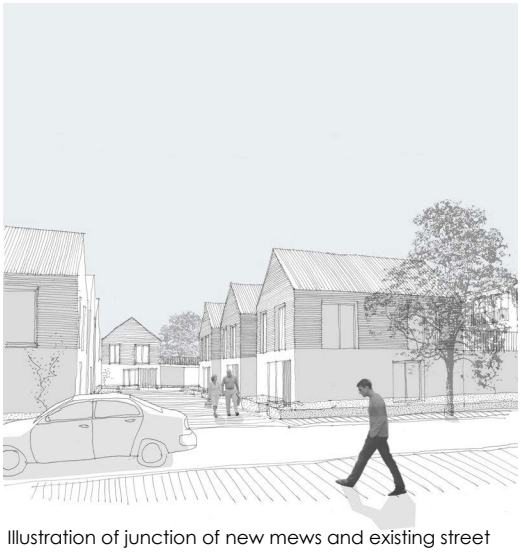
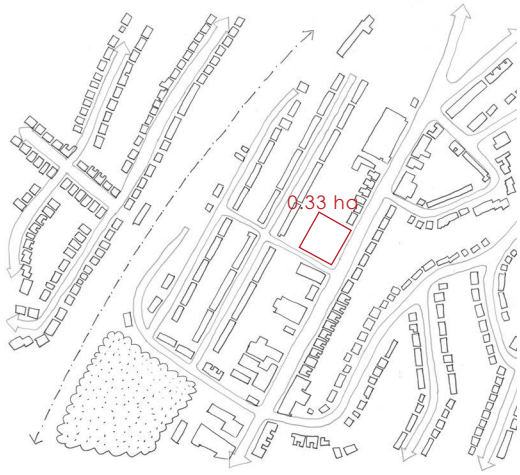
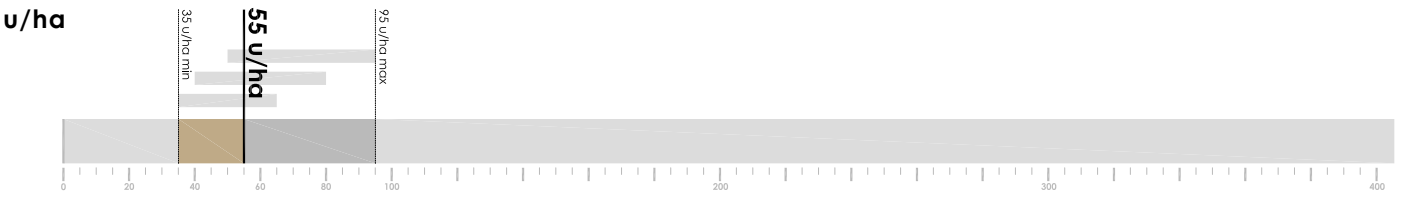


Illustration of junction of new mews and existing street



Location plan at 1:10,000 scale



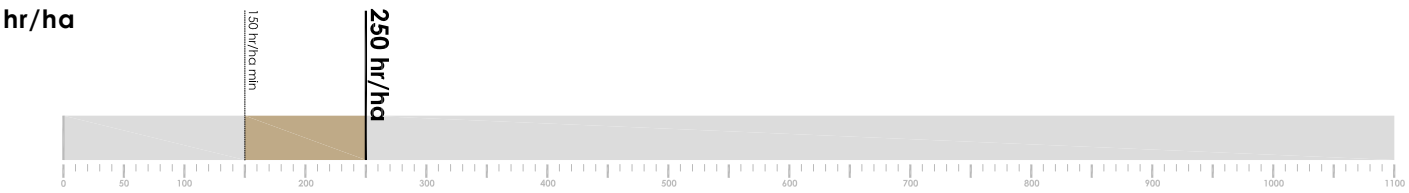


Illustration of new frontage onto existing main road

Site area (ha)	0.33
PTAL	3
Total dwellings	18
Density u/ha	**55**
Density hr/ha	**250**
GEA residential (m²)	2,500
GEA non-residential (m²)	0
GEA total (m²)	2,500
Plot ratio	**0.8**
Total no. car parking spaces	32
Car parking ratio per unit	**1.8**
Publicly accessible open space(m²)	100

1b1p	-
1b2p	11%
2b3p	-
2b4p	11%
3b5p	67%
4b5p	-
4b6p	11%
5b6p	-
Total	100%

Family dwellings (3b5p+)	78%
Wheelchair user dwellings	10%
Dual aspect dwellings	100%

4 Suburban PTAL 2-3

Illustration 3

Design response

- A low-rise scheme of 2-3 storey houses and apartment buildings where the density is maintained by bringing new dwellings close together, minimising separation distances. A patio house typology is used within the centre of the site to maintain privacy.
- The scheme achieves the maximum density for the setting and PTAL, measured in habitable rooms per hectare, and a moderate density in units per hectare.

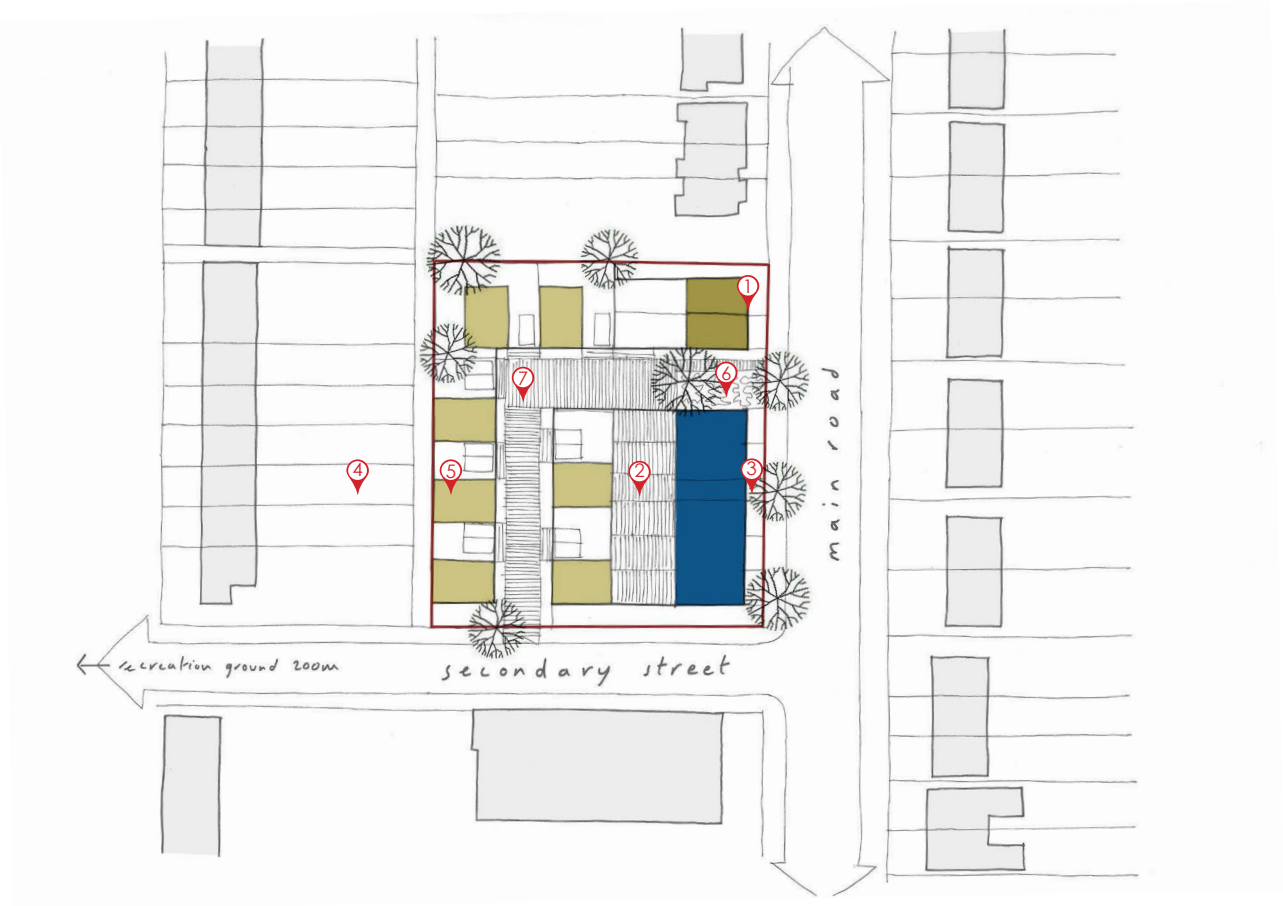
The numbers below relate to the plan below.

1. Building lines respect existing building lines. Lower maisonettes have small front gardens and entrances from the street.
2. Maisonettes have private gardens at podium level on the quieter side of the building.
3. Entrance to second floor flats.
4. Long back gardens to the east enable new patio houses to be placed along the boundary while maintaining 21m separation distances.
5. The patio house type has windows to the front and towards the patio side but no windows to the rear. This allows dwellings to be placed in close proximity with 8m front-to-front separation distances while maintaining privacy to habitable rooms.
6. Small 'door-step' shared play space adjacent to pedestrian entrance from main road. Play and recreation space for older children is provided by an existing recreation ground 200m away.
7. Patio houses are organised around a shared surface mews street to keep a strong public frontage while creating an internal environment that makes efficient use of the block.

Development alternatives

A single apartment block with a higher proportion of smaller dwellings wrapping the perimeter of the site would achieve a higher density in units per hectare but would require higher buildings to achieve a similar density and would not be as suitable for family accommodation.

Typology distribution diagram at 1:1,250 scale



Uses, typology, structure and massing

1:2,500 scale N 1-3

– Plot Ratio 0.8:1
– The introduction of an internal mews street is necessary to optimise the efficiency of a deep block and to allow vehicle access.
– A three-storey block containing ground floor maisonettes with apartments above is arranged along the main road. Two rows of patio houses in the centre of the site around the mews street.
– For vehicle access, a new turning is made off the secondary street. This returns to the road as a pedestrian-only path. Cars may exit to the secondary street via the undercroft parking but not enter.

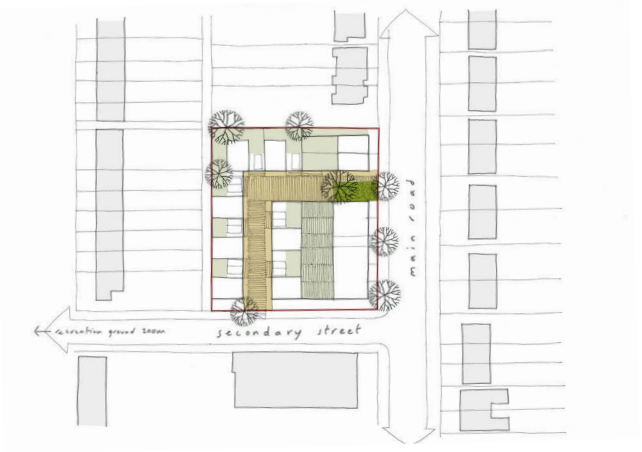
Car parking

1:2,500 scale N on street on plot undercroft

– Parking Ratio 1.8:1
– A combination of undercroft parking for the apartment buildings and on-plot parking for the patio houses.
– On plot parking for the patio houses is covered with a second patio deck at first floor level to maximise amenity space.
– Designated parking spaces for wheelchair users are provided on-plot for those individual houses that are wheelchair accessible or ‘easily adaptable’.

Open space and public realm

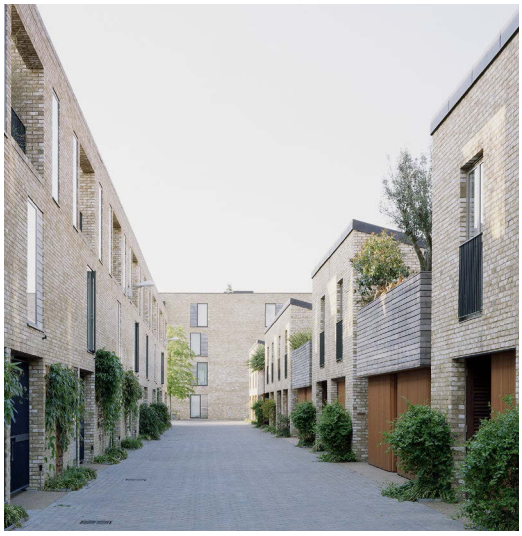
1:2,500 scale N mews street playspace private garden



– Small informal play area at pedestrian site entrance from main road.
– Each dwelling has a private garden, patio or terrace.
– Play and recreation space for older children would be provided through improvements to existing recreation ground nearby.

4 Suburban PTAL 2-3

BSE 3 - Accordia, Cambridge



Reasons for selection

- The development offers an example of a masterplan approach that responded to landscape conditions and the site's 700 existing trees, and was thereby able to optimise density within the building plots. The need to preserve existing mature trees is a common constraint on site area and density in suburban sites.
- The typologies developed in the scheme make innovative use of private external spaces, which are provided with a high degree of privacy.

Site and context

- The site is located to the south of Cambridge town centre, in a low-density urban context which is considered to be equivalent to a Suburban setting in London.

Uses, typology, structure and massing

- The housing is grouped in three compact blocks, retaining areas of open landscape and the existing avenues of trees in between.
- The blocks are organised around shared-surface mews streets. The streets are deliberately narrow in order to maintain densities and create an intimate character.
- Each of the three blocks of houses has a net density of around 65 u/ha. The overall site density 40 u/ha.
- There are 378 dwellings in total and a similar number of houses and apartments (212 houses and 166 apartments). The larger land take of the houses and the decision to site the apartment buildings to one side of the site gives the impression that the development is predominantly made up of terraced housing. This helps to manage the impact of the development on surrounding low-density housing by lowering the perceived density of the development.

Car parking

- The majority of parking is on plot, and narrow streets are intended to have the effect of discouraging car use for short trips.
- This approach is more relevant in Cambridge, where cycling is a viable alternative form of transport, than in suburban areas of outer London.

Location plan at 1:2500 scale

Open space and public realm

- The overall site area of 9.6 ha includes 3.5 ha of landscaped open space.
- All of the dwellings are provided with private open spaces in the form of balconies, terraces or patios. Family terraced houses with mews streets behind have private, enclosed terraces at first floor level accessed from the living room. Patio houses overlooking the green have patios at both ground and first floor level, screened from view from the park.

Other comments

- The tenure mix is 70% private and 30% affordable.

Location	Brooklands Avenue, Cambridge
Local Planning Authority	Cambridge City Council
Completed	2006 (Phase 1, 50%)
Developer	Countryside Properties
Architect	Fielden Clegg Bradley, Maccreanor Lavington, Alison Brooks. Landscape: Grant Associates.

Site area (ha)	9.6
PTAL	n/a
Total dwellings	378
Density u/ha	**40**
Density hr/ha	
GEA residential	100%
GEA non-residential	0%
Total GEA	
Plot ratio	
Total no. car parking spaces	
Car parking ratio per unit	
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	19%
2b3p	31%
2b4p	
3b5p	24%
4b5p	20%
4b6p	
5b6p	6%
Total	100%

Family dwellings (3b5p+)	50%
Wheelchair user dwellings	
Dual aspect dwellings	

4 Suburban PTAL 2-3

BSE 4 - Academy Fields

Reasons for selection

– An example of a contemporary suburban development that provides a high quality public realm in which car parking is well managed and does not appear to dominate the street environment. The materials and detailing of the houses also helps to raise the quality of the scheme.
– An example of a new development integrating and re-using an existing historic building within the plan.

Location and context

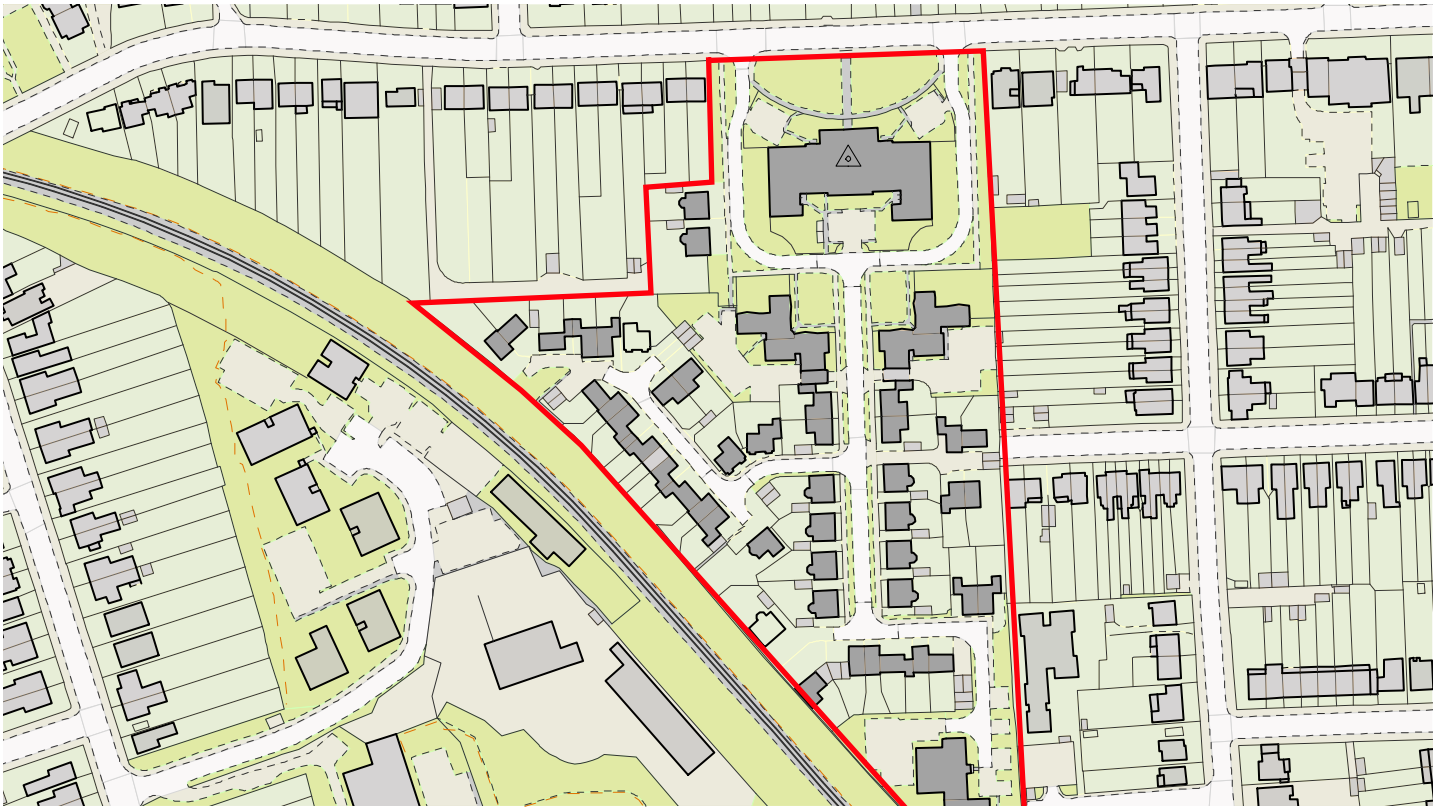
– Suburban setting, surrounded by low-density residential development.
– The location, around 750m from the town centre boundary of Romford (a Metropolitan Centre) could alternatively be classified as 'Central' if there had been a different interpretation of the matrix settings, prioritising distance from town centre over existing local character.
– The site is around 1km from Gidea Park station and has a moderate PTAL of 2-3.

Uses, typology, structure and massing

– The scheme includes the retention and conversion of a former listed school building and new, mainly 3-storey houses.
– There are 52 apartments in total (14 in school building) and 47 detached and semi-detached houses. The site is around 2.7 ha including the retained building, giving a density of 40 u/ha.
– The development has a clear urban layout organized on axis from the converted school building. However, the plan as a whole is inward-facing and very poorly integrated with the surrounding road and pedestrian network.

Car parking

– Parking for the houses is on-plot, in garages tucked to the rear of the houses. The apartment buildings have parking courts to the rear. There is additional un-allocated on-street parking.



Location plan at 1:2500 scale

Open space and public realm

– Low hedges and street trees help to soften the appearance of open spaces and give some separation between houses, pavement and roadway.

Other comments

– The scheme was put forward by officers of the London Borough of Havering and is therefore also included in Appendix 2.

Location	Heath Park Road, Romford, London RM2
Local Planning Authority	London Borough of Havering
Completed	2002
Developer	Crest Nicholson
Architect	

Site area (ha)	2.7
PTAL	2-3
Total dwellings	111
Density u/ha	**40**
Density hr/ha	
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	192
Car parking ratio per unit	**1.7**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	
2b3p	
2b4p	
3b5p	
4b5p	
4b6p	
5b6p	
Total	100%
Family dwellings (3b5p+)	
Wheelchair user dwellings	10%
Dual aspect dwellings	

4 Suburban PTAL 2-3

BSE 5 - Walters Way and Segal Close

Reasons for selection

– The two schemes are built in low density suburban contexts on sites that were formerly large house plots. The design approach potentially offers transferrable lessons for the intensification of small sites within low density suburban settings.
– Layouts exploit the steeply sloping sites to reduce separation distances between houses, and the project shows that investing in a strong landscape structure and planting can enhance the quality of the public realm as well as helping to increase the acceptable density.

Site and context

– Outer South East London.
– Suburban setting in Forest Hill, with two-storey detached and semi-detached houses on large plots.

Uses, typology, structure and massing

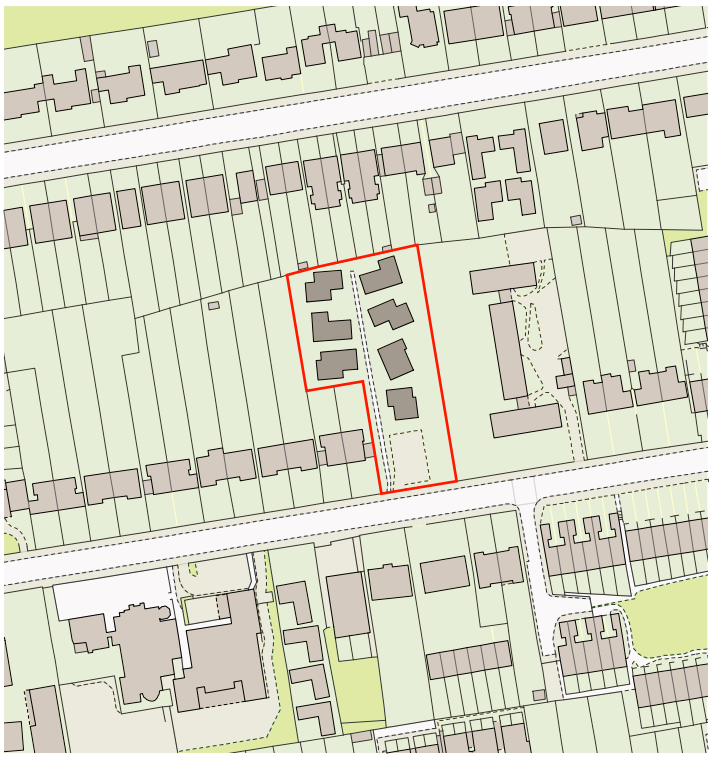
– There are 27 houses in total between the two sites; 13 detached houses at Walters Way and 14 semi-detached houses at Segal Close.

Car parking

– Walters Way has vehicle access along a private, shared surface road through the site, and on-plot car parking at a level of one space per dwelling. Car parking is beside the dwelling within the garden, which reduces the visibility of cars from the street.
– Segal Close has an on-site shared car park at the entrance to the site. The rest of the site has pedestrian-only access.

Open space and public realm

– In both sites, existing mature trees were retained and dense planting was introduced between the houses and around the perimeter of the site. The trees and planting provide privacy screening and help to minimise the impact of the development on neighbouring homes. Without it, the density might be considered unacceptable.
– Both schemes successfully create environments where pedestrians have priority.



Location plan at 1:2500 scale

Other comments

- The developments were self-built by residents. The projects were initiated in the mid-1970s by Lewisham Council for families on the council housing waiting list and named after Walter Segal, the architect.
- The cooperative management structure and other specific circumstances of the project allow the community to maintain a large amount of communal landscape, which might otherwise not be possible without high service charges.

Location	London SE23 3LH and London SE23 1PP
Local Planning Authority	London Borough of Lewisham
Completed	1979 - 1984
Developer	Community self-build, in partnership with Lewisham, with the Water Segal Self Build Trust
Architect	Walter Segal

Site area (ha)	0.7
PTAL	2-3
Total dwellings	27
Density u/ha	**41**
Density hr/ha	**200** approx.
GEA residential	100%
GEA non-residential	0%
Total GEA	
Plot ratio	
Total no. car parking spaces	27
Car parking ratio per unit	**1**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	
2b3p	
2b4p	
3b5p	
4b5p	
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)	
Wheelchair user dwellings	10%
Dual aspect dwellings	100%

4 Suburban PTAL 2-3

BSE 6 - Queen Mary's Place, Roehampton

Reasons for selection

– The project is an example of a new development in a suburban context that was required to incorporate existing buildings and respond to a sensitive historic setting.
– The development achieves higher densities than its surroundings but has a scale and use of material that give a traditional, suburban character.

Location and context

– Outer South London.
– Suburban setting in Roehampton, neigbouring a hospital and university campus, with a mixture of terraces and large detached houses in the vicinity.
– The site was former NHS land and incorporated the Grade I Listed Roehampton House and surplus hospital land to the south and east.

Uses, typology, structure and massing

– The blocks are predominantly three storeys in the centre of the site and made up of short terraces of family houses. There are some small apartment buildings at the corners or ends of the blocks. Taller apartment buildings of four and five storeys are arranged along Roehampton Lane. Roehampton House was conserved within the development and converted into 24 flats.
– The layout of small blocks within the new development relates to the historic layout of formal gardens around the house.

Car parking

– Car parking for terraced houses is on-plot, in front gardens. Some houses have additional parking spaces in garages accommodated within the ground floor. Parking for apartment buildings is provided in basement car parks and at-grade parking courts.

Open space and public realm

– The gardens of Roehampton House have been preserved as amenity spaces for the development. Additionally, small lawned amenity areas are provided within the new development.

Location plan at 1:2500 scale

Other comments

- The density of the development is at the upper limit for its setting and PTAL level. In order for this level of density to be considered acceptable the Council secured a number of transport and travel measures, including parking controls to limit the effect of overspill on neighbouring residential streets. There was also an agreement for off-site children's play space, with a financial contribution towards upgrading play facilities in the adjacent playing field.
- The tenure mix is 75% private and 25% affordable (81 homes for shared ownership, 8 for social rent).
- The scheme was put forward by officers of the London Borough of Wandsworth and is therefore also included in Appendix 2.

Location	177 Roehampton Lane, London SW15 5BF
Local Planning Authority	London Borough of Wandsworth
Completed	2011
Developer	St James / Berkeley Group
Architect	Giles Quarne Architects, MKA Architects

Site area (ha)	5.6
PTAL	3
Total dwellings	359
Density u/ha	**64**
Density hr/ha	**242**
GEA residential	100%
GEA non-residential	0%
Total GEA	
Plot ratio	
Total no. car parking spaces	459
Car parking ratio per unit	**1.3**
Publicly accessible open space	

Dwelling mix	
1b1p	4%
1b2p	16%
2b3p	46%
2b4p	
3b5p	9%
4b5p	23%
4b6p	
5b6p	2%
Total	100%
Family dwellings (3b5p+)	34%
Wheelchair user dwellings	
Dual aspect dwellings	

4 Suburban PTAL 4-6

Illustration 4

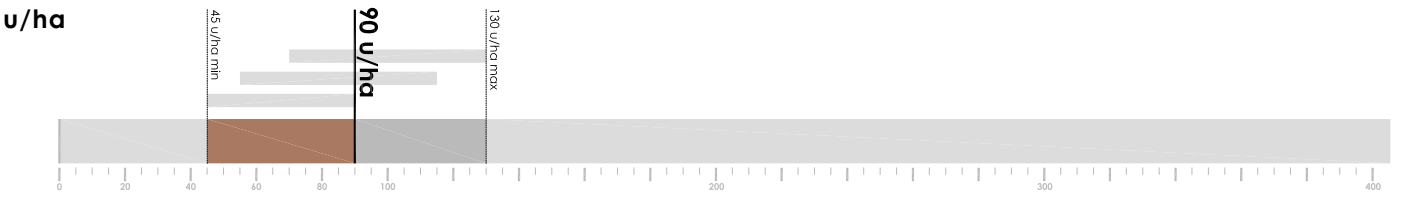
Location plan at 1:10,000 scale N

Location and context

- Outer West London.
- Existing social housing estate in need of investment. Phased estate renewal scheme.
- Suburban setting of two-storey terrace and semi-detached housing. Parks directly adjoin the site to the east and west. There is a railway embankment to the north and a main road to the east leading to the local centre, which has District Centre status.
- There is a mainline station immediately adjacent to the north and an Underground station about 500m to the north, within the town centre, and buses along the main road, giving a PTAL of 4.

Development assumptions

- The density, dwelling mix and tenure profile ensure no net loss of affordable housing and allow for a significant increase in the amount of market housing for sale (to create a more mixed community and ensure a financially viable scheme; with market housing helping to cross-subsidise the re-provision of affordable housing).
- To achieve a density at the top end of the range requires a high proportion of flatted accommodation.
- Need for around 800 sqm of non-residential space on the main road to provide community and retail services to support an intensification of the site.
- Underground car parking is unlikely to be viable.
- High noise levels near the railway and main road.
- Existing gardens to the south require vehicular access.



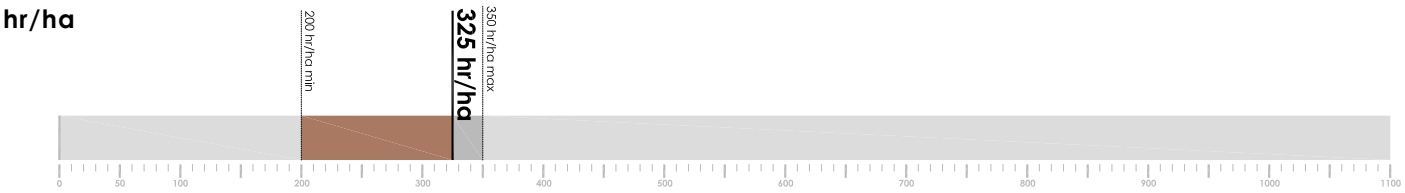


Illustration of new residential street showing a 'hybrid block' of houses and apartments

Site area (ha)	3.0
PTAL	4
Total dwellings	265
Density u/ha	**90**
Density hr/ha	**325**
GEA residential (m²)	33,100
GEA non-residential (m²)	900
GEA total (m²)	34,000
Plot ratio	**1.1**
Total no. car parking spaces	260
Car parking ratio per unit	**1.0**
Publicly accessible open space(m²)	1,300

1b1p	-
1b2p	31%
2b3p	-
2b4p	31%
3b5p	29%
4b5p	-
4b6p	8%
5b6p	-
Total	100%

Family dwellings (3b5p+)	37%
Wheelchair user dwellings	10%
Dual aspect dwellings	60-70%

4 Suburban PTAL 4-6

Illustration 4

Design response

A masterplan approach towards comprehensive redevelopment that seeks to respect the existing character by establishing a clear network of streets and building heights hierarchy.

The numbers below relate to the plan below.

1. Direct public route provided between main road and park, overlooked by homes.
2. The development is structured as a series of small hybrid blocks, each combining an apartment building with rows of houses. This was found to be the most efficient layout for densities and parking given the width of the site.
3. Play space is consolidated at the interface with the existing park.
4. Non-residential space is located on the ground floor of buildings fronting the main road.
5. Two-storey houses and gardens are located adjacent to existing two-storey housing to respect character, safeguard security and maintain privacy of existing neighbours. 21m separation distances between new and existing dwellings. Some limited-access courtyard spaces are provided to maintain rights of way to existing gardens.
6. Taller five-storey dual aspect buildings are located along the northern edge of the site, to prevent overshadowing of proposed homes (special attention needed to protect these homes from railway noise).
7. Arranging the taller buildings on the north side and having lower buildings over the rest of the site means that lower rise family houses appear to be the predominant dwelling type.
8. Relatively narrow streets (about 16m across) help keep building heights low. Back-to-back distances are 18m to maintain privacy.
9. All new homes to have private amenity spaces (gardens, courtyards, balconies etc).
10. A mix of on-plot, on-street and undercroft car parking areas (with overall numbers limited because of good public transport accessibility).

Development alternatives

To achieve lower building heights of two to four storeys throughout the development while retaining the same density and mix of dwelling sizes, the following trade-offs would need to be considered:

– Accommodate a greater number of dwellings as apartments rather than houses.
– Bring buildings closer together on side and front elevations while retaining 18m privacy distance at rear.

Typology distribution diagram at 1:2,000 scale

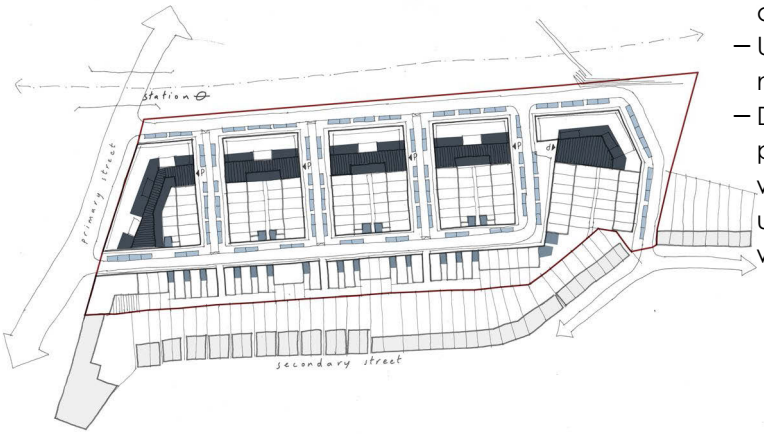
Uses, typology, structure and massing

1:4,000 scale N 1-3 4-5

- Plot Ratio 1.1:1
- The site is structured by a main east-west street to give a strong public connection between the main road and the park, with five-storey apartment buildings arranged along this route along the northern edge.
- Exposed existing gardens are fronted by houses that retain existing vehicular access Secondary residential streets link the two main east west routes with terraced family houses.
- Layout of small hybrid blocks comprising an apartment building and terraced houses. The location of different housing types within the blocks responds to the various street types in the plan.

Car parking

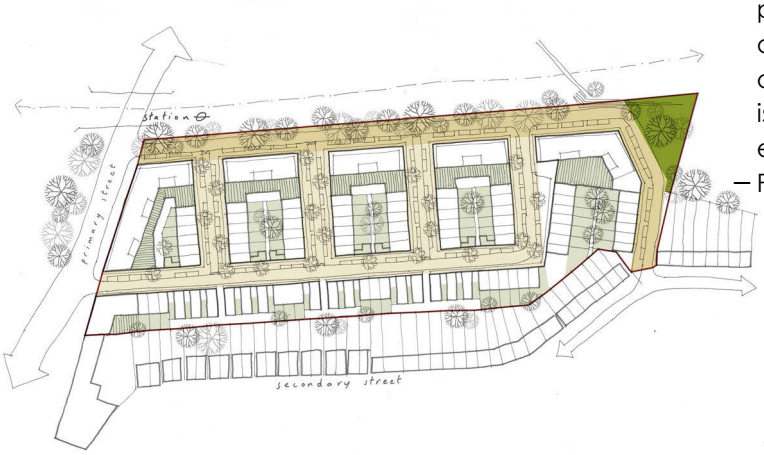
1:4,000 scale N on street on plot undercroft



- Parking Ratio 1.0:1
- A combination of podium, on-street and on-plot parking.
- On street parking is designed as parallel parking designed into the street section.
- Undercroft parking garages are 'wrapped' by maisonettes with front doors onto the street.
- Designated parking spaces for wheelchair users are provided on-plot for those individual houses that are wheelchair accessible or 'easily adaptable' and within undercroft garages (located close to stair/lift cores) for wheelchair accessible/'easily adaptable' apartments.

Open space and public realm

1:4,000 scale N streets play private garden



- Houses have gardens or patios, apartments have balconies or terraces.
- A limited amount of dedicated shared amenity / play space. There is a large existing park immediately adjacent that provides play and recreation space for older children and young people and new play space is consolidated at the edge of the site alongside this existing park.
- Playable, shared surface 'home-zone' streets.

4 Suburban PTAL 4-6

BSE 7 - Stanmore Place

Reasons for selection

- An example of a large development in a suburban setting in which all of the residential accommodation is provided in apartment buildings.
- The layout uses various 'place shielding' measures to manage the interfaces with neighbouring residential and industrial areas.

Location and context

- Outer North London.
- Suburban setting in Stanmore with terraced housing to the north, industry to the south, a railway to the east and a major road (A4140) to the west.
- The large site was formerly occupied by government offices and is situated adjacent to Cannons Park Station (Jubilee Line).

Uses, typology, structure and massing

- The mixed use scheme comprises 764 new homes and around 7,900 sqm of B1 floorspace. The development is laid out as a series of linked, four and five storey apartment buildings.
- The scheme as a whole provides a high proportion of single aspect dwellings due to the apartment block typology adopted.
- The car park building and small business centre along the south side of the site provide 'place shielding' from the industrial estate beyond, while the terrace of houses on the north side manage the relationship between the development and its surrounding context (another form of place shielding).

Car parking

- Car parking is provided mainly in a screened multi-storey car park, described as a car storage building. This is a bold solution, intended to encourage a change in attitude towards car use, making other modes of transport equally convenient for regular journeys.

Open space and public realm

- 17% of the site on the west side is given over to open space, which includes a lake that was necessary for

Location plan at 1:2500 scale

flood attenuation.

– The benefit of removing parked cars from the landscape is not fully exploited in the landscape design, which incorporates relatively large areas of hard surfacing.

Other comments

– The tenure mix is 60% private and 40% affordable (of which 60% for social rent and 40% for shared ownership).

– The scheme was put forward by officers of the London Borough of Harrow and is therefore also included in Appendix 2.

Location	Honeypot Lane, London HA7 1DN
Local Planning Authority	London Borough of Harrow
Completed	2011
Developer	St Edward Homes Ltd. / Berkeley Homes
Architect	GRID Architects

Site area (ha)	6.2
PTAL	3-4
Total dwellings	798
Density u/ha	**128**
Density hr/ha	**410**
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	697
Car parking ratio per unit	**0.90**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	44%
2b3p	36%
2b4p	
3b5p	13%
4b5p	7%
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)	20%
Wheelchair user dwellings	10%
Dual aspect dwellings	

5 Urban Settings

Introduction

5.1. This section discusses the characteristics of this setting before discussing Illustrations and Built Scheme Examples in urban areas of different public transport accessibility (PTAL 0-1, PTAL 2-3 and PTAL 4-6).

Setting characteristics

5.2. Urban areas are defined in the London Plan as areas with predominantly dense development such as, for example, terraced houses, mansion blocks, a mix of different uses, medium building footprints and typically buildings of two to four storeys, located within 800m walking distance of a District centre, or along main arterial routes.

	0 to 1	2 to 3	4 to 6
Suburban	**150-200 hr/ha**	**150-250 hr/ha**	**200-350 hr/ha**
3.8-4.6 hr/unit	35-55 u/ha	35-65 u/ha	45-90 u/ha
3.1-3.7 hr/unit	40-65 u/ha	40-80 u/ha	55-115 u/ha
2.7-3.0 hr/unit	50-75 u/ha	50-95 u/ha	70-130 u/ha
Urban	**150-250 hr/ha**	**200-450 hr/ha**	**200-700 hr/ha**
3.8-4.6 hr/unit	35-65 u/ha	45-120 u/ha	45-185 u/ha
3.1-3.7 hr/unit	40-80 u/ha	55-145 u/ha	55-225 u/ha
2.7-3.0 hr/unit	50-95 u/ha	70-170 u/ha	70-260 u/ha
Central	**150-300 hr/ha**	**300-650 hr/ha**	**650-1100 hr/ha**
3.8-4.6 hr/unit	35-80 u/ha	65-170 u/ha	140-290 u/ha
3.1-3.7 hr/unit	40-100 u/ha	80-210 u/ha	175-355 u/ha
2.7-3.0 hr/unit	50-110 u/hr	100-240 u/ha	215-405 u/ha

SRQ Density Matrix as table 3.2 from the London Plan (July 2011)

5 Urban PTAL 0-1

Illustration 5

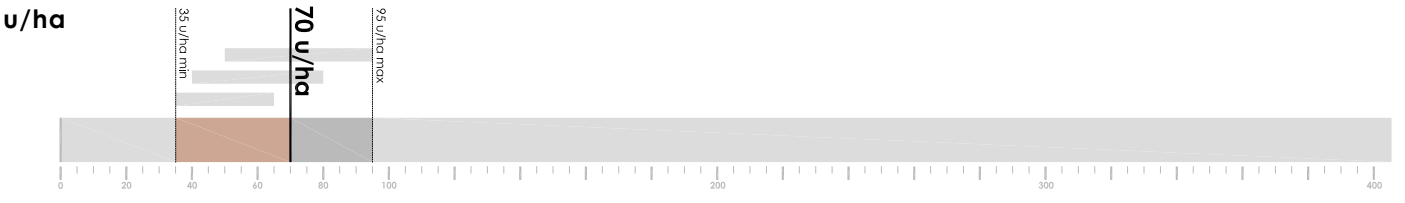
Location plan at 1:10,000 scale

Location and context

- Inner South West London, about 400m from a local centre.
- Vacant two-storey industrial units (approx. 1,900sqm) and open storage.
- A railway embankment forms the northern boundary, a church and church hall adjoins to the south and there are large two-storey terrace and semi-detached houses to the east and west.
- The site, which is accessed from a non-through road, slopes from south to north by around 5m and a pedestrian footbridge continues over the railway tracks at the northern end.

Development assumptions

- Policy requirement to provide 300sqm of Business B1 space.
- Four houses at eastern end of the site are developed by a housing association for affordable rent.



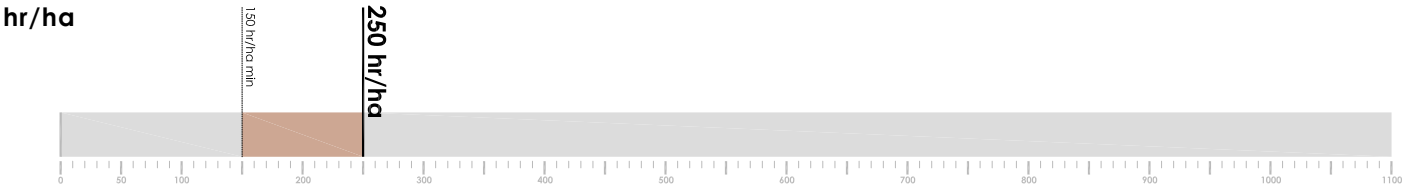


Illustration showing new houses and apartments fronting existing street

Site area (ha)	0.33
PTAL	1b
Total dwellings	21
Density u/ha	**70**
Density hr/ha	**250**
GEA residential (m²)	2,600
GEA non-residential (m²)	300
GEA total (m²)	2,900
Plot ratio	**0.8**
Total no. car parking spaces	17
Car parking ratio per unit	**0.8**
Publicly accessible open space(m²)	110

1b1p	-
1b2p	33%
2b3p	-
2b4p	28%
3b5p	38%
4b5p	-
4b6p	-
5b6p	-
Total	100%

Family dwellings (3b5p+)	38%
Wheelchair user dwellings	10%
Dual aspect dwellings	80-90%

5 Urban PTAL 0-1

Illustration 5

Design response

A mixture of flats and houses, with the two short residential terraces helping to manage the change in gradient across the site. The numbers below relate to the plan below.

1. The setting back of the two terraces enables the widening of the street to the front of the houses, and rear to rear distances of 21m.
2. Grouping car parking spaces for houses enables the provision of informal play areas.
3. The short terraces enable the development to address the change in levels across the site.
4. The deep apartment building with a central and northern core minimises its height by maximising the number of flats per core.

Development alternatives

Three separate apartment buildings could be provided with communal rear gardens, but this would result in shorter front-to-front distances across the street and possibly less family-sized accommodation.

Typology distribution diagram at 1:1,250 scale N

* business use on ground floor

Uses, typology, structure and massing

– Plot Ratio 0.8:1
– Two small business units (150 sq m each) on the ground floor of the three-storey block of flats.
– Two short terraces of houses.

Car parking

– Parking Ratio 0.8:1.
– •Separate residential parking and business unit parking / servicing area.
– Parking and servicing plan in place for the proposed business units.
– Part surface parking, part undercroft parking for flats.
– Allocated car parking spaces for houses.
– Designated car parking spaces for wheelchair users are provided on-plot for the two end of terrace houses, which are assumed to be designed to be wheelchair accessible or 'easily adaptable' for wheelchair users.

Open space and public realm

– Private gardens for houses.
– Inset balconies for apartments.
– Informal play areas.

5 Urban PTAL 0-1

BSE 8 - Oldfield Road

Reasons for selection

- This area of Victorian 'Byelaw' terraced housing provides an example of the kind of housing that makes up many of London's residential districts.
- This form of housing also exhibits many of the general qualities people value in housing; attractive, well-defined streets and solidly built houses with private gardens.

Location and context

- Inner North London
- Urban setting in Stoke Newington, surrounded by housing of a similar density.

Uses, typology, structure and massing

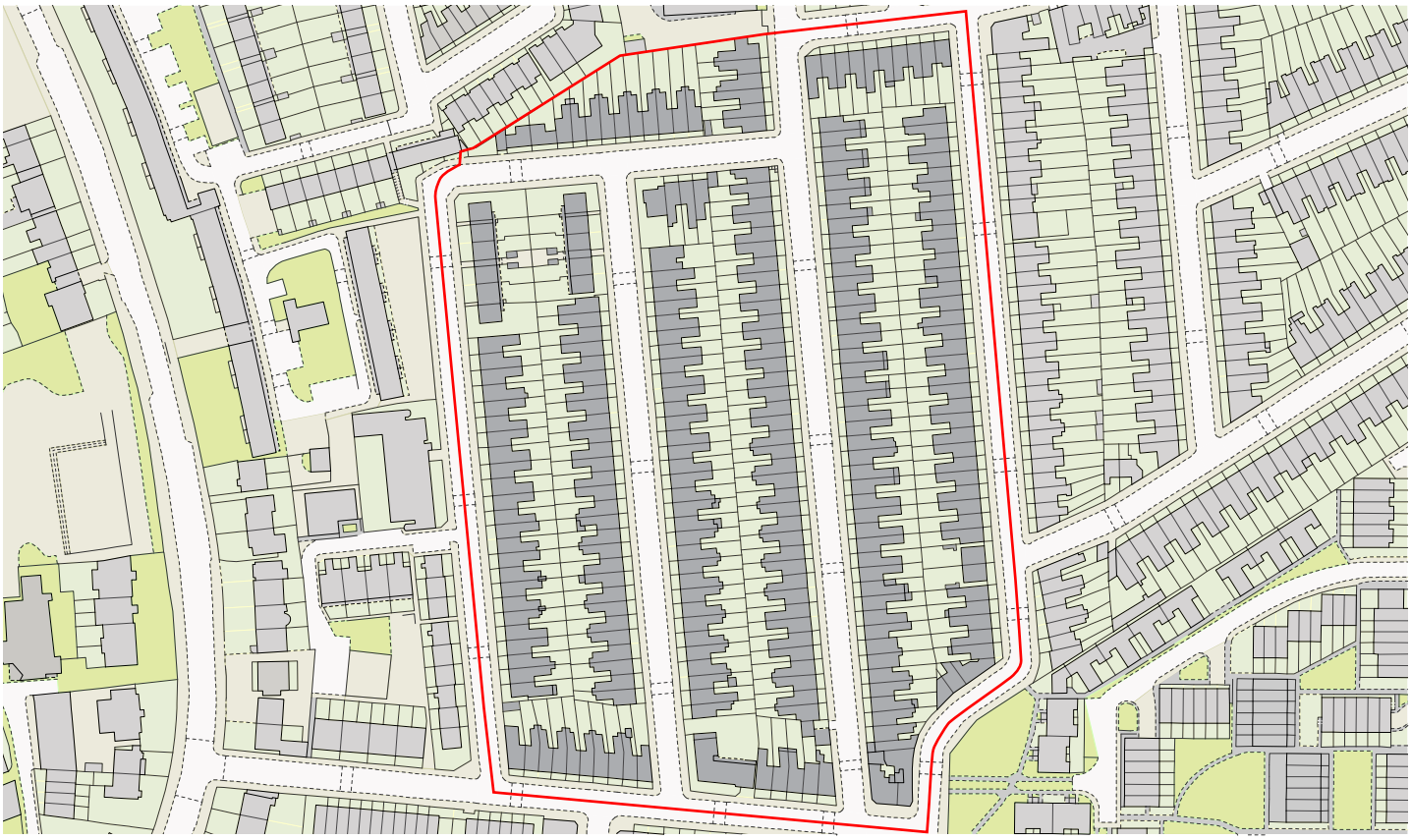
- Terraced housing of two and three storeys arranged in long rows, with small private gardens to the front and rear.
- The terraces are laid out in closely spaced rows, with separation distances of 12.5 - 14m between rear windows. Garden walls provide privacy between opposite dwellings on the ground floor. There may be some loss of privacy at upper levels, which could be addressed in a new-build scheme through the careful placement of windows.

Car parking

- Car parking is provided by unallocated, on-street parking bays. Whilst unallocated car parking has its benefits (as discussed in Section 7A), problems can occur, particularly where houses are subdivided into flats and the demand exceeds the available supply. A CPZ may be necessary in areas of parking stress.

Open space and public realm

- An attractive street setting is created by the long, straight rows of houses, bay windows and traditional façade details, and front gardens with railings and hedges
- There are no communal amenity spaces, however



Location plan at 1:2500 scale

private play and amenity space is provided in back gardens.

– If the current requirement to provide play space would be taken into account, the development would have an estimated child population of 65 and would require 650sq m of dedicated play space. The resulting loss of 7 units would give a lower density of 60u/ha. The area required is relatively low because play space for children under 5 is provided in back gardens.

Other comments

– Like many buildings designed in this period, the houses would not meet a number of the current design standards for accessibility.

Location	Oldfield Road, Stoke Newington, London N16
Local Planning Authority	London Borough of Hackney
Completed	Mid-19th Century

Site area (ha)	4.5	
PTAL	0-1	
Total dwellings	279	
Density u/ha	**62**	
Density hr/ha	**280**	approx.
GEA residential		
GEA non-residential	0	
Total GEA		
Plot ratio		
Total no. car parking spaces	140	approx.
Car parking ratio per unit	**0.48**	
Publicly accessible open space		

Dwelling mix	
1b1p	
1b2p	5%
2b3p	
2b4p	15%
3b5p	80%
4b5p	
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)	80%
Wheelchair user dwellings	
Dual aspect dwellings	100%

5 Urban PTAL 2-3

Illustration 6

Location and context

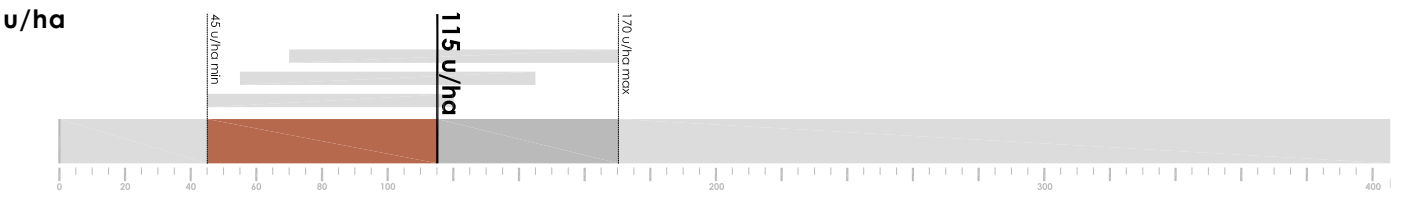
- Outer North London.
- Former hospital site close to an Underground station and District Centre and with a short frontage to a main road.
- Main hospital building Grade II Listed.
- A number of existing trees are protected by a Tree Preservation Order.
- Railway to the west and residential apartment buildings and park to the north.

Development assumptions

- Phased, mixed-tenure development.
- The majority of the streets and publicly accessible open space are to be privately maintained by management company.
- The street that services affordable housing is adopted by Borough, to minimise service charges for tenants.
- Underground car parking is not viable.

Illustration showing house fronts facing residential street

Location plan at 1:10,000 scale



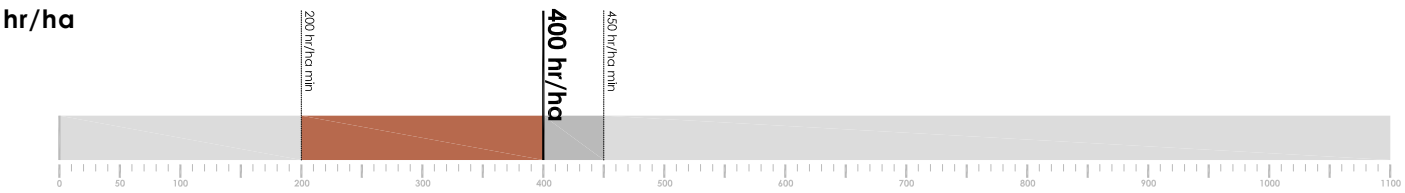


Illustration showing new apartment buildings fronting new primary residential street

Site area (ha)	5.20
PTAL	3
Total dwellings	601
Density u/ha	**115**
Density hr/ha	**400**
GEA residential (m²)	69,400
GEA non-residential (m²)	0
GEA total (m²)	69,400
Plot ratio	**1.3**
Total no. car parking spaces	498
Car parking ratio per unit	**0.8**
Publicly accessible open space(m²)	3,030

1b1p	-
1b2p	32%
2b3p	-
2b4p	33%
3b5p	29%
4b5p	-
4b6p	6%
5b6p	-
Total	100%

Family dwellings (3b5p+)	34%
Wheelchair user dwellings	10%
Dual aspect dwellings	60-70%

5 Urban PTAL 2-3

Illustration 6

Design response

A masterplan approach that retains and incorporates the Listed building and TPO trees within a network of streets of two to three-storey houses, with four and six-storey blocks of flats. The numbers below relate to the plan below.

1. Private space backing on to existing private spaces.
2. Listed building and setting are retained and enhanced.
3. Consolidates open space around existing trees.
4. TPO trees incorporated into publicly accessible open space (to include play space).
5. Publicly accessible pedestrian/cycle route established from Station and park .
6. Front to front distances generally 16-21m.
7. Rear to rear distances generally 18-21m.

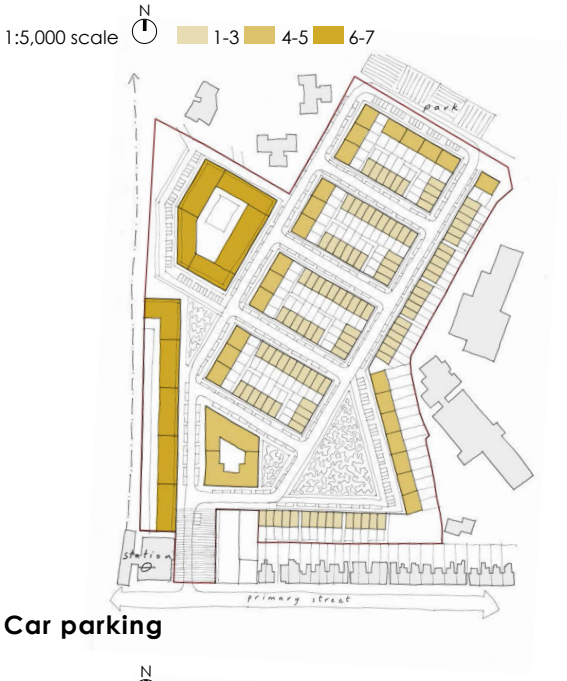
Development alternatives

– To achieve more car parking while retaining the same density and dwelling mix, additional car parking could be introduced along the western edge of the open space (3), with less open space provided. Integral garages could also be included in some of the houses, and an alternative street section could be provided that allows for larger front gardens with on-plot parking. However, this would require an increased street width and therefore reduced density.

– To increase separation distances between the proposed houses (front to front and / or rear to rear), the western street block could be replaced with a taller (six-storey) apartment building to enable the easing of building to building distances in the remaining street blocks.

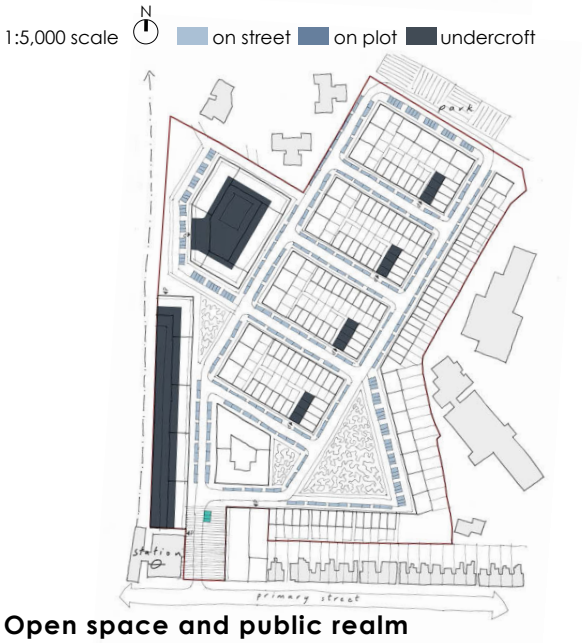
Typology distribution diagram at 1:2,500 scale

Uses, typology, structure and massing



- Plot Ratio 1.3:1
- Terrace of apartment buildings along western edge, with a large apartment building in north west corner.
- Establishment of two- to four-storey hybrid blocks with mix of houses and walkup apartment buildings on western and northern edges to create a network of residential streets with a clear hierarchy.
- Two clear character areas of public space; a more urban apartment-lined street which links the station in the south with the park to the north and quieter residential streets of family housing.
- Terrace of dual aspect apartment buildings along railway line at western edge, with large apartment building in north west corner.
- Top floors on the apartment buildings step back to reduce their impact on the street.
- Conversion and extension of listed building to housing.
- New hotel next to station.

Car parking



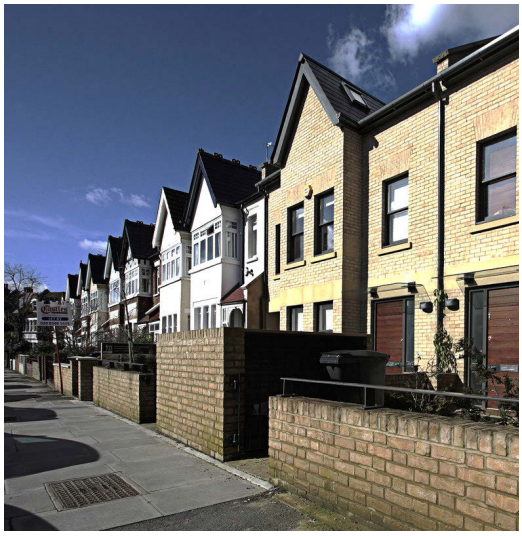
- Parking Ratio 0.8:1
- Mixture of on-street unallocated, and on-plot and undercroft allocated car parking.
- Car club secured by legal agreement (with three reserved car parking spaces).
- Unallocated parking spaces for wheelchair users are provided as on street in un-adopted streets, with designated parking spaces for wheelchair users also being provided within the gardens of those end of terrace houses that are designed to be wheelchair accessible/'easily adaptable' and within the undercroft garages (located close to stair/lift cores) for wheelchair accessible/'easily adaptable' apartments.

Open space and public realm

- Primary street linking new and existing open spaces.
- Secondary residential streets running perpendicular.
- Tertiary shared surface streets along edges of open spaces.
- Publicly accessible open space located around existing mature trees.
- Private gardens for family housing.

5 Urban PTAL 2-3

BSE 9 - Frederick Mews



Reasons for selection

– The scheme is an example of the redevelopment of a backland site within an Urban setting. Reduced separation distances with surrounding buildings were possible because the development followed the footprint of buildings that were formerly on the site. The different internal arrangement of the houses on opposite sides of the courtyard helps to achieve privacy.

Location and context

– Outer North London.
– An Urban setting in Crouch End (a District Centre), within a Conservation Area. To the west is an area of two-storey terraced housing and to the east towards the high street there are commercial buildings.
– The site benefits from having a frontage onto a residential street and separate access from a car park at the rear. There is a change in level of almost one storey from the street to the car park.

Uses, typology, structure and massing

– A small, mixed-use mews development occupying a backland site, replacing an industrial building of similar mass and height that had shorter separation distances with some of the surrounding houses.
– A pair of houses on the street side continues the scale and architectural expression of the neighbouring terrace. The mews courtyard of three, four and five bedroom houses with private back gardens is level with the car park.
– A commercial office building runs along the northern edge of the site to screen the residential mews from the car park.
– To avoid overlooking within the mews, houses on one side are wide-fronted and have habitable rooms facing the courtyard and rear gardens while on the other, the stair and bathrooms are towards the courtyard and habitable rooms face the rear.

Location plan at 1:2500 scale

Car parking

– The change in level is exploited to provide garages below the back gardens of the pair of new houses. The local authority required a car parking provision of 1.5 spaces per unit.

Open space and public realm

– The houses have small private rear gardens. The mews courtyard is shared by a small number of residents and could be considered to function as an amenity space.

Location	Frederick Place, Crouch End, London N8 8AF
Local Planning Authority	London Borough of Haringey
Completed	2009
Developer	Acorn Property Group
Architect	Pollard Thomas Edwards

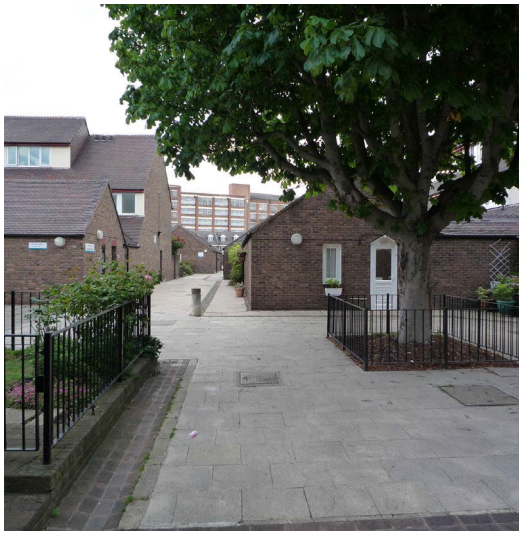
Site area (ha)	0.13
PTAL	2-3
Total dwellings	8
Density u/ha	**61**
Density hr/ha	**292**
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	13
Car parking ratio per unit	**1.6**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	
2b3p	
2b4p	
3b5p	
4b5p	
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)	
Wheelchair user dwellings	
Dual aspect dwellings	

5 Urban PTAL 2-3

BSE 10 - Setchell Road



Reasons for selection

– A low-rise local authority development dating from the late 1970s, built to a density of almost 100 u/ha. The design uses a compact urban layout and innovative courtyard house types to achieve conditions usually associated with lower densities; a development predominantly made up of 2-3 storey terraced housing in which almost every dwelling has a private front door at ground level and a small private open space.

Site and context

– Inner South London.
– An Urban context, with industrial estates to the west and south, a main road with a school and other community facilities to the north, and 3-5 storey blocks of housing to the east.

Uses, typology, structure and massing

– The general arrangement followed the previous pattern of terraced housing in order to retain mature street trees and services, but was built to a much higher density.
– The development is organised around a series of pedestrian lanes, from which all the houses are entered, which lead into a central pedestrian mall. Separate linear parking courts are arranged parallel to the lanes behind the rows of houses.
– Streets and pedestrian routes are kept as narrow as possible in order to create an intimate environment and keep densities high, but houses gain ample light because of the use of pitched roofs.
– There are two main housing types; terraced houses with a narrow frontages of 3.8m and internal courtyard gardens, which increase in size from 1-4 bedroom by adding volumes to the roof, and small
– The courtyard gardens provide complete privacy from adjacent dwellings and help to mitigate external noise from the adjacent industrial estate, which was formerly a large goods yard.

Location plan at 1:2500 scale

Car parking

– Car parking is provided in parking courts and private garages at a level of 0.8 u/ha.

Open space and public realm

– The development provides two dedicated playgrounds and tree-lined pedestrian lanes and malls provide additional amenity spaces.
– The majority of dwellings are provided with a small private open space.

Location	Grange Road / Setchell Road, London SE1
Local Planning Authority	London Borough of Southwark
Completed	1979
Developer	London Borough of Southwark
Architect	Neylan & Ungless

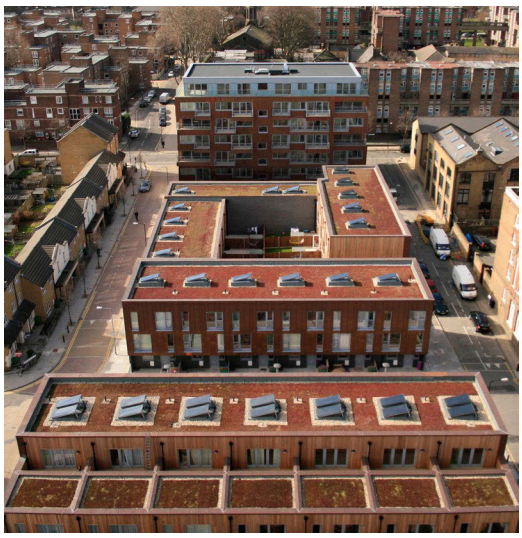
Site area (ha)	3.2	
PTAL	2-3	
Total dwellings	312	
Density u/ha	**97**	
Density hr/ha	**340**	approx.
GEA residential		
GEA non-residential		
Total GEA		
Plot ratio		
Total no. car parking spaces	241	
Car parking ratio per unit	**0.8**	
Publicly accessible open space		

Dwelling mix	
1b1p	19%
1b2p	42%
2b3p	11%
2b4p	8%
3b5p	5%
4b5p	
4b6p	15%
5b6p	
Total	100%

Family dwellings (3b5p+)	21%
Wheelchair user dwellings	9%
Dual aspect dwellings	100%

5 Urban PTAL 2-3

BSE 11 - Claredale Street



Reasons for selection

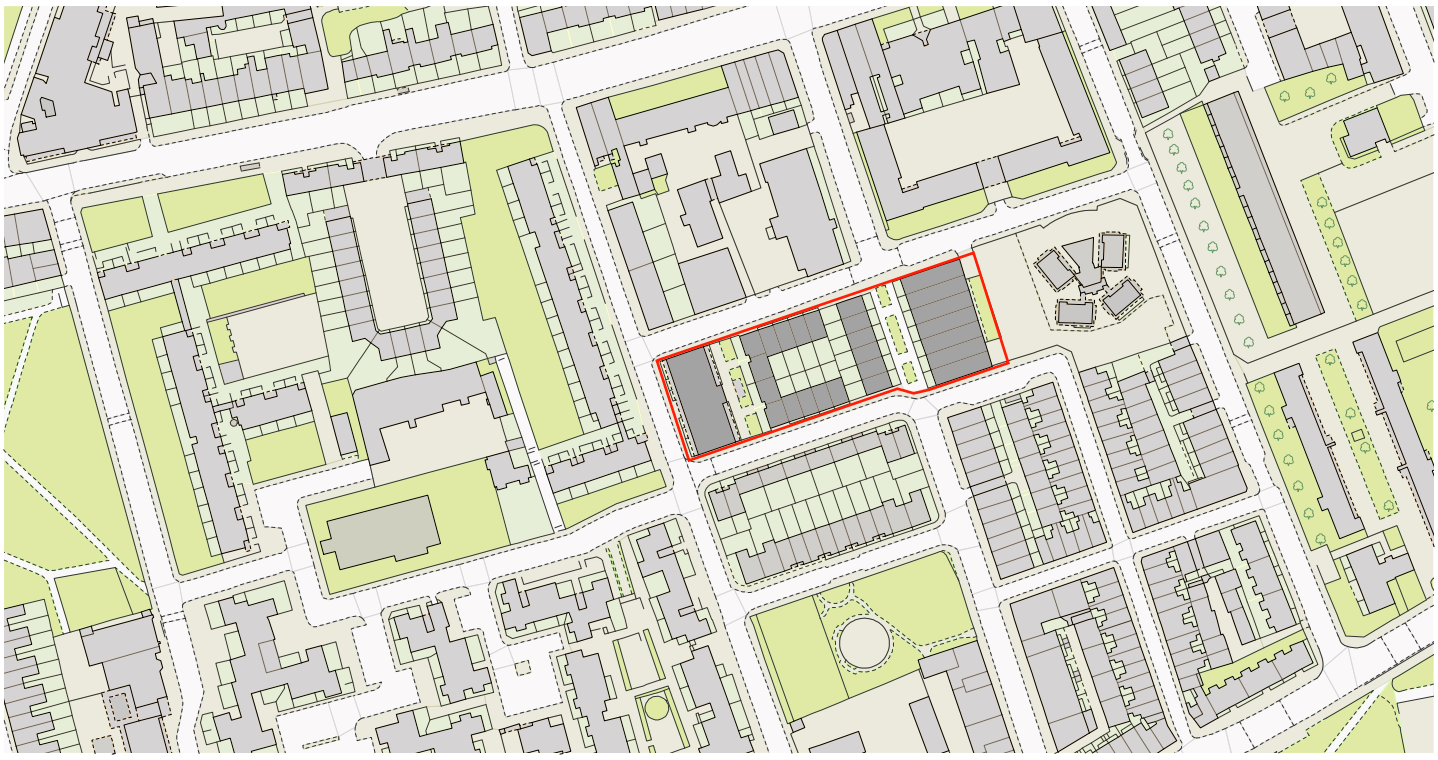
- A low and mid-rise scheme achieving a high density of 154 u/ha while also providing a high proportion of terraced houses and maisonettes with private front doors at ground level.
- The design demonstrates the approach of using a hybrid block composed of a terraced and apartment housing to provide a mix of unit types and make efficient use of the site.

Location and context

- Inner East London.
- The location in Bethnal Green is classified as Urban because it is more than 800m from CAZ and Major and Metropolitan town centre boundaries and surrounding buildings have a mix of uses and predominantly 3-4 storey building heights (with some taller residential blocks).

Uses, typology, structure and massing

- The development of 77 dwellings is arranged in three blocks, separated by pedestrian mews streets. The three blocks are, from west to east; an apartment building of one and two bedroom flats organised around a central corridor, a block of two-, three- and four-bedroom terraced houses, and a terrace comprising three-bedroom maisonettes above two-bedroom courtyard flats.
- The central block of terraced houses includes four single-aspect houses, which have no windows to the rear to avoid overlooking at the rear. This type allows densities to be increased within the block but results in a blank, two-storey wall to the gardens behind.
- The hybrid terraced block to the east contains another unusual typology, upper level maisonettes with front doors at ground level and living spaces two storeys up. This type provides the valued amenity of a private front door on the street and removes the need for shared circulation, but the type might have benefitted from providing more generous entrance lobbies and a place to store prams at ground level.



Location plan at 1:2500 scale

Car parking

– The development provides no car parking.

Open space and public realm

– The pedestrianised streets and private gardens offer opportunities for play.

Other comments

– The tenure mix is 50% private and 50% affordable.

Location	Claredale Street, Bethnal Green, London E2 7AP
Local Planning Authority	London Borough of Tower Hamlets
Completed	2010
Developer	Tower Hamlets Community Housing
Architect	Karakusevic Carson

Site area (ha)	0.38
PTAL	2-3
Total dwellings	77
Density u/ha	**202**
Density hr/ha	**652**
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	0
Car parking ratio per unit	**0**
Publicly accessible open space	

Dwelling mix	
1b1p	6%
1b2p	24%
2b3p	6%
2b4p	35%
3b4p	10%
3b5p	4%
4b7p	13%
4b8p	2%
Total	100%
Family dwellings (3b5p+)	19%
Wheelchair user dwellings	
Dual aspect dwellings	

5 Urban PTAL 2-3

BSE 12 - Consort Road

Reasons for selection

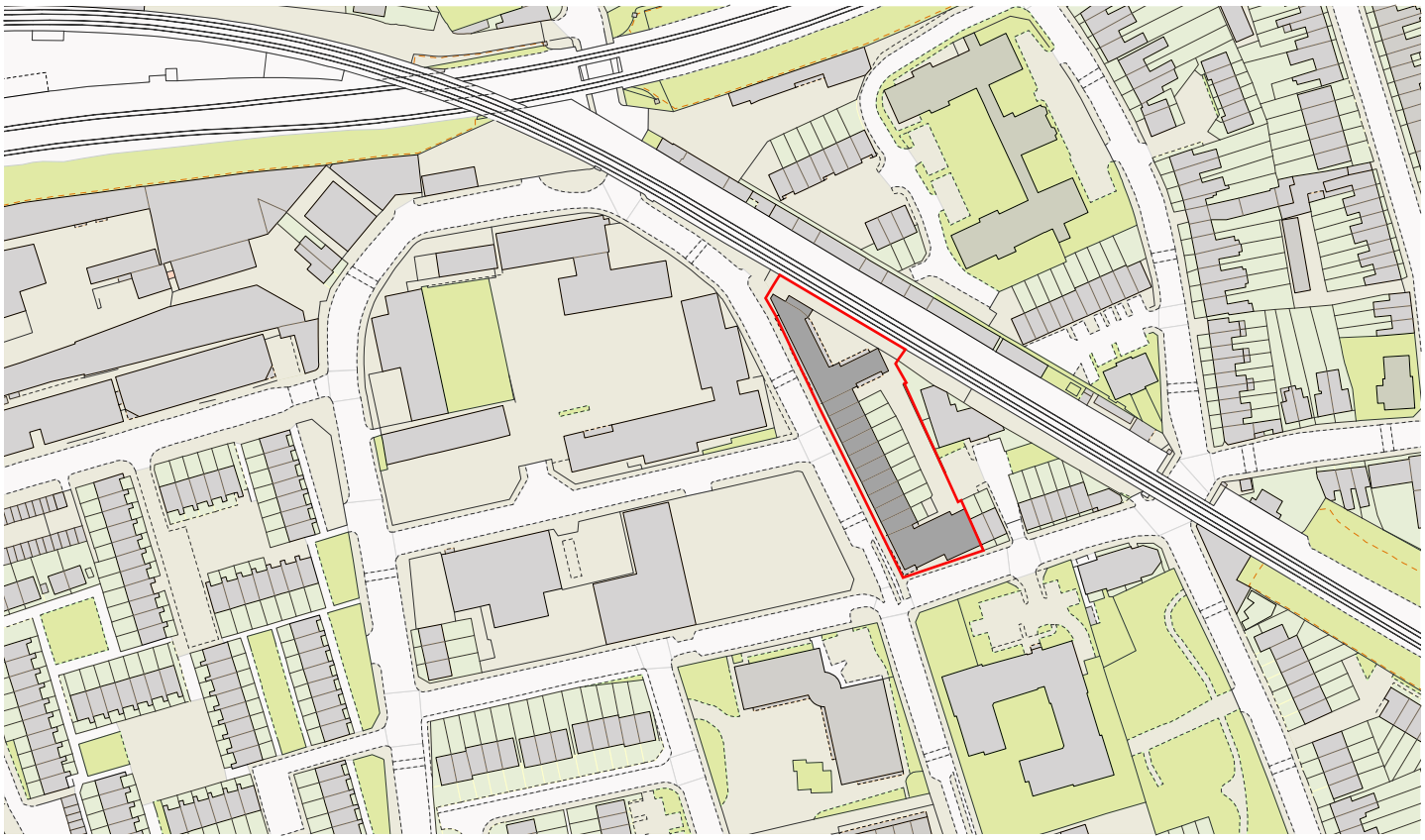
– An example of a housing development on a challenging site, surrounded by noise-generating uses. The design demonstrates various measures to manage these interfaces and mitigate noise.

Location and context

– Inner South London.
– A mixed use Urban setting.
– The site is flanked by a busy road and stands adjacent to a bus garage and railway viaduct.

Uses, typology, structure and massing

– The development of 49 dwellings is composed of three distinct blocks; a six-storey, shared ownership apartment building to the south, a terrace of family houses in the centre, and a seven storey block of rental flats to the north. The terrace of houses comprises nine seven-person homes for affordable rent. Commercial units are provided on the ground floors of the apartment buildings.
– All of the flats have glazed wintergardens, which offer a degree of noise reduction and also provide passive energy benefits. The whole end wall of the living room can be opened up into the wintergarden, and this allows the living area to be extended in warmer months.
– The wintergardens are extensively used for drying clothes and for storage, and the floor to ceiling glazing means that these uses are on display in the street.
– The private apartments have deck access via enclosed, glazed balconies on the north side adjacent to the railway.
– The three-storey terraced houses are 4.9m wide and have a storage space and wc acting as a noise buffer towards the street on the ground floor, with family rooms behind opening onto the garden.



Location plan at 1:2500 scale

Car parking

– The development is provided with car club parking spaces.

Open space and public realm

– There is a small amenity space, the 'stone court', between the north block and the railway, and a small roof garden at fourth floor level overlooking it.
– The adjacent pavements towards the main road were widened as part of the development works.

Other comments

– The majority of commercial units are currently vacant.

Location	Consort Road, Peckham, London SE15
Local Planning Authority	London Borough of Southwark
Completed	2007
Developer	Notting Hill Housing Trust
Architect	Walter Menteth Architects

Site area (ha)	0.27	
PTAL	2-3	
Total dwellings	49	
Density u/ha	**185**	
Density hr/ha	**610**	approx.
GEA residential		
GEA non-residential		
Total GEA		
Plot ratio		
Total no. car parking spaces		
Car parking ratio per unit		
Publicly accessible open space		

Dwelling mix	
1b1p	
1b2p	
2b3p	
2b4p	
3b5p	
4b5p	
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)
Wheelchair user dwellings
Dual aspect dwellings

5 Urban PTAL 4-6

Illustration 7

Location and context

- Outer North West London.
- Within a District Centre, adjacent to a main road.
- A retail park to the south and light industry and retail to the north west. A street of two-storey terraced houses to the east leading to the town centre and Underground station.
- Urban setting due to the mix of uses, presence of terraced houses and location within a District Centre, but within a predominantly low-density, two-storey context.
- An Underground station 600m to the northwest and a number of bus stops nearby, giving a PTAL of 4.
- Restricted access to the site from one entrance at the south west corner.
- No public open spaces or play spaces in the immediate vicinity.

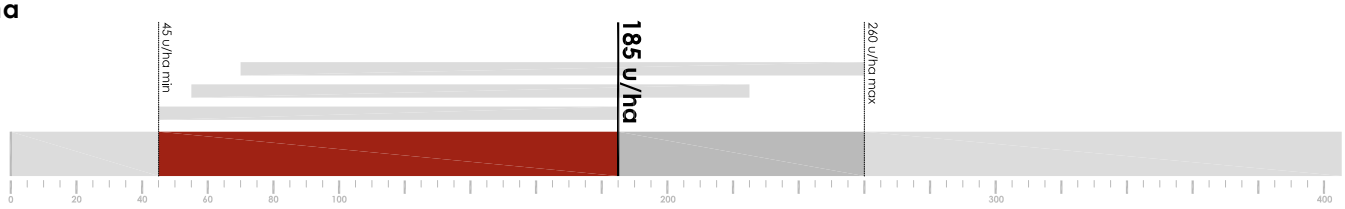
Development assumptions

- Phased, mixed tenure development.
- Underground car parking is unlikely to be viable.
- Target density necessitates a higher proportion of flatted development.

Junction of new residential street with existing

Location plan at 1:10,000 scale

u/ha



hr/ha

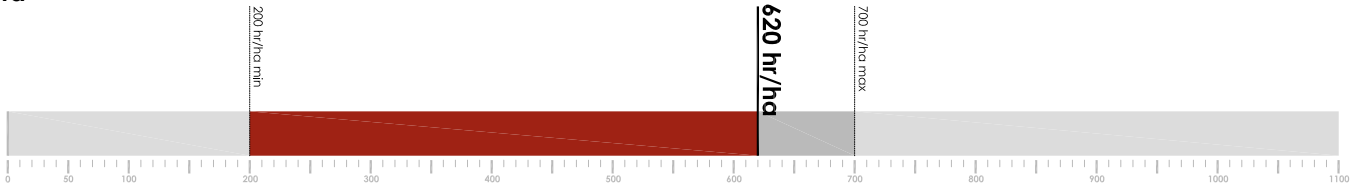


Illustration showing new public amenity space between apartment buidings

Site area (ha)	2.25
PTAL	4
Total dwellings	395
Density u/ha	**185**
Density hr/ha	**620**
GEA residential (m²)	49,300
GEA non-residential (m²)	2,400
GEA total (m²)	51,700
Plot ratio	**2.2**
Total no. car parking spaces	237
Car parking ratio per unit	**0.6**
Publicly accessible open space(m²)	2,670

1b1p	-
1b2p	35%
2b3p	-
2b4p	35%
3b5p	24%
4b5p	-
4b6p	7%
5b6p	-
Total	100%

Family dwellings (3b5p+)	30%
Wheelchair user dwellings	10%
Dual aspect dwellings	50-60%

5 Urban PTAL 4-6

Illustration 7

Design response

1. Three-storey houses with gardens maintain the security and privacy of existing houses. Houses at the end of the row are turned towards side streets to improve the overlooking and safety of open spaces.
2. Maisonettes have private gardens at first floor level towards the courtyard and are wrapped around the undercroft parking that is in the centre of each block. Stacked maisonettes accessed from communal cores have private open space in the form of terraces.
3. The podium over undercroft car parking is occupied by private gardens and shared amenity space.
4. Building heights are designed to manage sunlight appropriately in the courtyards and streets.
5. Dwellings facing towards the main streets (where noise levels are higher) are all dual aspect. Single aspect dwellings are located in less noisy locations and all have east or west orientation.

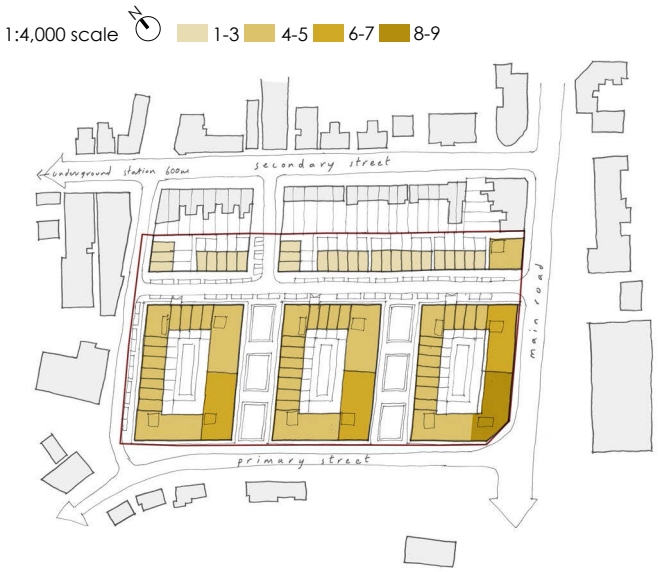
Development alternatives

More undercroft car parking would be provided by a larger perimeter block. Taller buildings would be necessary to achieve the same density.

Typology distribution diagram at 1:2,000 scale

* commerical and business use on ground and first floor

Uses, typology, structure and massing



- Plot Ratio 2.2:1
- Terraced houses with gardens arranged along the boundary backing on to an existing row of terraced houses, giving a separation distance at the rear of 21m.
- Courtyard blocks with a mix of apartments and stacked maisonettes ranging in height from four to seven storeys and set out with 21m spacing of streets and courtyards.
- Street layout and block structure designed to integrate with existing street network.
- A proportion of single aspect apartments. (No single aspect dwellings that are north facing, exposed to Noise Category C or D or contain three or more bedrooms).

Car parking

- Parking ratio 0.6:1
- A combination of on-street and undercroft parking.
- Designated parking spaces for wheelchair users are provided within the undercroft garages associated with apartment buildings and stacked maisonettes, located close to stair/lift cores.

Open space and public realm

- Pedestrian streets accommodate amenity and play space.
- Private gardens to terraced houses.
- Balconies and terraces to apartments.
- Podium level shared amenity space in the centre of each courtyard block.

5 Urban PTAL 4-6

BSE 13 - Whatcott's Yard

Reasons for selection

– Example of a small development within a constrained backland site, which uses various design measures to achieve privacy and maintain adequate daylight levels despite close separation distances.

Location and context

– Inner North London.
– Urban setting in Hackney, surrounded by two- and three- storey terraced housing, with a mix of uses in the surrounding area.

Uses, typology, structure and massing

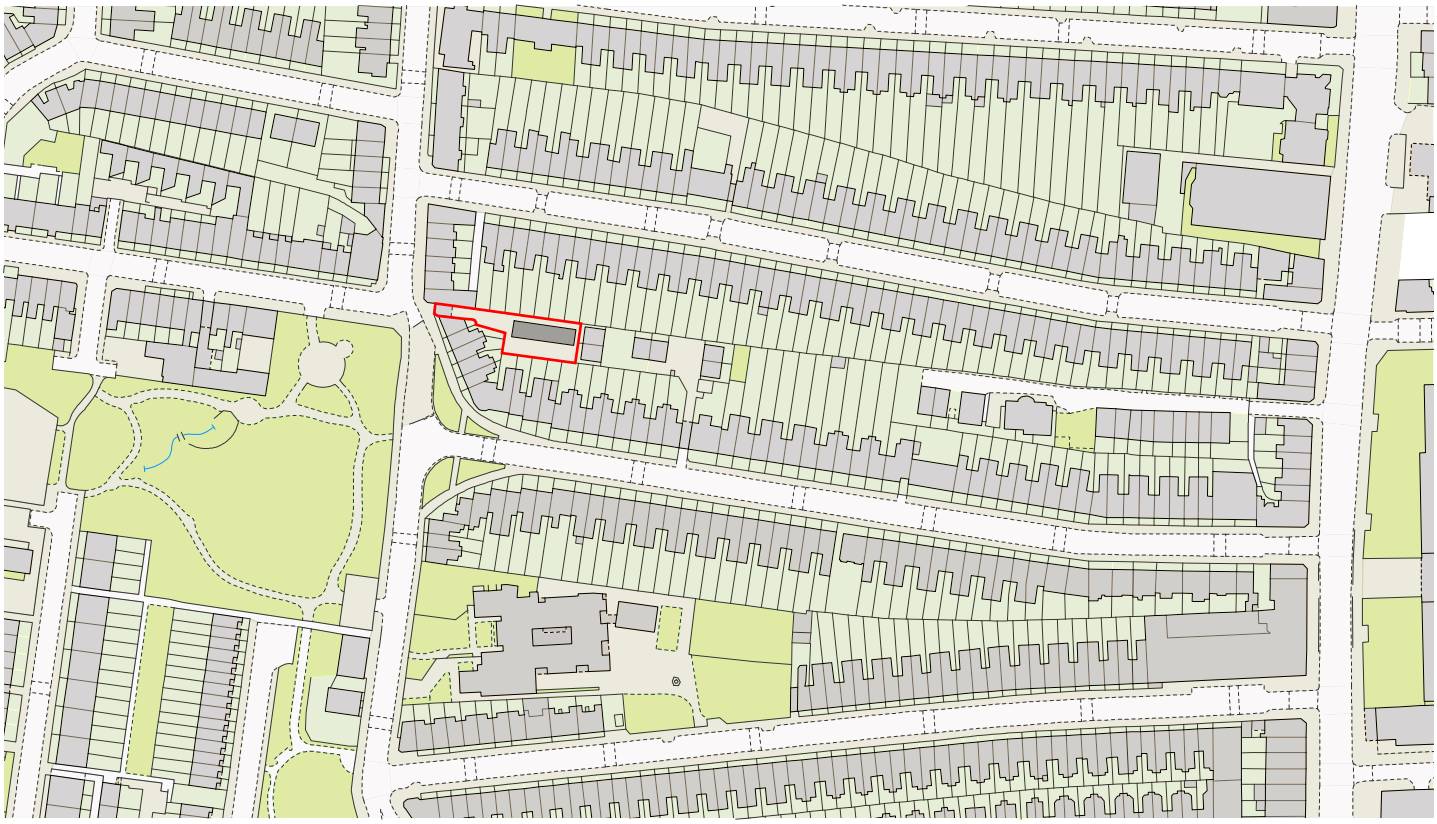
– Whatcott's Yard is a small, self-build development of two-storey houses on a narrow backland site. The site has a single point of entry on the west side beneath a flying freehold.
– The three houses have the same footprint of 45 sq m but vary internally, with one subdivided to form two flats. The houses are entered from the north side from a narrow lane, and on the south side they open onto small, private gardens.
– The separation distances are 16m from the north façade of the building to the rear facade of the neighbouring terrace to the north, and approximately 10-12m from the south façade of the building to the rear façade of the neighbouring terrace to the south. Close separation distances were possible due to the precedent set by existing and former backland development within the same block.
– Design measures were introduced to manage the potential loss of privacy. The south elevation of the terrace was tilted in order to reduce the frontal relationship with houses opposite and increase separation distances by half a metre at first floor level. The south façade is highly glazed but sheer curtains are provided to all windows above ground floor level in order to screen the interiors from view. This was seen as an acceptable alternative to obscure glazing. The ground floor rooms are screened by the garden wall.
– The massing of the building was carefully shaped to avoid the loss of daylight and sunlight to the windows of neighbouring houses. Only one window of one neighbouring property is negatively affected.

Car parking

– Car-free development.

Open space and public realm

– There is a small, shared yard in the 'neck' of the site and each dwelling is provided with a private garden.



Location plan at 1:2500 scale

Location	Off Palatine Road, London N16 8ST
Local Planning Authority	London Borough of Hackney
Completed	2004
Developer	Self-build: Ullmayer, Riches, Garibaldo
Architect	Ullmayer, Riches, Garibaldo

Site area (ha)	0.04	
PTAL	2-3	
Total dwellings	4	
Density u/ha	**100**	
Density hr/ha	**300**	
GEA residential	330	approx.
GEA non-residential	0	
Total GEA	330	
Plot ratio	**0.8**	
Total no. car parking spaces	0	
Car parking ratio per unit	**0**	
Publicly accessible open space		

Dwelling mix	
1b1p	
1b2p	50%
2b3p	
2b4p	50%
3b5p	
4b5p	
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)	0%
Wheelchair user dwellings	0%
Dual aspect dwellings	100%

5 Urban PTAL 4-6

BSE 14 - Elgin Avenue, Maida Vale

Reasons for selection

– This typology of walk-up mansion blocks enclosing secure, well-planted gardens, is an example of a form of apartment housing that is attractive to families while achieving around three times the density of terraced housing.

Location and context

– Inner West London
– Urban context, within a wider area of Maida Vale composed of streets of five-storey walk-up mansion apartment buildings dating from 1900-1910.

Uses, typology, structure and massing

– Each mansion building has an individual garden to the front and access to a gated communal garden to the rear, which is shared by all the mansion buildings in the block.
– The hybrid urban blocks are made up from a number of housing types, including small and large single-family houses at the end of the rows of mansion apartment blocks.
– The individual mansion buildings contain between five and ten dwellings of differing sizes. The density of the area is estimated to be 145 u/ha.
– Separation distances are 17m across the street and between 17.5 and 35m to the rear.

Car parking

– All car parking is provided on-street. The streets are wide enough to accommodate echelon parking on one side, increasing capacity.

Location plan at 1:2500 scale

Open space and public realm

- The buildings form wide, attractive, tree-lined streets.
- The larger urban plan integrates a public park and games fields.
- One of the great benefits of this typology is that it provides a gated communal garden to the rear of the mansion buildings, extending the length of the block. This provides an excellent, secure play space for children and an amenity space that is large enough for a variety of residents' functions and gatherings.

Location	Wymering Road / Essendine Road, London W9
Local Planning Authority	City of Westminster
Completed	c. 1900
Developer	unknown
Architect	unknown

Site area (ha)	4.5	
PTAL	4-6	
Total dwellings	655	approx.
Density u/ha	**145**	approx.
Density hr/ha	**480**	approx.
GEA residential		
GEA non-residential		
Total GEA		
Plot ratio		
Total no. car parking spaces	280	approx.
Car parking ratio per unit	**0.43**	approx.
Publicly accessible open space		

Dwelling mix	
1b1p	
1b2p	
2b3p	
2b4p	
3b5p	
4b5p	
4b6p	
5b6p	
Total	100%
Family dwellings (3b5p+)	
Wheelchair user dwellings	
Dual aspect dwellings	100%

5 Urban PTAL 4-6

BSE 15 - Highwood Court

Reasons for selection

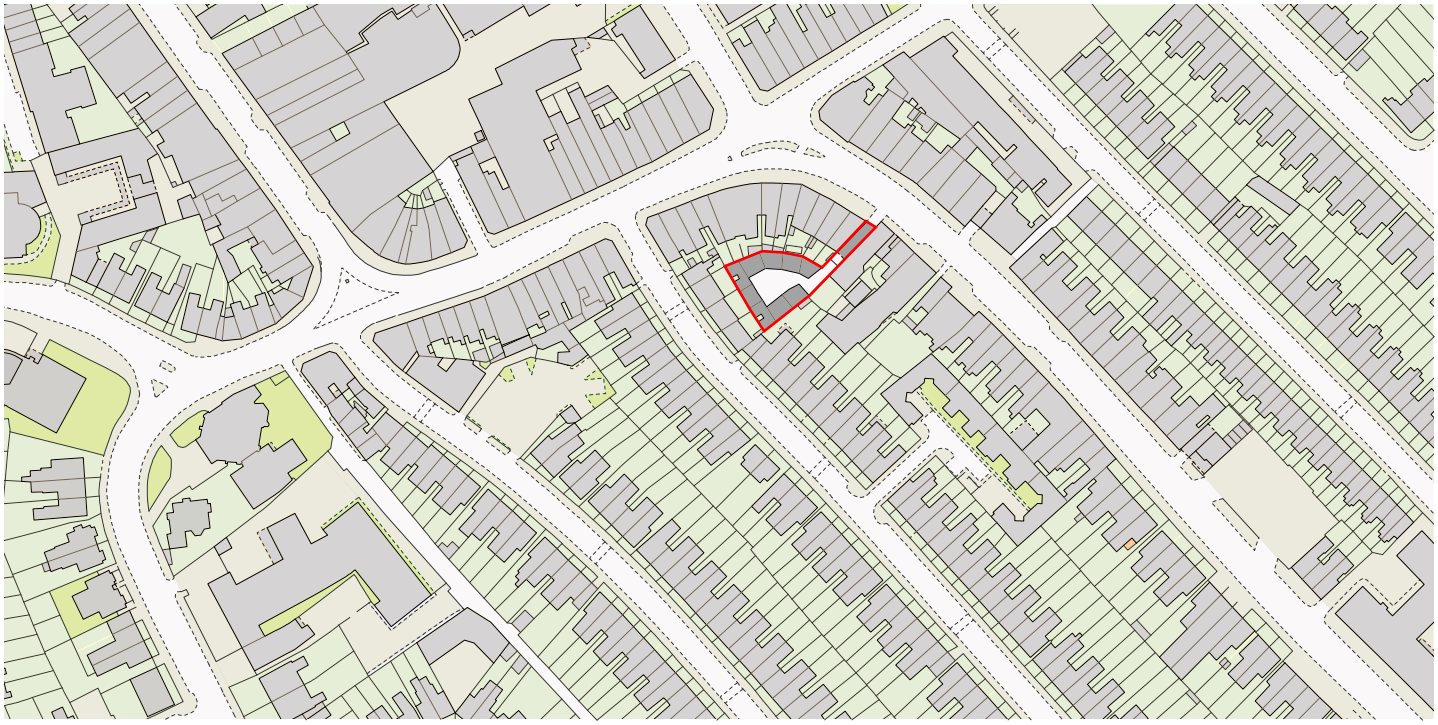
- An example of a development within a constrained backland site within an Urban setting.
- Like BSE 13 (Whatcott's Yard), reduced separation distances were possible due to the presence of a previous industrial building on the site, which had a similar height and footprint.

Location and context

- Outer North West London.
- Urban setting, surrounded by residential and mixed-use buildings of three storeys in height.
- The project is located in a backland site behind the high street in Harlesden, a District Centre.

Uses, typology, structure and massing

- The gated development of nine houses is accessed via a narrow passage from the high street. The houses are arranged around the edge of the site, enclosing a small courtyard.
- The two- and three-storey, two- and three-bedroom houses are arranged with their front doors and living rooms at raised ground floor level, accessed via an external staircase, and bedrooms at first floor and lower ground floor level, where there is a second entrance providing level access.
- The site realises its theoretical development potential with some loss of privacy. The distance across the courtyard varies from 8 to 13m. Privacy between dwellings is managed through the careful placement of windows and screening provided by curtains and blinds. The external stairs and the wall of the central raised podium provide privacy screening to ground level bedrooms.
- To maintain privacy between new and existing dwellings there are no windows in the rear elevations of the houses. The new houses are single aspect over the lower two storeys but have wide, shallow plans to ensure adequate ventilation and light. The top storey of each dwelling has a second aspect towards the private patio.
- Narrow separation distances with surrounding houses were deemed to be appropriate because the presence previously of a factory building of similar shape and height.



Location plan at 1:2500 scale

Car parking

– Car-free development.

Open space and public realm

– The gated courtyard provides a small amenity space for residents.
– Each house has a private patio at second floor level. These are screened from neighbouring houses to the rear by louvred metal grilles, which allow light to penetrate.

Other comments

– The tenure is 100% private.

Location	High Street, London NW10
Local Planning Authority	London Borough of Brent
Completed	2010
Developer	SUSD
Architect	SUSD

Site area (ha)	0.06
PTAL	3
Total dwellings	9
Density u/ha	**153**
Density hr/ha	**583**
GEA residential	738
GEA non-residential	0
Total GEA	738
Plot ratio	**1.23**
Total no. car parking spaces	0
Car parking ratio per unit	**0**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	
2b3p	12%
2b4p	
3b5p	88%
4b5p	
4b6p	
5b6p	
Total	100%

Family dwellings (3b5p+)	88%
Wheelchair user dwellings	0%
Dual aspect dwellings	

5 Urban PTAL 4-6

BSE 16 - Urban Housing, Finsbury Park

Reasons for selection

- The development shows how an arrangement of closely-spaced, small apartment buildings with central access cores can offer a way of providing 100% dual aspect apartments at high densities. The scheme achieves the highest density of the urban built scheme example projects in terms of units and habitable rooms per hectare.
- The development also shows that, with careful design, this typology can be made to sit well within an urban context of large detached houses.

Location and context

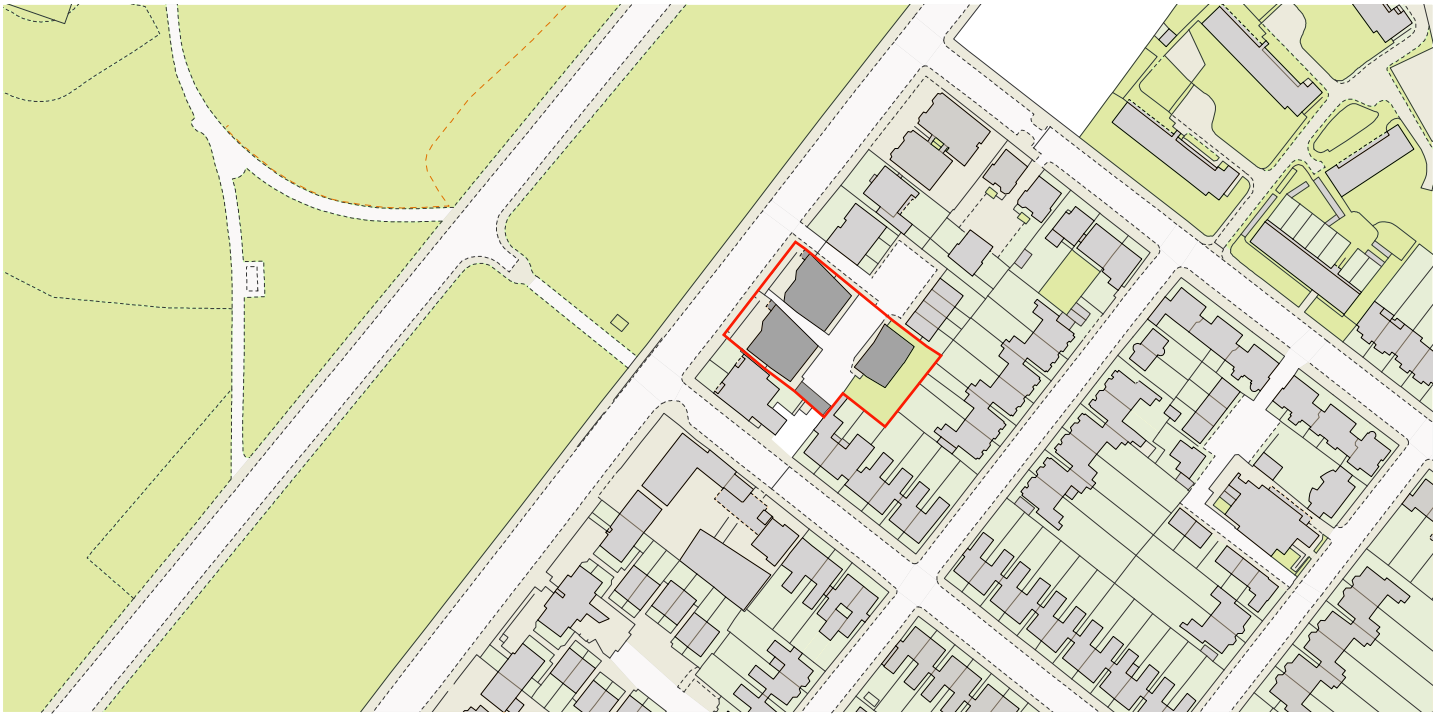
- Inner North London.
- Urban setting in Finsbury Park, surrounded by predominantly residential buildings of four to six storeys.

Uses, typology, structure and massing

- A development of three small apartment blocks of four, five and six storeys (including lower ground) with four dual aspect apartments per floor.
- The development responds closely to the scale and massing of neighbouring development - large detached villas along Seven Sisters Road and backland development within the block - while increasing densities well above the surroundings.
- Adjacent apartment buildings are separated by very narrow distances (4m at the narrowest point). The apartments have their secondary aspects towards these flank elevations. Off-setting the windows in adjacent apartment buildings provides privacy.
- The apartments have compact plans and are arranged in the corners of the building plan, with a central lift core and stair located on an external wall.
- The buildings are designed in brick and concrete to have a solid, substantial appearance and to give a sense of quality and permanence.

Open space and public realm

- The development benefits from the amenity and play facilities of Finsbury Park, which is located immediately opposite across the road from the site.
- Some landscaped amenity space is provided on site.
- Each apartment is provided with a small, enclosed balcony, set back within the facade. The project was designed before the development of the Mayor's



Location plan at 1:2500 scale

housing design standards and these balcony spaces would be too small and shallow to meet the current guidelines. Nevertheless the balconies provide a useful space for drying clothes and sitting out.

Other comments

– The tenure mix is 100% affordable. A combination of shared ownership and social rented apartments is provided in the two taller blocks towards the street. The smaller block to the rear of the site provides all social rented dwellings, with ground floor dwellings accessed via private front doors.

Location	Seven Sisters Road, London N4 2AP
Local Planning Authority	London Borough of Hackney
Completed	2007
Developer	Circle Anglia Ltd.
Architect	Sergison Bates

Site area (ha)	0.22	
PTAL	2-3	
Total dwellings	44	
Density u/ha	**200**	
Density hr/ha	**650**	approx.
GEA residential		
GEA non-residential		
Total GEA		
Plot ratio		
Total no. car parking spaces	13	
Car parking ratio per unit	**0.3**	
Publicly accessible open space		

Dwelling mix	
1b1p	
1b2p	41%
2b3p	
2b4p	27%
3b5p	22%
4b5p	
4b6p	10%
5b6p	
Total	100%
Family dwellings (3b5p+)	32%
Wheelchair user dwellings	
Dual aspect dwellings	

6 Central Settings

Introduction

6.1. This section discusses the characteristics of this setting before discussing Illustrations and Built Scheme Examples in central areas of different public transport accessibility (PTAL 0-1, PTAL 2-3 and PTAL 4-6).

Setting characteristics

6.2. Central areas are defined in the London Plan as areas with very dense development, a mix of different uses, large building footprints and typically buildings of four to six storeys, located within 800m walking distance of an International, Metropolitan or Major town centre.

Central PTAL 0-1

6.3 As outlined in Section 3 above, following discussion with the client, it was agreed that it was not necessary to prepare illustrations for sites with a Central setting and a PTAL of 0-1, since by definition such sites do not exist or are very rare.

	0 to 1	2 to 3	4 to 6
Suburban	**150-200 hr/ha**	**150-250 hr/ha**	**200-350 hr/ha**
3.8-4.6 hr/unit	35-55 u/ha	35-65 u/ha	45-90 u/ha
3.1-3.7 hr/unit	40-65 u/ha	40-80 u/ha	55-115 u/ha
2.7-3.0 hr/unit	50-75 u/ha	50-95 u/ha	70-130 u/ha
Urban	**150-250 hr/ha**	**200-450 hr/ha**	**200-700 hr/ha**
3.8-4.6 hr/unit	35-65 u/ha	45-120 u/ha	45-185 u/ha
3.1-3.7 hr/unit	40-80 u/ha	55-145 u/ha	55-225 u/ha
2.7-3.0 hr/unit	50-95 u/ha	70-170 u/ha	70-260 u/ha
Central	**150-300 hr/ha**	**300-650 hr/ha**	**650-1100 hr/ha**
3.8-4.6 hr/unit	35-80 u/ha	65-170 u/ha	140-290 u/ha
3.1-3.7 hr/unit	40-100 u/ha	80-210 u/ha	175-355 u/ha
2.7-3.0 hr/unit	50-110 u/hr	100-240 u/ha	215-405 u/ha

SRQ Density Matrix as table 3.2 from the London Plan (July 2011)

6 Central PTAL 2-3

Illustration 8

Location and context

- Outer East London.
- Vacant industrial site fronting main road.
- Located on the edge of a Metropolitan Town Centre (within 800m of the town centre boundary).
- The site lies within an Area Action Plan boundary and is identified as an Opportunity Site suitable for a variety of uses.
- Well served by public transport with two rail stations 150m and 500m away and bus stops along the main road. PTAL of 3.
- A mix of uses and building heights in the surrounding context. To the west are large, one- to two- storey leisure and retail sheds, to the east behind the high street is a street of two-storey terraced houses, to the south an eight-storey commercial office building and lower retail buildings along the main road, and to the north there are railway tracks and a rail depot.
- The nearest public park is 500m to the south.

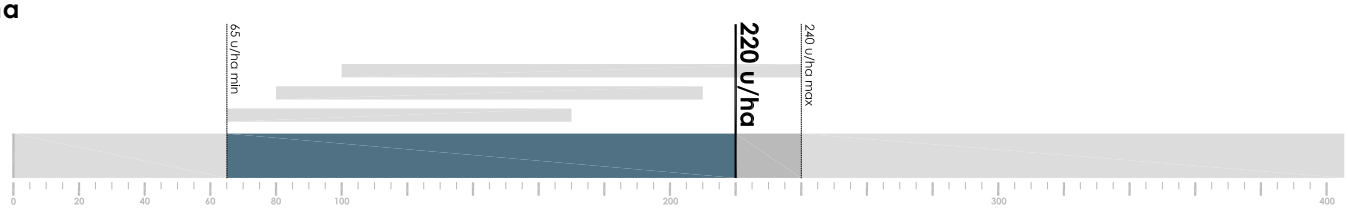
Development assumptions

- Client brief required 300 sqm of retail and commercial uses fronting the main road.
- Opportunity Site development brief assesses the maximum residential capacity to be 122 dwellings. The site is within a Building Height Zone of up to eight storeys.
- Further redevelopment of commercial sites to the west is anticipated.
- High noise levels along the main road and on the north side from the railway.

Existing houses with new development behind

Location plan at 1:10,000 scale

u/ha



hr/ha

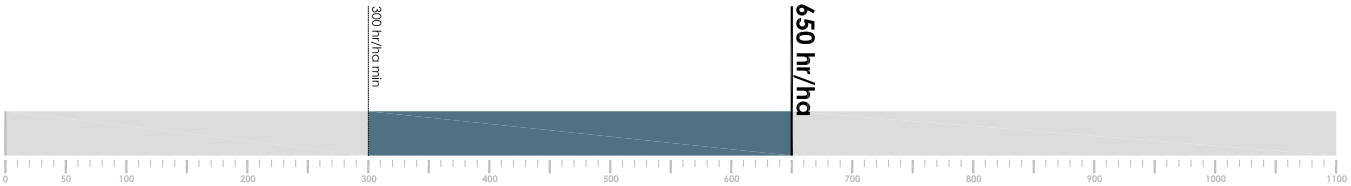


Illustration showing new frontage onto main road

Site area (ha)	0.26
PTAL	3
Total dwellings	53
Density u/ha	**220**
Density hr/ha	**650**
GEA residential (m²)	6,300
GEA non-residential (m²)	300
GEA total (m²)	6,600
Plot ratio	**2.4**
Total no. car parking spaces	26
Car parking ratio per unit	**0.5**
Publicly accessible open space(m²)	-

1b1p	-
1b2p	38%
2b3p	-
2b4p	44%
3b5p	17%
4b5p	-
4b6p	0%
5b6p	-
Total	100%

Family dwellings (3b5p+)	17%
Wheelchair user dwellings	10%
Dual aspect dwellings	70-80%

6 Central PTAL 2-3

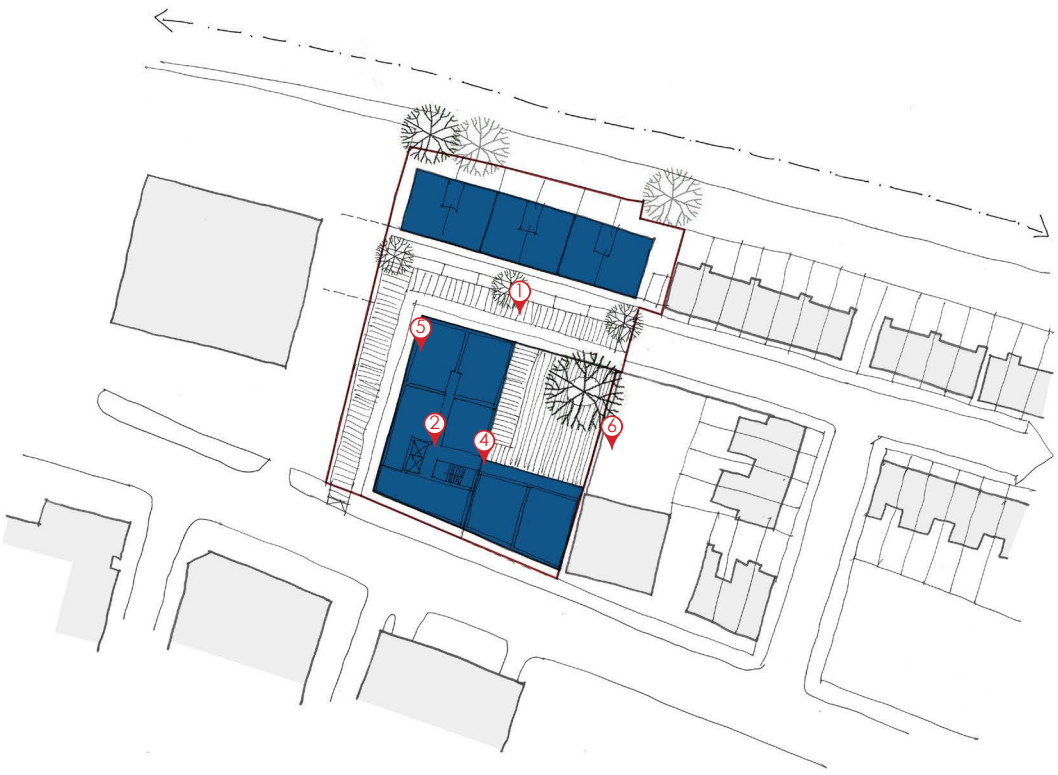
Illustration 8

Design response

1. The site layout seeks to integrate with and continue the neighbouring development pattern. The residential street to the east is extended through the site, allowing for a future connection with further development sites to the west.
2. The massing seeks to limit impact on surrounding development and minimise overshadowing of amenity spaces.
3. The scheme has a high proportion of dual aspect dwellings.
4. Privacy is managed at the internal corner of the block by combining dual aspect, balcony access dwellings with windows of non-habitable rooms set back from the podium space, and corridor access single aspect dwellings fronting the podium courtyard.
5. Maisonettes are wrapped around the undercroft parking, giving ground level dwellings entrances from the street and provide overlooking.
6. Generous separation distances with neighbouring houses (around 40m).

Development alternatives

A single larger building with greater site coverage and a larger area of undercroft parking might achieve higher densities and parking levels but would not relate as well to the existing context and would limit connectivity to future development sites to the west.



Typology distribution diagram at 1:1,250 scale N

* commerical and business use on ground, first and second floor

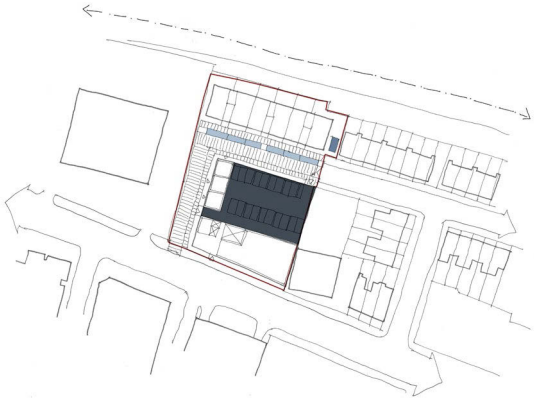
Uses, typology, structure and massing

1:2,500 scale N 1-3 4-5 6-7

– Plot Ratio 2.4:1
– A four-storey dual aspect walk-up apartment building is arranged next to existing two-storey terraced houses, with maisonettes over the ground and first floors.
– The main apartment block steps down from seven storeys in the south west to five in the north and four in the east.
– One level of commercial space is provided fronting the main road.

Car parking

1:2,500 scale N on street on plot undercroft



– Parking Ratio 0.5:1
– Parking is predominantly provided in an undercroft under the main block, with access from the north side and access for cycle parking from the west side.
– Six on-street spaces are provided adjacent to the four-storey apartment block. Four of the spaces are suitable for designation as disabled parking bays. There is an additional on-plot disabled parking space adjacent to the east end of the block, where one of the wheelchair accessible dwellings would be situated.
– Designated parking spaces for wheelchair users are provided within the undercroft garage associated with the apartment building, located close to stair and lift cores. One space is accommodated on-plot for a wheelchair accessible / 'easily adaptable' lower maisonette.

Open space and public realm

1:2,500 scale N streets courtyard private garden

– All dwellings have private open spaces in the form of gardens, balconies, patios and roof terraces.
– A shared amenity space which includes formal play space is provided at first floor level on a podium above the undercroft parking, accessed from the block's circulation core.

6 Central PTAL 2-3

BSE 17 - Peabody Avenue

Reasons for selection

– A high quality development that responds sensitively to buildings within the surrounding Conservation Area.
– The development offers exemplary levels of amenity by providing 100% dual aspect dwellings, creating a large new play space, and providing generous private open spaces to all apartments.

Location and context

– A Central setting in Westminster.
– The site is within a Conservation Area, adjacent to a railway.

Uses, typology, structure and massing

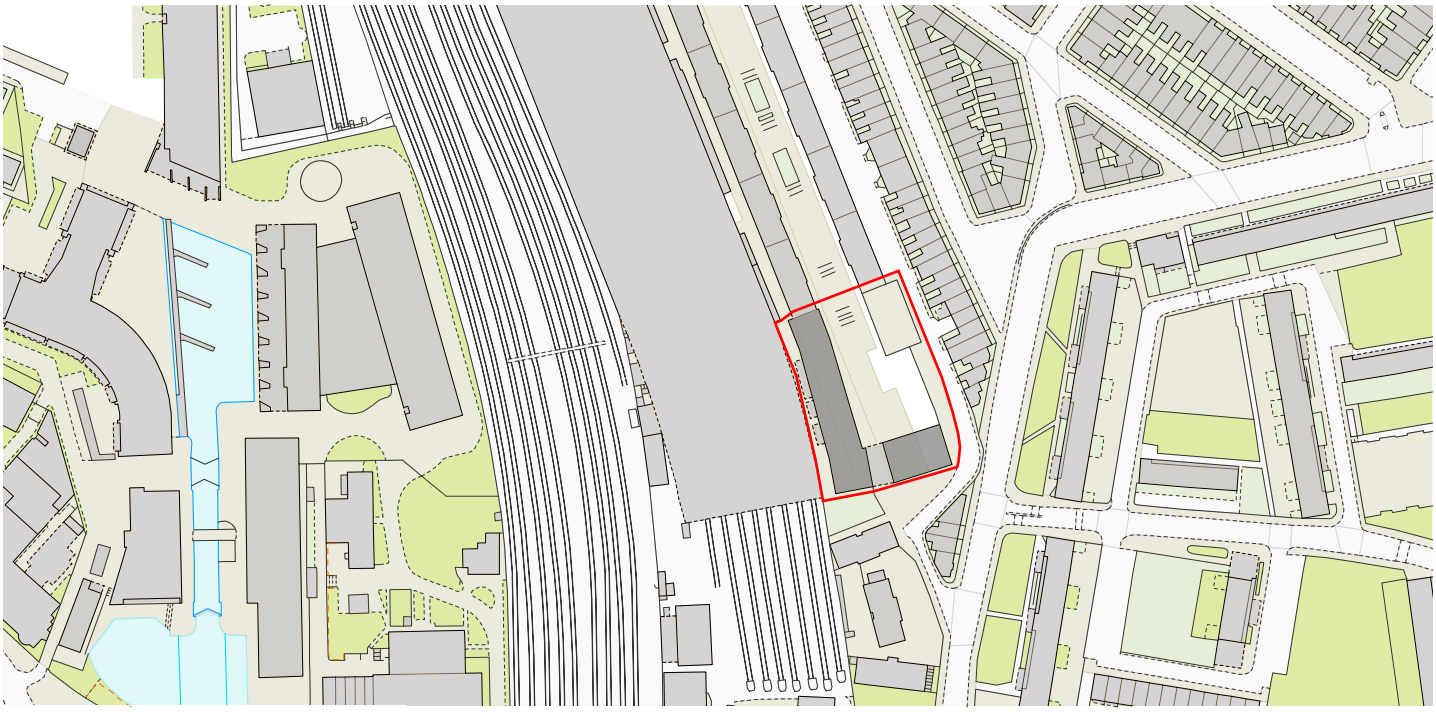
– The project terminates the end of a long row of nineteenth century, five-storey Peabody apartment buildings.
– The quality and detailing of the brickwork and the sensitive design of the elevations and entrances helps the development to relate well to the existing Peabody blocks and the adjacent Listed Cubitt terraces.
– The large, naturally lit circulation cores give access to a limited number of dwellings per floor (four to six).
– The project offers a contemporary take on a balcony access typology. This arrangement provides 100% dual aspect homes.
– Family maisonettes occupy the ground and first floors.

Car parking

– Car-free development.

Open space and public realm

– Flats adjacent to the railway have an unusual arrangement of private amenity balconies that are accessed from shared walkways rather than directly from the home. This takes advantage of a sunny aspect on the railway side and allows the main elevations to continue the flat appearance of the existing Peabody blocks. Crossing the access walkway to get to the private space works here because of the limited number of flats sharing an access core on each floor.
– The development is un-gated and provides a landscaped open space, a children's play area, community room, resident's association office and Warden's office.



Location plan at 1:2500 scale

– The popularity of the play space has resulted some initial management difficulties due to the fact that it is un-gated and has attracted children and young people from surrounding areas.
– The design also improved the landscape in the wider estate, providing suitable storage for communal waste bins and adding planting.

Other comments

– The tenure mix is 100% affordable (67% affordable rent, 33% shared ownership).
– The scheme was put forward by Westminster City council and is therefore also included in Appendix 2.

Location	Peabody Avenue, London SW1V
Local Planning Authority	City of Westminster
Completed	2011
Developer	Peabody Trust
Architect	Howarth Tompkins

Site area (ha)	0.35
PTAL	2-3
Total dwellings	55
Density u/ha	**157**
Density hr/ha	**650** approx.
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	12
Car parking ratio per unit	**0.21**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	35%
2b3p	3%
2b4p	31%
3b5p	31%
4b5p	
4b6p	
5b6p	
Total	100%
Family dwellings (3b5p+)	31%
Wheelchair user dwellings	
Dual aspect dwellings	

6 Central PTAL 2-3

BSE 18 - Colville Square

Reasons for selection

– An example of a high density scheme of predominantly affordable family housing that provides generous levels of high quality shared amenity and play space.
– Colville Square is a popular social housing development with a low turnover.

Location and context

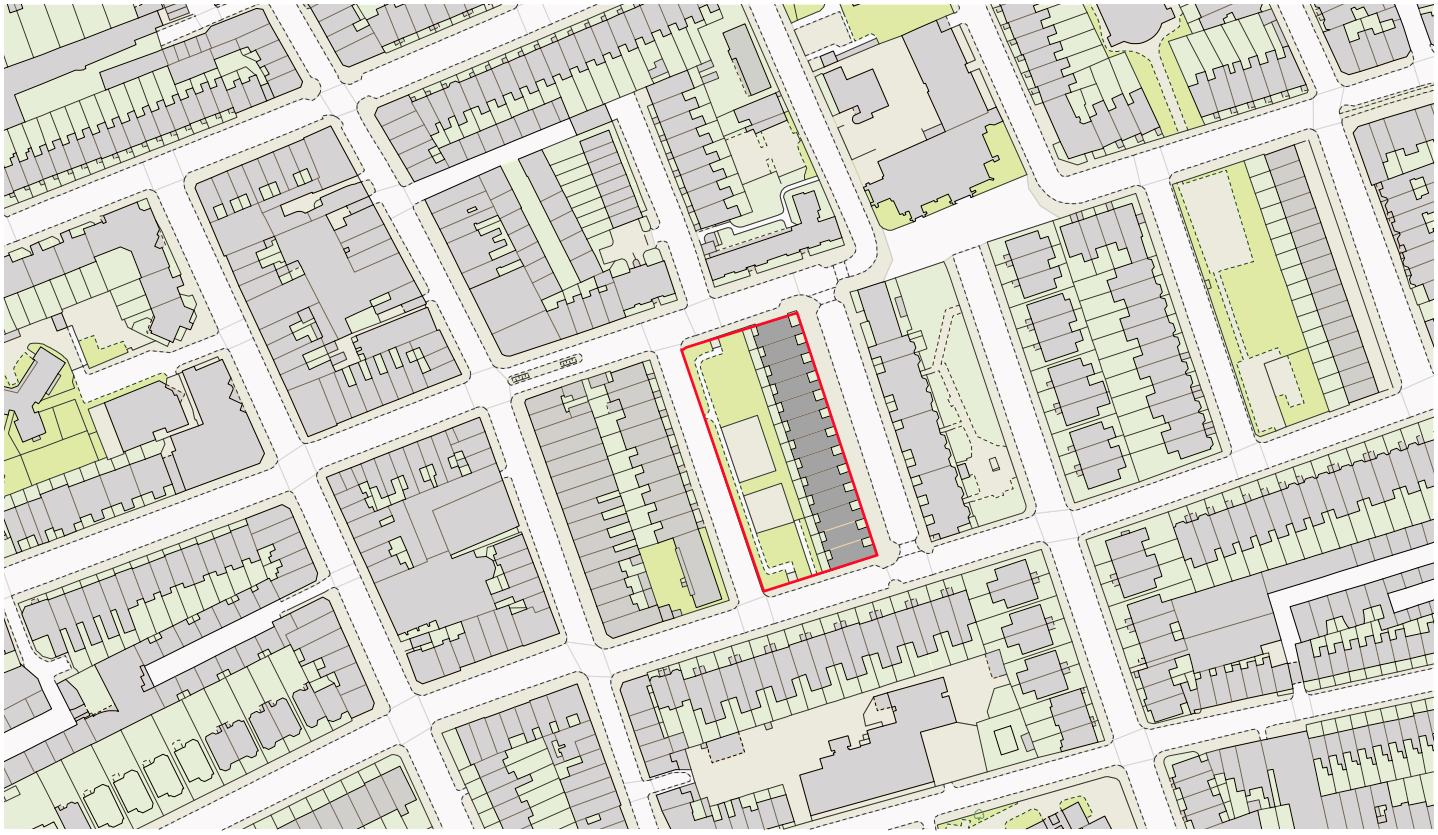
– Inner West London.
– A Central setting in Kensington and Chelsea surrounded by substantial terraced houses and mansion blocks, with an even, four- to five-storey building height.

Uses, typology, structure and massing

– The block of 13 houses is one of several rows of Victorian terraces of six to seven storeys. It stands adjacent to a landscaped square of equal size to the housing plot. (This space is included in the density calculation).
– The buildings have been converted to provide 68 dwellings, of which 45 are owned and managed by the Notting Hill Housing Trust.
– The square provides landscaped amenity and play space, which is well used by residents. It is estimated that 45% of households within the development have children.
– Homes have non-standard plans, many having been created through lateral conversions.
– With the exception of smaller one-bedroom dwellings, the flats have generous proportions and high ceilings.

Car parking

– On-street car parking is controlled through a CPZ.
– There is general shortage of parking in the area and it is considered an area of parking stress.



Location plan at 1:2500 scale

Open space and public realm

- The well-planted and maintained communal garden incorporates a play space for young children as well as benches and grassed areas for communal use.
- The garden is gated but is open for general access during the day.
- Private open space in the form of gardens, narrow balconies and roof terraces is provided to 49% of the homes.

Location	1-13 Colville Square, London W11
Local Planning Authority	London Borough of Kensington & Chelsea
Completed	c. 1800, converted 1970
Developer	Notting Hill Housing Group
Architect	unknown

Site area (ha)	0.34
PTAL	2-3
Total dwellings	68
Density u/ha	**200**
Density hr/ha	**620**
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	**2.2**
Total no. car parking spaces	0
Car parking ratio per unit	**0**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	17%
2b3p	68%
2b4p	
3b5p	7%
4b5p	7%
4b6p	
5b6p	1%
Total	100%
Family dwellings (3b5p+)	15%
Wheelchair user dwellings	0%
Dual aspect dwellings	

6 Central PTAL 4-6

Illustration 9

Location and context

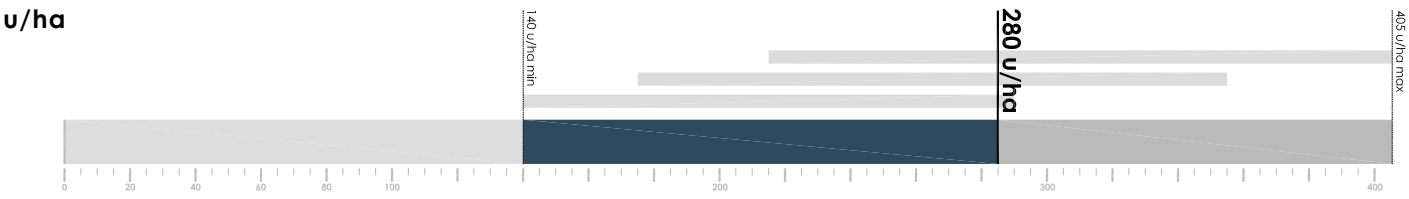
- On the edge of a Metropolitan Town Centre in Outer West London.
- Within 500m of an Underground and main line station and bus routes, with a PTAL of 6a.
- Existing surface level car park, two-storey library and three and four-storey blocks of flats.
- Railway embankment (with mature trees) and railway tracks to the north, two-storey semi-detached and detached houses and four-storey block of flats to the east, four to five-storey blocks of flats to the south east, six to eight-storey office building to the south west and more mixed two to six-storey commercial buildings to the west.

Development assumptions

- Site owned by the Borough.
- Town centre strategy requires the re-provision on site of public car parking and a library; with re-provision partly funded by capital receipt from sale of land.

Illustration showing existing housing on adjacent street and new development behind

Location plan at 1:10000 scale



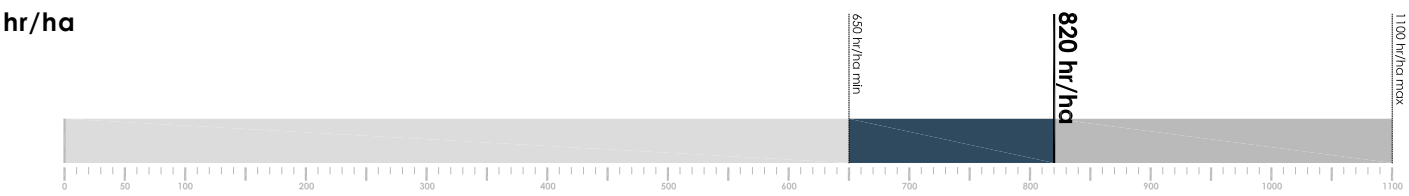


Illustration showing view from the railway bridge

Site area (ha)	1.35
PTAL	6a
Total dwellings	366
Density u/ha	**280**
Density hr/ha	**820**
GEA residential (m²)	39,300
GEA non-residential (m²)	1,400
GEA total (m²)	40,700
Plot ratio	**3.0**
Total no. car parking spaces	176
Car parking ratio per unit	**0.5**
Publicly accessible open space(m²)	1,435

1b1p	-
1b2p	37%
2b3p	-
2b4p	49%
3b5p	14%
4b5p	-
4b6p	0%
5b6p	-
Total	100%

Family dwellings (3b5p+)	14%
Wheelchair user dwellings	10%
Dual aspect dwellings	20-30%

6 Central PTAL 4-6

Illustration 9

Design response

1. Location of gardens and three- to four-storey buildings on eastern edge of site to respect existing character and act as a transition to taller buildings to the west.
2. Courtyards created on top of undercroft parking structures (incorporating play space).
3. Lower buildings located on southern edges of courtyards to allow sunlight to penetrate amenity space.
4. Provision of a 3m high wall at ground and courtyard level along the northern edge of the site to help mitigate railway noise.
5. Frontage to the south responds in height and building line to the immediate context.
6. Upper levels step back to minimise impact on street.
7. Breaking the buildings down into a series of separate cores allows a greater manipulation of building heights.
8. The height and massing of buildings along the railway is modelled to create variety in the view from the railway bridge.

Development alternatives

– Could increase separation distances between apartment buildings, but building heights would need to increase if proposed density is to be maintained.
– Could create a taller frontage building along road frontage, but this would increase overshadowing of the rest of the site.

Typology distribution diagram at 1:2,000 scale

Library on ground, first and second floor

Uses, typology, structure and massing

- Plot Ratio 3.0:1
- Three-storey public library with flats above in a nine-storey tower.
- Two 'C' shaped blocks of flats ranging from three to 10 storeys in height
- Five-storey block of flats and a terrace of three to four-storey walk-up apartment buildings on the eastern edge of the site.
- 'Linear buildings are organised to give an east and west orientation to the apartments. This is to maintain higher density levels to be provided with adequate daylight and sunlight. These buildings step up in height towards the northern edge to maximise light to the courtyards and residential private open space.

Car parking

- Parking Ratio 0.5:1
- Surface parking for the terrace of maisonettes and flats.
- Undercroft parking for flats in the two 'C' blocks.
- Underground parking for the public spaces.
- Designated parking spaces for wheelchair users are provided within the undercroft garage associated with the apartment buildings and lower maisonettes (located close to stair/lift cores).

Open space and public realm

- Ground level gardens for the maisonettes.
- Play space provided in gardens and integrated into courtyard spaces.
- Small public space next to library.
- Living roofs included on lower buildings of 'C' blocks.

6 Central PTAL 4-6

Illustration 10

Location and context

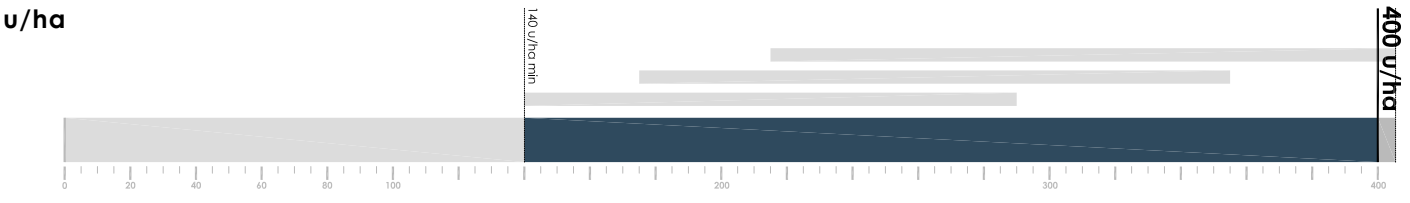
- North East London, within the Central Activities Zone.
- Fronting a main road (Red Route) served by four bus routes and within 600m of an Underground/main line station, with a PTAL of 6a.
- Within a Controlled Parking Zone.
- An existing 7 storey office building covers half the site, with the remainder used as surface parking.
- City fringe character, with large scale mixed-use business and residential buildings, pubs and a hospital nearby. This is an area that is undergoing change.

Development assumptions

- Site in single ownership.
- Not affected by strategic or important local views.

Illustration showing four storey southern block from existing street

Location plan at 1:5000 scale



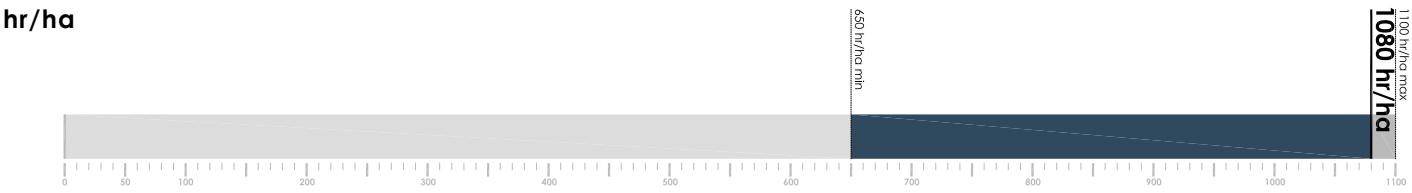


Illustration showing frontage, tower and commercial plinth onto the main road

Site area (ha)	0.44
PTAL	6a
Total dwellings	143
Density u/ha	**400**
Density hr/ha	**1080**
GEA residential (m²)	13,700
GEA non-residential (m²)	3,200
GEA total (m²)	16,900
Plot ratio	**3.8**
Total no. car parking spaces	106
Car parking ratio per unit	**0.7**
Publicly accessible open space(ha)	-

1b1p	-
1b2p	40%
2b3p	-
2b4p	55%
3b5p	5%
4b5p	-
4b6p	0%
5b6p	-
Total	100%

Family dwellings (3b5p+)	5%
Wheelchair user dwellings	10%
Dual aspect dwellings	70-80%

6 Central PTAL 4-6

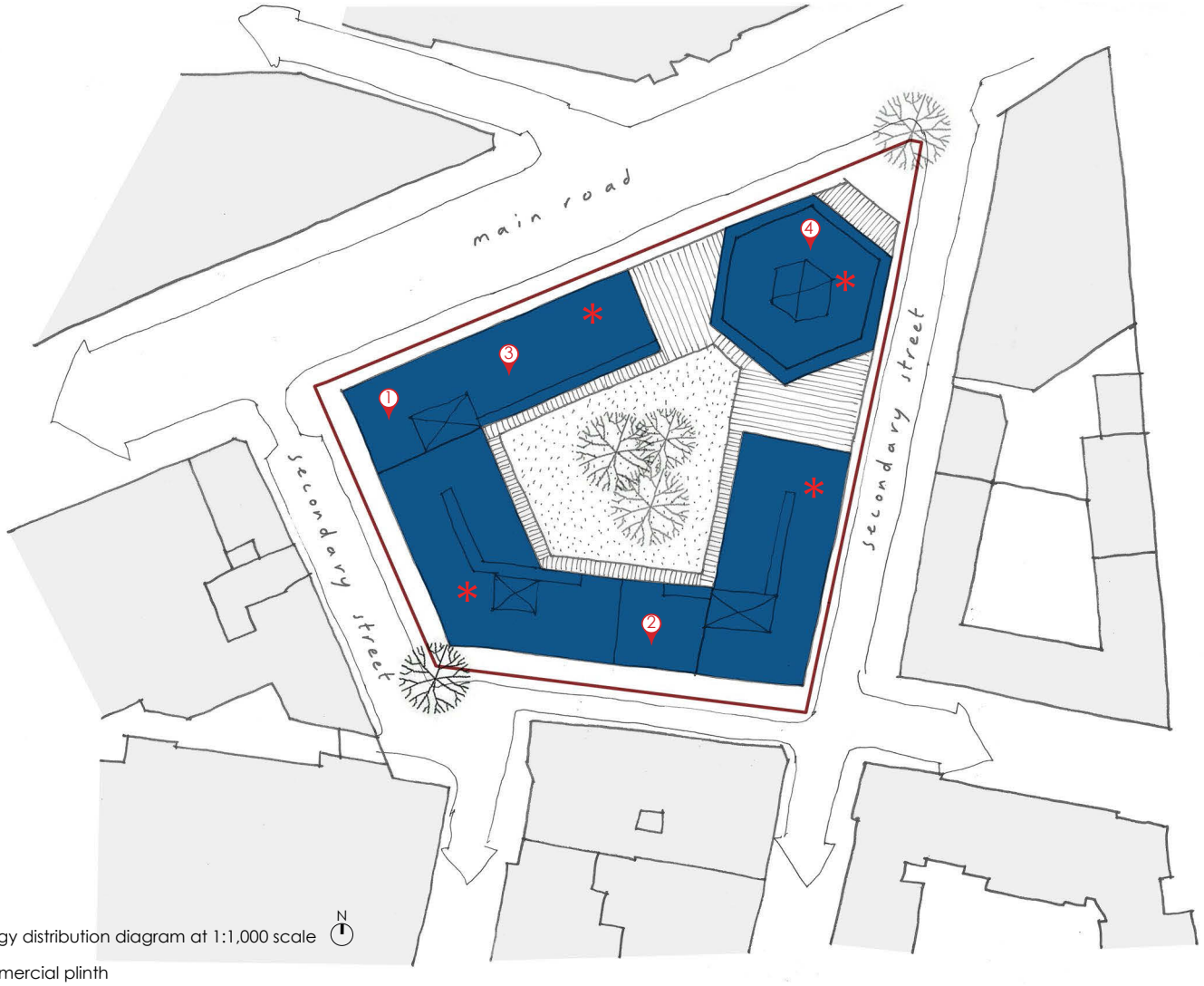
Illustration 10

Design response

1. Non-residential uses help meet policy requirement for employment generating uses and lift the proposed housing above bustling noisy streets (particularly the main road)
2. Three-storey buildings around the southern edges of the site respect the scale of neighbouring buildings and allow sunlight in to the proposed courtyard
3. Larger scale buildings on the main road frontage respect the robust commercial character of the street and help reduce traffic noise in the courtyard
4. The tower is located in order to minimise overshadowing of existing and proposed homes. Its plan form minimises overlooking of existing homes on the other side of a narrow street and enables dual aspect new homes.

Development alternatives

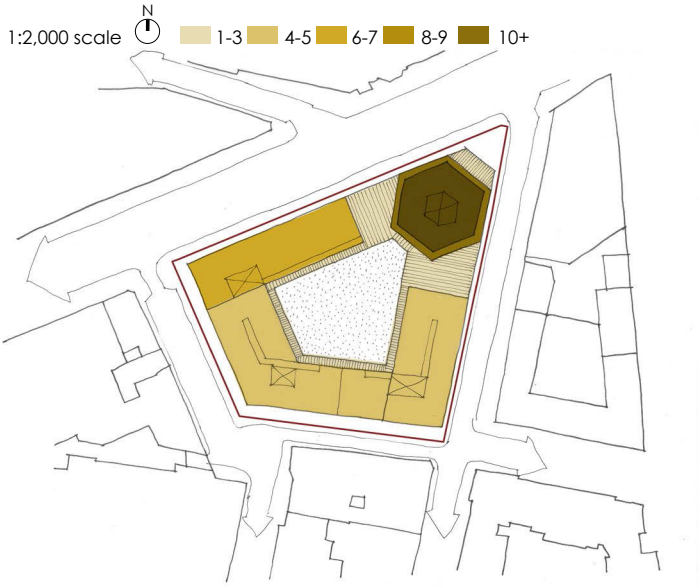
Taller buildings could be incorporated around the southern edge, but this would reduce sunlight available to proposed flats to the north and require a different strategy for the courtyard (infilling with communal space at first floor roof top level).



Typology distribution diagram at 1:1,000 scale

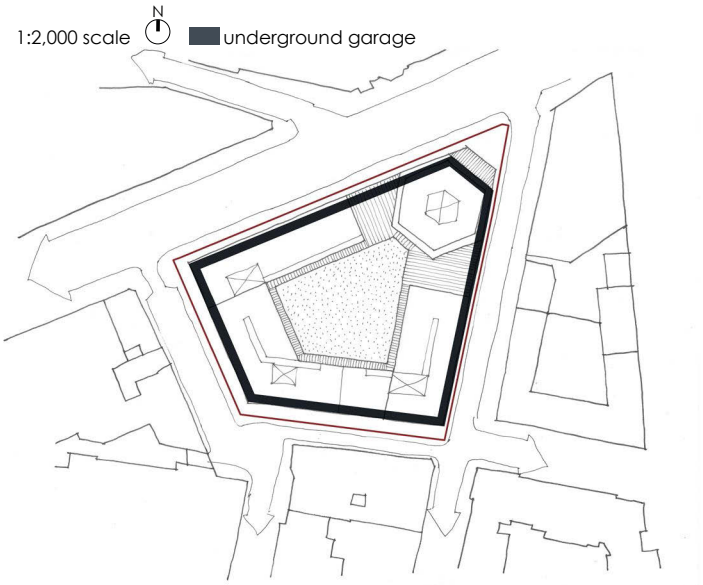
* Comercial plinth

Uses, typology, structure and massing



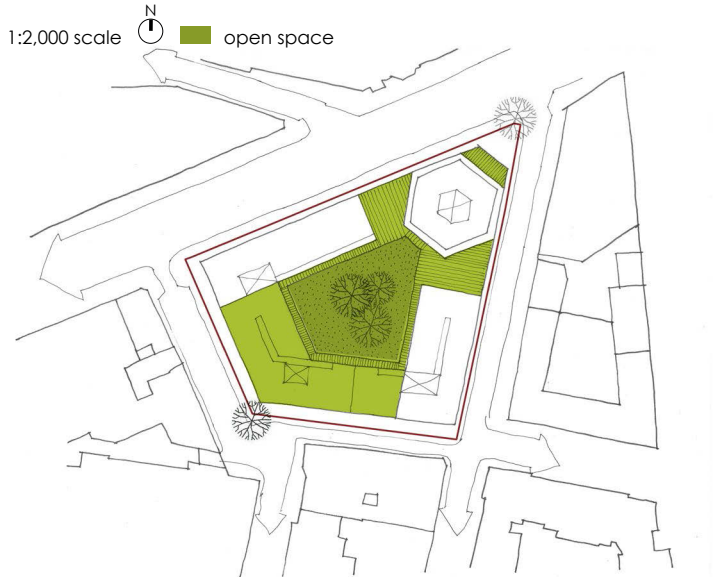
– Plot Ratio: 3.8:1
– Non-residential uses at ground floor level around whole site.
– Residential buildings are dual aspect along main roads and in all locations exposed to high noise levels.
– Servicing is from adjoining streets (Red Route service bay along main road and yellow line loading areas on secondary streets).
– Building heights range from three storeys along the southern frontages to five storeys along main road frontages and part of eastern frontage, to a residential tower of 21 storeys in the north east corner.

Car parking



– Plot Ratio: 0.75:1
– Basement car parking area (residential car and cycle parking only).
– Designated parking spaces for wheelchair users are provided within the basement parking garage, located close to stair/lift cores.

Open space and public realm



– Communal courtyard space for residents.
– Communal gardens on lower roofs around tower and in south west corner.
– Living roofs included on other roof spaces.

6 Central PTAL 4-6

BSE 19 - St Andrews, Bromley-by-Bow

Reasons for selection

– The scheme provides 30% family housing (homes with 3 or more bedrooms) at high densities and offers lessons for combining family housing and smaller dwellings within high density perimeter blocks.
– The design demonstrates creative ways of incorporating private open spaces, in the form of balconies, gardens and large roof terraces.

Site and context

– Inner East London.
– Central setting due to the location within 800m of the town centre boundary of Stratford, a Major Centre.
– The site of the former St Andrews Hospital in Tower Hamlets, which was previously LDA-owned.
– Located adjacent to Bromley-by-Bow underground station.
– The site was severed from its immediate context by the A12 motorway and railway embankment, which are both elevated several metres above the site.

Uses, typology, structure and massing

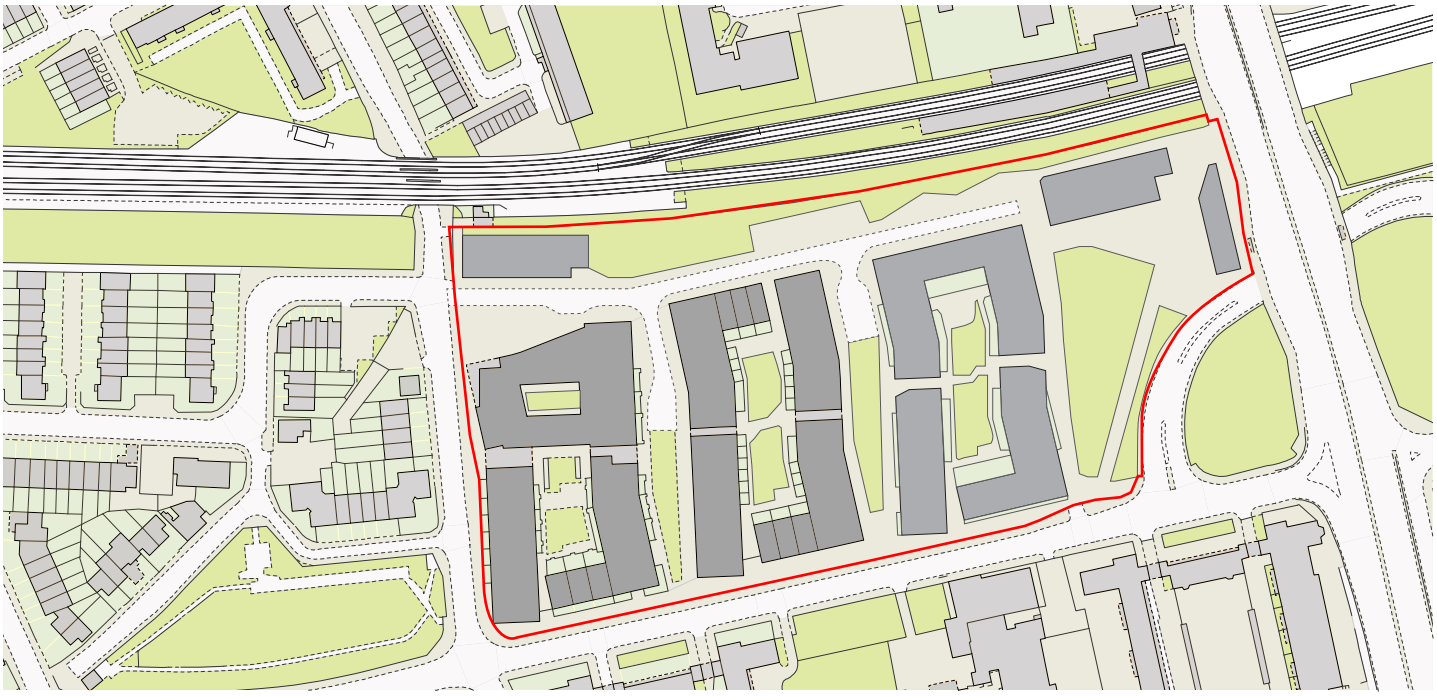
– The masterplan consists of three perimeter courtyard blocks in the centre of the site and two towers located to the north against the railway. The landscaped open space rises up to provide a new pedestrian connection to the station. Block C incorporates a health centre for Tower Hamlets Primary Care Trust.
– The north-south orientation of the courtyard blocks avoids overshadowing of the courtyard. All dwellings are dual aspect or east/west facing.
– Ground floor dwellings on both street and garden sides are entered from the public open space and a special typology of interlocking 3-bedroom maisonettes increases the number of private front doors at street level.
– Tenures are separated by core but a mix of tenures is included within each block, sharing the central courtyard gardens.

Car parking

– Basement car parking.

Open space and public realm

– 30% of the total site area is landscaped open space.
– Communal amenity spaces are provided in the courtyards.



Location plan at 1:2500 scale

– Every dwelling has a private open space in the form of a garden, patio, balcony or roof terrace.
– The stepping form of the block provides maisonettes with large roof terraces over the upper two floors.

Other comments

– The tenure mix is 50% private and 50% affordable (of which 69% is social rented and 31% is shared ownership).

Location	Bromley by Bow, London E3
Local Planning Authority	London Borough of Tower Hamlets
Completed	2011 (first phase)
Developer	Barratt Homes
Architect	Allies and Morrison (Masterplan, Block A), Maccreanor Lavington (Block B), Glenn Howells (Block C)

Site area (ha)	3.01
PTAL	4-6
Total dwellings	964
Density u/ha	**320**
Density hr/ha	**990** approx.
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	151
Car parking ratio per unit	**0.16**
Publicly accessible open space	

Dwelling mix	
1b1p	10%
1b2p	31%
2b3p	29%
2b4p	
3b5p	26%
4b5p	3%
4b6p	
5b6p	1%
Total	100%

Family dwellings (3b5p+)	30%
Wheelchair user dwellings	10%
Dual aspect dwellings	

6 Central PTAL 4-6

BSE 20 - Highbury Gardens

Reasons for selection

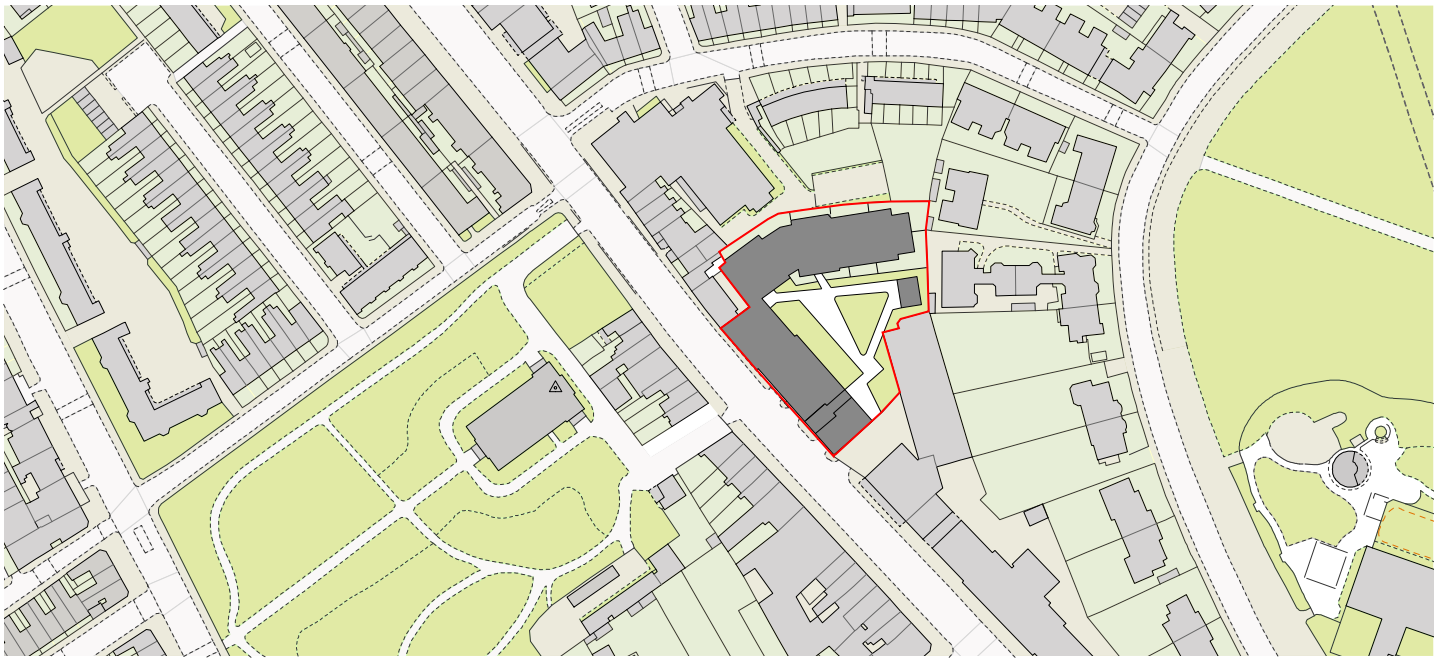
– An example of high-density development within the context of a typical inner London high street, where surrounding buildings are generally 3-5 storeys in height, high noise levels are generated by the road, and existing residential buildings are present in close proximity at the rear.

Location and context

– Inner North London
– Central setting in Islington, adjacent to a Major Centre and around 800m from the CAZ boundary.
– The surrounding context at the south end of Holloway Road has a mix of uses and three- to five-storey building heights.

Uses, typology, structure and massing

– The scheme is a mixed-use development providing 128 residential units and 311 sq m ground floor commercial space (A/B1), that rises from five to seven storeys along the street. The L-shaped plan follows the footprint of the 2-5 storey taxi garage and showroom that formerly occupied the site.
– In order to maximise the number of units within restricted building heights, 17m deep, corridor access apartment buildings were used, which provide mostly single aspect units. It should be noted that a proportion of these units have three bedrooms or face north and would therefore not meet the dual aspect design standard of the draft Housing SPG.
– To overcome high noise levels, elevations towards Holloway Road were designed with additional sound insulation and noise-attenuating ventilation.
– The separation distance with adjacent residential blocks is only 10m at the rear, but there are no windows in the end elevation and the building steps down to four storeys in height.
– Various measures were taken to try to reduce the perceived height and scale of the development, including setting back the upper storeys and adding cornices and other horizontal projections to emphasise lower storey levels, and subdividing the building along the length of the facade to make the development appear as six separate interlinked buildings. Although these have not succeeded in concealing the overall scale of the development, subdividing the facade has helped to maintain the rhythm of smaller plots along the high street.



Location plan at 1:2500 scale

Car parking

– The project is car-free.

Open space and public realm

– Ground floor units towards the courtyard have 3m deep private gardens. Few of the upper level units are provided with a sufficient depth or area of private open space to meet current standards.

Other comments

– The tenure mix is 50% private sale, 50% affordable (34% Intermediate, 16% social rented).

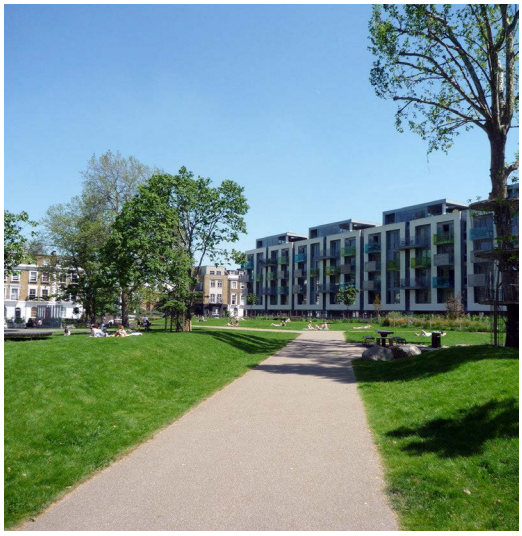
Location	52 Holloway Road, London
Local Planning Authority	London Borough of Islington
Completed	2012
Developer	First Base / English Partnerships
Architect	Porphyrios Associates with John Robertson

Site area (ha)	0.37
PTAL	6
Total dwellings	128
Density u/ha	**346**
Density hr/ha	**946**
GEA residential	
GEA non-residential	311
Total GEA	
Plot ratio	
Total no. car parking spaces	
Car parking ratio per unit	
Publicly accessible open space	

Dwelling mix	
1b1p	38%
1b2p	
2b3p	49%
2b4p	
3b5p	13%
4b5p	
4b6p	
5b6p	
Total	100%
Family dwellings (3b5p+)	13%
Wheelchair user dwellings	9%
Dual aspect dwellings	100%

6 Central PTAL 4-6

BSE 21 - Arundel Square



Reasons for selection

– An example of a development unlocking the potential of a difficult backland site adjacent to a railway cutting by making a significant investment in infrastructure. The development provided a deck that bridges over the adjacent railway and connects with the public park, Arundel Square, on the other side.
– A high quality development with well planned flats, a high proportion of dual aspect dwellings and a limited number of dwellings per floor per core.

Location and context

– Inner North London.
– The setting in Islington may be described as 'Central' due to the location adjacent to a Major Centre and around 800m from the CAZ boundary.
– The surrounding area also has 'Urban' qualities due to the consistent three-storey building height and urban fabric of terraced houses.

Uses, typology, structure and massing

– A linear, five- and six-storey apartment building which returns at either end to address the side streets.
– Open space is provided by a reinforced concrete deck over the railway cutting, which connects the development with Arundel Square.
– Communal circulation is more generous than might be expected from a development of this density. Six separate cores give a maximum of four dwellings per floor. This enables the majority of dwellings to be dual aspect.
– Although it is not out of scale with the surroundings, the development does show that even a modest increase in buildng height can be noticeable if the surrounding context is very even in height.

Location plan at 1:2500 scale

Car parking

– Basement car park and car club.

Open space and public realm

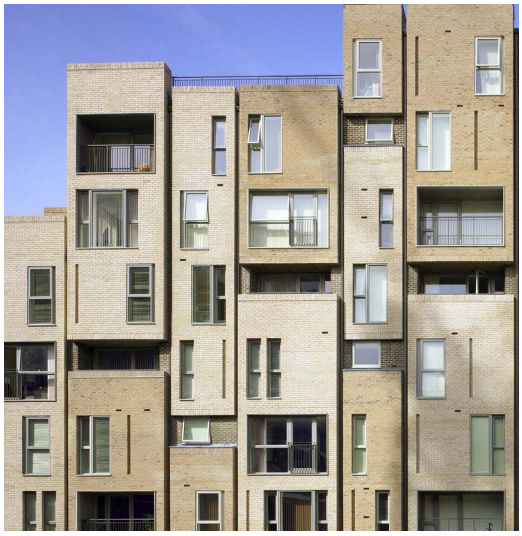
– The majority of the decked over area is added to the public open space of Arundel Square.
– The decked enclosure significantly reduces noise from the railway, for Arundel Square residents, park users, and residents of adjacent housing.

Location	Arundel Square, London N7
Local Planning Authority	London Borough of Islington
Completed	2010
Developer	United House Developments,
Architect	Pollard Thomas Edwards

Site area (ha)	0.33		Dwelling mix	
PTAL	4		1b1p	43%
Total dwellings	146		1b2p	
Density u/ha	**440**		2b3p	52%
Density hr/ha	**1166**	approx.	2b4p	
GEA residential	100		3b5p	1%
GEA non-residential	0		4b5p	1%
Total GEA			4b6p	
Plot ratio			5b6p	3%
Total no. car parking spaces	66		Total	100%
Car parking ratio per unit	**0.45**			
Publicly accessible open space			Family dwellings (3b5p+)	5%
			Wheelchair user dwellings	
			Dual aspect dwellings	

6 Central PTAL 4-6

BSE 22 - Bear Lane



Reasons for selection

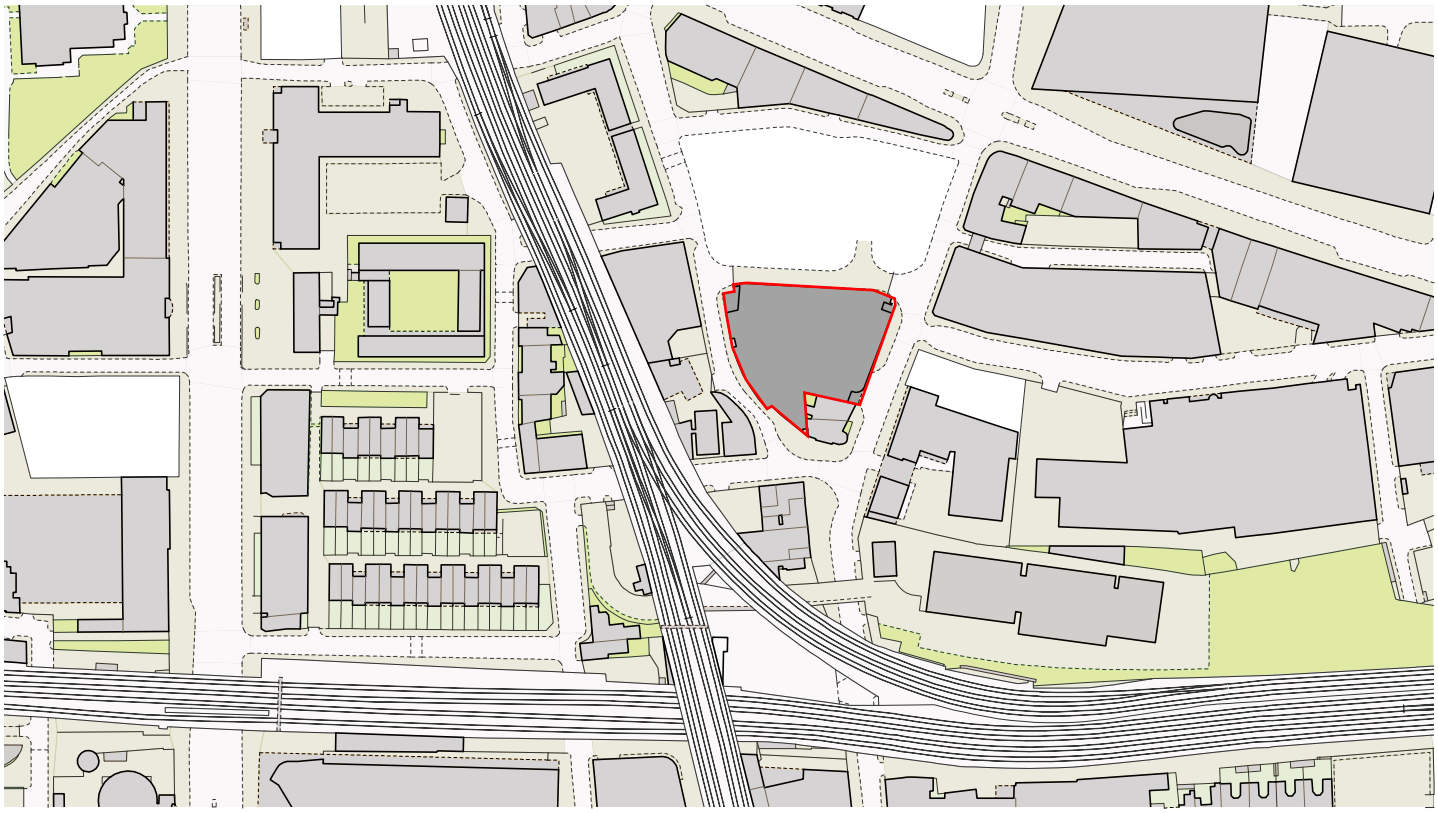
– An example of a project that achieves a density at (or slightly above) the upper limit of the London Plan density matrix while limiting building heights to around 10 storeys.

Location and context

– Inner South London.
– A Central setting within the CAZ.
– The project is located in Bankside, an area undergoing major change, where new, mid-rise (8-10 storey), very deep commercial buildings stand next to existing 3-5 storey terraces and warehouses.

Uses, typology, structure and massing

– An apartment building developed around the perimeter of the site enclosing a courtyard, with ground level commercial use and basement level car parking.
– The massing of the development responds successfully both to the scale of the existing pub on the corner and older adjacent fabric but also to the scale of new development in Bankside.
– Residential amenity is compromised in many of the units, due to the high number of dwellings per floor and per core, small back to back privacy distances across the courtyard, the high proportion of single aspect dwellings, and the restricted provision of daylight and sunlight to lower level dwellings, particularly those around the courtyard.
– The development demonstrates that at the highest densities (just exceeding the top end of the Central, high PTAL range of the London Plan density matrix), where building heights are limited to around 10 storeys, certain qualitative aspects are likely to be affected.
– The density level is exaggerated due to the high site coverage within the red line boundary (100%) and lack of access roads.



Location plan at 1:2500 scale

Car parking

– Basement level car parking

Open space and public realm

– There is a shared courtyard at first floor level in the centre of the block, to which some dwellings have direct access.
– The majority of dwellings have private outdoor space, either as recessed balconies or larger external terraces, which are provided to upper dwellings as the building steps up.

Location	Bear Lane, London SE1
Local Planning Authority	London Borough of Southwark
Completed	2009
Developer	Galliard Homes
Architect	Panter Hudspith

Site area (ha)	0.19
PTAL	6
Total dwellings	89
Density u/ha	**460**
Density hr/ha	**1228**
GEA residential	
GEA non-residential	
Total GEA	
Plot ratio	
Total no. car parking spaces	24
Car parking ratio per unit	**0.27**
Publicly accessible open space	

Dwelling mix	
1b1p	
1b2p	47%
2b3p	39%
2b4p	
3b5p	14%
4b5p	
4b6p	
5b6p	
Total	100%
Family dwellings (3b5p+)	14%
Wheelchair user dwellings	
Dual aspect dwellings	

7 Cross-cutting issues

Introduction

7.1. This section discusses cross-cutting issues that are relevant to all settings and key setting/site specific issues, drawing on the Illustrations and Built Scheme Examples in Sections 4, 5 and 6 and making specific recommendations.

7 Cross-cutting issues

A Car Parking

Policy and guidance

7.2 In terms of the level of car parking, the Parking Addendum to Chapter 6 of the London Plan sets the following maximum residential parking standards: 4+ bed – 2-1.5 spaces per unit; 3-bed – 1.5-1 spaces per unit; and 1-2 bed – Less than 1 per unit.

7.3. In accordance with the London Plan, the draft Housing SPG includes alternative tables setting out two options for a matrix of residential parking standards that reflect PTAL levels. It also (2.3.6) makes clear that each designated wheelchair user dwelling should be allocated a designated wheelchair parking space complying with Standard 3.3.2 and GLA Best Practice Guidance on wheelchair user housing.

The importance of car parking

7.4 Research has found that car parking remains a significant issue for residents and home buyers and that many people feel that new housing schemes should accommodate typical levels of car parking ownership and that the level of parking in new developments is inadequate (although it should be noted that people surveyed in London were more willing to rely on public transport and were less preoccupied with problems associated with car parking as compared with people living elsewhere in the country).[8] The level of parking is an important factor in the financial viability of a scheme as it affects the attractiveness of new homes to purchasers, the values achieved for new homes and the speed at which they sell. It is also important to ensure that what car parking is provided is allocated in an equitable way between private and affordable housing and that priority allocation is given to disabled people and families.

Particular design issues

7.5 Access and car parking has a major impact on site planning and design and can take up to between 25% to 40% of the area of small sites.[9] However, this can be consolidated or minimised through good design and management. The costs of providing car parking in different forms is significant and has a direct bearing on the type and amount that is provided on a particular site. The relative 'rule of thumb' cost of providing different forms of parking (including land acquisition and construction) is as follows:

- Surface level = £X
- Undercroft = 2 to 3 times £X
- Basement = 5 to 6 times £X

7.6. Given the above, basement car parking is most likely to be a viable option in relatively high value locations where space is at a premium and this could be augmented by relatively expensive stacking systems. Elsewhere, surface and undercroft parking will be the most viable options. In order to make the best use of land and optimise density, car parking strategies should:

- be based on an understanding of existing parking issues/controls around the site;
- be developed early on in the design process, taking account of management arrangements (adopted or private roads, allocated or unallocated spaces, implications for service charges etc);
- start by incorporating well located parking spaces for disabled people (in accordance with specific guidance), families and other priority groups;
- integrate a mix of car parking provision into a scheme in ways which embeds spaces into the streetscene and landscaping, and minimise its negative effect on open areas (e.g. use of levels, planting, street furniture and lighting);
- provide spaces that are overlooked, safe, secure and accessible;
- avoid large open car-parking courts by breaking up provision and incorporating them into the landscape.
- In some cases it may be appropriate to think in terms of 'car storage', where cars are grouped together in a multi-storey car park in a relatively remote part of the site – as with BSE 7 (Stanmore Place).
- Where underground or multi-storey car parks are provided, include measures such as CCTV and good lighting to help create a safe environment and consider the position of vents, grilles and access points to minimise adverse visual and air quality impacts.
- In mixed-use schemes, servicing areas need to be sensitively located and screened.

Particular management issues

7.7. Some residents will value having an on-plot parking space that is exclusively for their use and be willing to pay a premium for that. However, Government research[10] has found that the allocation of spaces in communal parking areas or private roads to individual dwellings can be inefficient, as some spaces would be unused (at least for large parts of the day) and there would be additional unmet demand for spaces from households with two or more cars and visitors. Unallocated spaces, in contrast, are available on a first come first served basis for residents and visitors and the overall number needed will be less – freeing up space

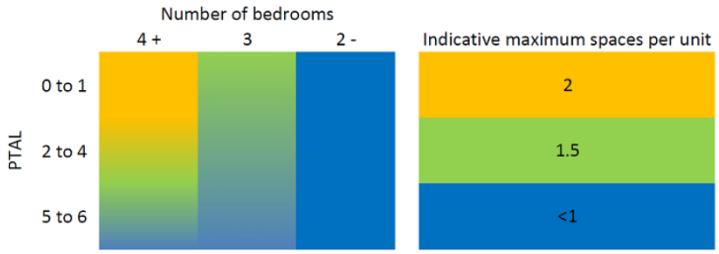
for other purposes and reducing costs. The downside is the frustration felt by residents that miss out on a space and this may lead to conflict and overspill parking off-site.

7.8. In practice, there is likely to be a mix of allocated and unallocated spaces in communal areas – with spaces needing to be allocated to occupiers of wheelchair accessible homes (where not provided on-plot) and possibly some family-sized homes, which are likely to be the next priority. The balance between allocated and unallocated space will differ from site to site, but such management arrangements should be used to best effect to help optimise density.

7.9. Dynamic car parking management plans secured by planning condition or planning obligation, can help manage parking over time. It may also be necessary in areas of parking stress around sites to consider the designation of Controlled Parking Zones (CPZ) and to potentially prevent occupiers of new homes on a site from obtaining parking permits – thus preventing displacement of parking into surrounding streets.

7.10. The Outer London Commission has made a number of specific recommendations in relation to the implementation of London Plan Policy 6.13 (Parking) and Table 6.2 in the context of other relevant policies to secure a level of accessibility by private car consistent with the overall balance of the transport system at the local level and recognising the continued importance of the private car in outer London. The draft Housing SPG includes two alternative indicative car park matrixes. Matrix 1 seeks to emphasise through the use of graduated colour-scales that while PTAL should have an influence on parking provision, the appropriate allocation is quite properly a matter of judgement. Matrix 2 also uses graduated colour-scales to provide a visual indication of flexibility by re-introducing a link between the density matrix and parking provision, including units and habitable rooms, settings and PTAL. Both matrices are set out below.

	PTAL 0 to 1		PTAL 2 to 4		PTAL 5 to 6	
Suburban	**150–200 hr/ha**	**Parking provision**	**150–250 hr/ha**	**Parking provision**	**200–350 hr/ha**	**Parking provision**
3.8–4.6 hr/unit	35–55 u/ha	Up to 2 spaces per unit	35–65 u/ha	Up to 1.5 spaces per unit	45–90 u/ha	Up to one space per unit
3.1–3.7 hr/unit	40–65 u/ha		40–80 u/ha		55–115 u/ha	
2.7–3.0 hr/unit	50–75 u/ha		50–95 u/ha		70–130 u/ha	
Urban	**150–250 hr/ha**		**200–450 hr/ha**		**200–700 hr/ha**	
3.8 –4.6 hr/unit	35–65 u/ha	Up to 1.5 spaces per unit	45–120 u/ha	Up to 1.5 spaces per unit	45–185 u/ha	Up to one space per unit
3.1–3.7 hr/unit	40–80 u/ha		55–145 u/ha		55–225 u/ha	
2.7–3.0 hr/unit	50–95 u/ha		70–170 u/ha	Up to one space per unit	70–260 u/ha	
Central	**150–300 hr/ha**		**300–650 hr/ha**		**650–1100 hr/ha**	
3.8–4.6 hr/unit	35–80 u/ha	Up to 1.5 spaces per unit	65–170 u/ha	Up to one space per unit	140–290 u/ha	Up to one space per unit
3.1–3.7 hr/unit	40–100 u/ha		80–210 u/ha		175–355 u/ha	
2.7–3.0 hr/unit	50–110 u/hr	Up to one space per unit	100–240 u/ha		215–405 u/ha	



The two alternative indicative car park matrices from the draft housing SPG

Recommendations

– Prospective developers should integrate car parking provision into residential and mixed-use schemes to help optimise density by developing car parking strategies that take account of the issues identified above.

7 Cross-cutting issues

B Tenure and dwelling mix

Existing policy and guidance

7.11 London Plan Policy 3.8 (Housing choice) calls for new developments to offer a range of housing choices, in terms of the mix of housing sizes and types, taking account of the housing requirements of different groups. Policy 3.9 (Mixed and balanced communities) promotes communities that are mixed in terms of tenure and income and Policy 3.12 (Negotiating affordable housing on individual private residential and mixed use schemes) seeks the maximum reasonable amount of on-site affordable housing – with justifying text (para 3.75) making clear that affordable housing should be integrated with the rest of the proposed development and have the same external appearance as other housing. Policy 7.1 (Building London's Neighbourhoods and Communities) makes clear, amongst other things, that places should be designed to meet the needs of the community at all stages of people's lives, and should meet the principles of lifetime neighbourhoods.

7.12. The draft Housing SPG includes Standard 2.2.1 which calls for development proposals to demonstrate how the mix of dwelling sizes and the mix of tenures meet strategic and local borough targets and are appropriate to the location in London. Standard 4.9.1 refers to the Best Practice Guide on Wheelchair Accessible Housing. The draft SPG also sets out detailed guidance in relation to affordable housing.

Particular issues

7.13 Whilst the density matrix measures density in terms of units and habitable rooms per hectare, people per hectare most closely relates to bed spaces per hectare. Nevertheless, however density is counted, occupancy rates vary across time and tenure and the characteristics of people living in them (including ethnic and cultural background), with some homes being over occupied and some under occupied. As a particularly scarce resource, social housing has the lowest rate of under-occupation at 8%, compared to 11% of private rented and 37% of owner occupied housing.[11] The reverse is true for over-occupation, where social housing has the highest rate at 12.7%, compared to 9.8% for private rented and 3% for owner occupied housing.[12] This is relevant when considering issues relating to the management and maintenance of communal spaces and amenity spaces and the likely impacts on social and other infrastructure.

7.14. The child density rate also varies across dwelling size and tenure, with social rented houses and flats having significantly higher 'child yield' than intermediate or private homes.[13] This is again important when considering management and maintenance issues and the likely impacts on infrastructure (particularly play space, demand for nursery/childcare, school places and other social infrastructure).

7.15. Whilst there is need for all sizes of housing, the greatest need is for family-sized affordable housing[14] and borough policies emphasise the need for this type of accommodation. There is a danger that, given this policy emphasis and the lower demand for private family-sized homes, larger mixed-tenure developments will tend to contain a disproportionate number of affordable family-sized homes. It is important that there is a range of different dwelling types across all tenures on larger sites to help deliver mixed and sustainable new neighbourhoods.

7.16. London Plan Policy 3.8 and the draft Housing SPG (4.4.34) stress the need for affordable housing to have the same external appearance as private housing and be integrated with the rest of the development. This has implications for the design and management of mixed-tenure schemes. Most housing providers prefer to see social rent/affordable rent housing have different access and stair and lift cores to private housing (shared ownership tends to be more flexible). This helps with management and maintenance of common areas and in helping ensure that annual service charges is kept to an affordable level; a key consideration in the viability of affordable housing.[15] Subject to this, affordable housing is most commonly integrated vertically into mixed tenure buildings, although horizontal stacking of homes in different tenures is not uncommon (albeit often with separate entrances and stair and lift cores). It can also be located in separate buildings from private

housing on larger schemes, but with the same external appearance.

7.17. Communal amenity spaces shared by people living in affordable and private housing (courtyards, terraces, etc.) provide particular management challenges and it may be more practicable to design and manage public realm areas (streets, publicly accessible open spaces) as accessible, socially inclusive places where all people can meet and socialise, in accordance with Lifetime Neighbourhood principles.

7.18. Wheelchair accessible and 'easily adaptable' homes tends to be between 10-15% larger than standard housing and the inclusion of at least 10% of such homes in a scheme will have some effect on the achievable density. As with affordable housing, wheelchair accessible housing should be integrated within a scheme and, as far as possible, not stand out as being 'different' (although the requirement for covered car parking spaces for houses makes this difficult to achieve).[16]

7.19. The equitable allocation of car parking between homes in different tenures and the particular need for car parking for wheelchair users and family-sized housing is addressed under Section 7A ('Car parking') above.

Recommendations

– Prospective developers, housing providers, the boroughs and the Mayor need to consider the interrelationship between optimising density, dwelling mix and tenure in terms of the design, management and maintenance of particular schemes and the demand for social infrastructure as part of helping to create successful mixed communities.

7 Cross-cutting issues

C Family sized housing - general

Existing policy and guidance

7.20 London Plan Policy 3.8 (Housing Choice) calls for new developments to offer a range of housing choices, in terms of the mix of housing sizes and types, including ensuring that account is taken of the needs of particular communities with large families. The draft Housing SPG includes Standard 2.2.1 which calls for development proposals to demonstrate how the mix of dwelling sizes and the mix of tenures meet strategic and local borough targets and are appropriate to the location in London.

7.21. The London Plan (Glossary) and draft Housing SPG (1.3.11) state that family housing is defined as having three or more bedrooms. The draft SPG goes on to state that in broad terms, higher densities (which assume a lower number of habitable rooms per dwelling) will be more suitable for households without children and will require less open space and play provision (1.3.12). Developments with higher densities and a low proportion of family housing can be particularly suitable for town centres and as an element of mixed-use developments, where open space and car parking may be limited. Paragraph 1.3.13 goes on to note that lower density developments lend themselves more, though not exclusively, to family housing – with the density matrix assuming a higher number of habitable rooms per dwelling for lower density development.

7.22. The draft Housing SPG recognises in Part 2: Quality that given the choice, many people and most families would prefer to live in a home with a private front door at ground level, and that one challenge for higher density housing is to give the benefits of a private house (including privacy, security, a clear identity and private open space) to people living in apartments (2.3.1). Several of the design and space standards address this concern, including those for access and shared circulation.

Particular issues

7.23 Existing policy and guidance recognises the inherent benefits of larger family housing being provided at relatively low densities. These include: ground and low level gardens and play space, minimising the need to negotiate stairs and lifts, a more child-friendly and safe environment (particularly for young children) and the demand for and relative importance of car parking –

Anne Mews by Maccreanor Lavington and AHMM. Single family houses with density maximised through reduced privacy distances.

both in terms of ferrying around young children, young adult drivers living at home, and lack of public transport links (particularly 'orbital' ones) in low PTAL areas. The indicative density ranges included in the density matrix make provision for densities of under 50 units per hectare – the maximum density which Section 8D ('Lessons on housing typologies') identifies for projects solely made up of terraced housing – in all three character settings, although only areas with poor PTAL levels in Central settings. Section 8D also notes that it is possible to include an element of ground level family maisonettes or terraced houses within schemes of much higher densities. However, it is the Suburban and Urban character settings which hold the greatest opportunities for relatively low density family housing; particularly in Outer London.

7.24. The illustrations and built scheme examples for the Suburban character setting in Section 4 demonstrate the importance of site layout, car parking and urban design in creating successful relatively low density family housing which is not dominated by car parking. The issues are discussed in detail in Section 7A ('Car parking'), but it is important to note here that car parking strategies need to be developed early on in the design process and should help inform design and management solutions. Another key lesson from the illustrations and built scheme examples is the importance of garden and play space (discussed in detail in Section 7F – 'Social infrastructure and open space'), 'land hungry' uses that also need to be tackled early on.

7.25. While the London Plan and the draft Housing SPG define family housing as having three or more bedrooms, it is recognised that households with children can and do occupy any dwelling larger than a one bedroom flat. Families are likely to be under some pressure when living in two-bedroom, three- and four-person accommodation at full occupancy. We recommend that as and when the London Plan is revised, the definition of 'family housing' is reviewed and consideration given to recognising that two-bedroom, three-person dwellings and larger are 'family dwellings', and that three-bedroom, five-person dwellings are 'larger family dwellings'.

7.26. To provide suitable accommodation for families, apartments require an adequate level of internal dwelling space, appropriate room sizes and sufficient storage and utility space. Dwelling types which do not require all of the bedrooms to be shared at full occupancy (eg. 3b5p, 4b6p) tend to be preferable for larger families. To work effectively in the long term, family dwellings above ground need to offer levels of amenity approaching those provided by single family houses at ground level. Key considerations include providing private open space of sufficient size for the whole family and guests to gather, and with adequate outlook, orientation, privacy and shelter; providing a child-friendly, playable environment around the home and appropriate levels of dedicated play space; limiting the number of dwellings and occupants sharing each floor and each access core; providing good circulation spaces and limiting the distance travelled from the building entrance to the individual home; providing lift access for dwellings above the third floor and; ensuring adequate levels of visual and acoustic privacy. These considerations are reflected in the housing design standards contained within the draft Housing SPG.

7.27. Section 8D on typologies notes that in general it is easier to design family (3-bed plus) units that comply with Lifetime Homes standards and the full range of other design and space standards in the form of single level apartments rather than multi-level houses, and in some circumstances this might act as a disincentive to providing family housing in the form of houses and maisonettes.

7.28. Providing sufficient high quality play space for children has been an important London Plan policy objective for a number of years and provision of the amount and type of space called for in the 'Providing for children and young people's play and informal recreation' SPG can lead to and help justify taller buildings than would otherwise be proposed.

7 Cross-cutting issues

D Family sized housing at higher densities / in town centres and growth areas

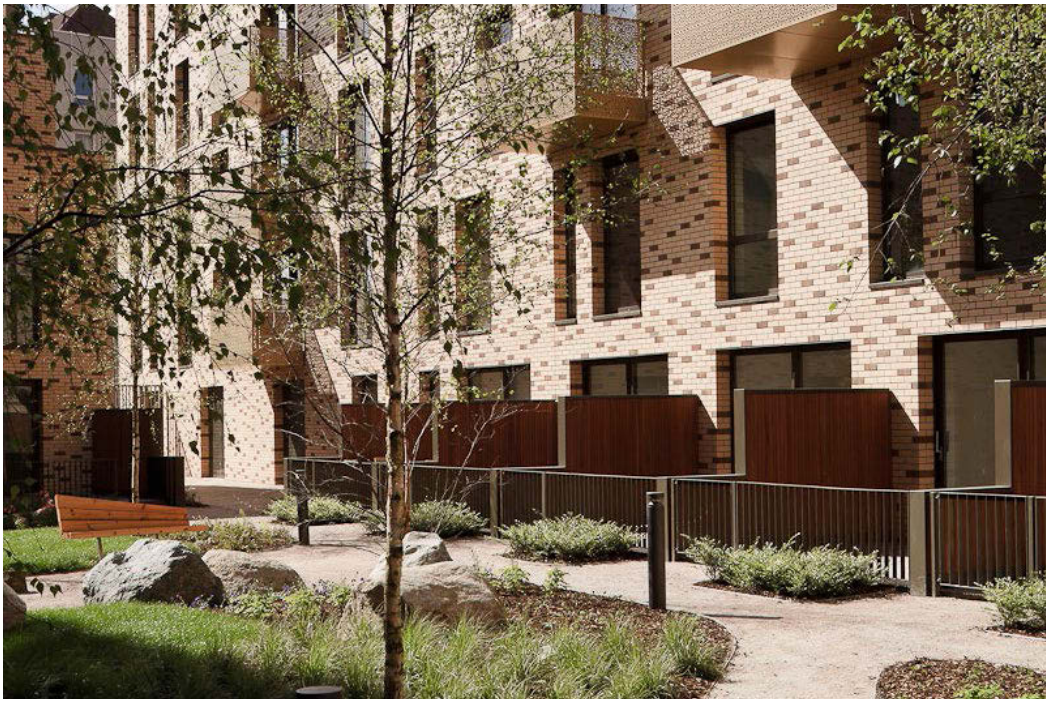
Existing policy and guidance

7.29 See dection 7C above.

Areas of housing growth

7.30 As outlined in the review of borough policy in Section 2 of this report, in accordance with London Plan Policies 2.13 (Opportunity Areas and Intensification Areas) and 2.15 (Town Centres), boroughs tend to direct new housing growth towards town centres and identified growth areas (including Opportunity Areas and Areas of Intensification). A number explicitly refer to this helping to relieve pressure on what are often seen as more sensitive suburban locations. However, many boroughs also identify the need for additional family-sized homes, particularly affordable ones, which the London Plan and most boroughs define as being 3-bedroom plus. This sets up an apparent tension between policy objectives.

7.31. The London Housing Federation's report 'Capital Gains: making high density housing work in London'[17] considers housing managed by social landlords and concludes that families can live in high density schemes, although serious consideration needs to be given to housing families with children above ground level. It recommends that families ideally have their own access or front door, play space is provided and that homes have sufficient internal space and storage space. It goes on to suggest that 250 units per hectare is probably the maximum acceptable housing density for family-only housing. Given this and experience working with public and private clients, family-sized homes are considered suitable in principle in town centres and growth areas as part of mixed-use schemes, (including those with an Urban or Central setting) providing that open space, play space, car parking, social infrastructure and other relevant factors are satisfactorily addressed. These include limiting the number of households served by one core and the careful integration of car and cycle parking at acceptable levels, taking account of demand, and refuse storage. BSE 19 (St Andrews, Bromley-by-Bow) is considered an example of a development where family housing has been successfully provided at high densities.



Block in St Andrews, Bromley by Bow (BSE 19) designed by Maccreanor Lavington. Family maisonettes on the ground and first floors maximise private amenity space and front doors at ground level.

Factors that are likely to deliver attractive family housing in town centres

7.32 The following factors are considered particularly important if growth areas and town centres are to provide good places for families to live and compete with more established areas of family housing, but they are also principles that should be followed for family housing in any other area:

- Sufficient internal space and internal storage space;
- The provision of a safe, reasonable sized private outdoor amenity space with a good direct relationship with the dwelling;
- Good amenity space and play space on-site and/ or nearby and safe walking routes to and from such space;
- Safe and convenient car parking (discussed further above);
- Sufficient primary school places and child care facilities within reasonable walking distance of (the average distance to a primary school is 2.4km (1.5miles[18]) and safe routes to get to them;
- Secondary school places can generally be provided over a wider catchment area. However, access to 'good' schools of all kinds is a major factor for those families that have the greatest choice in where to live (home owners);
- A front door at ground level or direct access to the circulation core and a short distance to the final exit of the building is an important feature;
- The perception of a safe neighbourhood and 'good' community; and
- Good general local amenities and image.

7.33. A number of these factors are explicitly addressed in the draft Housing SPG, including establishing baseline minimum GIAs and areas for dedicated internal storage space.

Family housing in suburban growth areas

7.34 A key issue relating to family housing at relatively high densities is existing character and context. Suburban and some urban character settings with relatively low building heights (two to three storeys) are more sensitive to changes in scale and massing. They also often exhibit other strong character traits of semi-detached and detached houses, such as relatively large plots/garden areas and generous separation distances between existing homes. Intensification in such areas can challenge existing character and context.

7.35. Many suburban locations include relatively small 'local' or 'neighbourhood' centres that can provide the focus of intensification in a similar way as International, Metropolitan, Major and District centres do in central and urban settings. These situations raise similar issues to those discussed above, although the character of these centres and their immediate hinterlands are often lower in scale and more sensitive to changes in building height

7.36. Another common example of intensification in suburban character settings is the redevelopment of large houses sitting in large plots with a building containing a number of flats. Here, issues often revolve around character and the ability of the new building to include some family housing on the ground floor.

Building mixed neighbourhoods over time

7.37 The sales of new family-sized homes in such areas will have to compete with established areas of family housing (particularly in Outer London suburban locations). The Croydon Housing Typologies study into the capacity of Croydon Metropolitan Centre to accommodate family-sized housing[19] highlights the challenges associated with creating mixed neighbourhoods in town centres. Based on the characteristics of new markets established in Central London, Docklands and European and North American cities, the establishment of a new housing market and new town centre family housing market can be seen as taking place in three stages:

- Stage 1- appealing to younger single people and couples (pioneers) attracted by cheaper rental properties – converted upper floors, office buildings etc. Once benefits of accessibility, access to employment opportunities etc. become apparent, demand, rents and values will increase;
- Stage 2 – higher values are likely to lead to higher specification conversions and first speculative

developments occur, aimed at the existing market of childless adults. Previously childless couples begin to start families. Some will move out to larger and traditional family stock at this stage, while others will stay; and
- Stage 3 – continued development sees a ramp up in the pace of delivery as well as diversification of housing being offered, with three and four-bedroom homes beginning to appear. Public sector agencies respond to demographic trends and provide additional social infrastructure.

7.38. The risk is that (given that the greatest housing need is often for large affordable family housing) insisting on affordable housing on-site during Stages 1 and 2, before a private market for family-sized housing has developed, could lead to virtually all family housing that is delivered in town centres in the short term being affordable. This is unlikely to foster the creation of a mixed and sustainable community, increasing demand for social infrastructure, and may deter the development of a private housing market (both family and non-family) which could exacerbate the issue further. The promotion of on-site affordable housing needs to be managed by:
- Prioritising Intermediate housing in the short term;
- Providing some on-site and some off-site family-sized Affordable Rent housing on 'donor sites' in CAZ / town centre fringe areas by way of payments in lieu; and
- Making clear that the balance will change and that all the achievable affordable housing will be expected to be delivered on-site in the in the longer-term.

Recommendations

- Amend paragraph 1.3.12 of the draft Housing SPG to make clear that family-sized homes are suitable in principle in town centres (including those with an Urban or Central setting) where open space, play space, car parking, social infrastructure and other relevant factors are satisfactorily addressed.
- In promoting family-sized housing in town centres and growth areas, boroughs should develop strategies in their Core Strategy, other Local Plans or Supplementary Planning Document that deliver the factors that are likely to make family housing in these areas attractive and recognise the need to grow a private housing market and build mixed neighbourhoods over time (as identified above).

7 Cross-cutting issues

E Housing for students and older people

Existing policy and guidance

7.39 London Plan Policy 3.8 (Housing Choice) seeks to ensure sufficient and high quality housing for older Londoners, students and those in need of supported housing (including requiring all homes to meet Lifetime Homes Standards and 10% of homes to be wheelchair accessible or 'easily adaptable' for wheelchair users). London Plan Policy 7.1 (Building London's neighbourhoods and communities) calls for the principles of 'Lifetime Neighbourhoods' to influence the way that streets, neighbourhoods, parks etc are designed (and managed).

7.40. The London Plan density matrix (Table 3.2), which is based on assumptions of number of habitable rooms per unit, is designed for dwelling houses (Use Class C3) and is not considered a useful tool in relation to student, sheltered and supported housing (hostels etc.) or live/work units.

7.41. The draft Housing SPG (2.1.14) makes clear that the housing standards set out in that document do not apply to specialist forms of housing. It goes on to note (3.1.50) that the clustering of higher education institutions in and around central London means that particular pressure has fallen on a relatively small number of boroughs to meet student needs. In addition it promotes a partnership approach to addressing the range of issues relating to London's academic sector (3.1.51). This includes the possibility of dispersing accommodation away from Central and Inner London. The OLC has suggested that this might make a particular contribution to mixed-use, town centre renewal. The draft Housing SPG (3.1.31) also suggests that there may be under provision of some types of specialist housing, at least in some parts of London.

Particular issues

7.42 Student housing can be in the form of halls of residents, cluster flats or self contained units. As with all forms of housing, it needs to benefit from inclusive design to ensure that it caters for a diverse student population.

7.43. Housing which caters for the needs of older people can include general needs housing aimed at specifically at downsizers and specialist housing (e.g. residential care homes, ExtraCare and sheltered housing).

Student housing on Pentoville road by AHMM. A continuous active plinth with communal uses and commercial ground floors allows the housing to step back from the busy main road.

7.44. The Mayor has commissioned research on the role of the planning system in helping to ensure that older Londoners have a genuine choice of homes that they can afford and which meet their requirements. Findings will be incorporated into the final Housing SPG. The concept of 'Lifetime Homes', in tandem with its counterpart 'Lifetime Neighbourhoods' and ensuring that at least 10% of new homes are wheelchair accessible or 'easily adaptable', underpins the London Plan's objective of making London's housing stock more suitable for all. However, demographic change means that, despite this emphasis, there is likely to be an increasing need for specialist housing). The report of the Housing our Ageing Population Panel for Innovation (HAPPI)[20] sets out a number of recommendations on the design of housing for older people and for future planning policy.

7.45. Whilst the Mayor's housing standards do not relate to specialist housing, a number of boroughs have guidance/standards for housing for students and older people and there will be some advantages in having London-wide advice on this, together with issues relating to the viability and deliverability of these forms of housing.

7.46. In terms of optimising density, subject to the requirements of borough guidance, student housing and specialist accommodation for older people:

- can make a positive contribution to town centre and mixed-use development, helping to bring activity throughout the day and disposable income to support local shops and services;
- offer flexibility in the amount and type of provision of amenity space that is provided;
- raise particular issues in terms of wheelchair accessible accommodation (particularly for older people's accommodation, but a percentage of student housing will also need to be wheelchair accessible);
- may need to include communal rooms and guest and/or staff bedrooms (adding to land requirements and build costs); and
- generally require less car parking, freeing up available external space for other purposes.

7.47. In addition, student housing can provide some flexibility in terms of outlook and orientation, with no requirement for dual aspect homes and the more transient nature of occupation making these issues less important than for permanent housing.

7.48. Given the above, both forms of housing can be a useful ingredient of larger sites and on sites in or on the edge of town centres. Such housing would help make use of open spaces and other infrastructure at different times of the day when it may otherwise be under used and student housing can help make the best use of areas that may be less suitable for other types of housing.

Recommendations

- Amend the draft Housing SPG to take account of findings of research into the housing needs of older people and ensure that the proposed London Plan Shaping Neighbourhoods SPG takes account of the findings and recommendations of the HAPPI report as part of promoting 'Lifetime neighbourhoods'.
- The Mayor of London should consider preparing London-wide guidance on the design and management, viability and deliverability of specialist housing for students and older people.

7 Cross-cutting issues

F Social infrastructure and open space

Existing policy and guidance

7.49 London Plan Policy 3.16 (protection and enhancement of social infrastructure) outlines the key policy requirements to protect existing provision and secure necessary additional provision to facilitate expected growth. Policies 3.2 and 3.17 to 3.19 address particular issues in relation to health and social care facilities, education facilities and sports facilities respectively.

7.50. London Plan Policy 2.18 (Green infrastructure: the network of open and green spaces) also makes clear that, amongst other things, developments should incorporate appropriate elements of green infrastructure that are integrated into the wider network. Policy 3.6 (Children and young people's play and informal recreation facilities) calls for provision to be made based on the expected child population and guidance is set out in the draft Shaping neighbourhoods: Children and young people's play and informal recreation SPG (February 2012).

7.51. Paragraph 3.28 of the London Plan makes clear that social infrastructure, open space and play space are particularly important factors to take account of in realising the optimum development of sites. The draft Housing SPG (1.3.37) makes clear that planned and existing social infrastructure should be considered when establishing appropriate density ranges. It goes on to state that where this cannot be provided off-site it should be provided on site and that this may result in lower density. The draft SPG (section 6.1) refers to the British Property Federation's guide to tackling the key challenges associated with infrastructure in major projects and the Homes and Community Agency's Social Infrastructure Matrix[21] to help assess need, management, ownership and ongoing funding. It is understood that the detailed guidance on social infrastructure that is set out in the Housing SPG EiP Draft (August 2010) is to be carried forward in the proposed Shaping neighbourhoods SPG.

Particular issues

7.52 The need to ensure that there is adequate social infrastructure which is reasonably accessible to people living in new homes has been a long standing objective of density policy in London. This is in addition to the proximity of town centres and the broader range of uses and services they offer. The adequacy of social infrastructure is identified in Table 4 as a common issue in relation to optimising residential density on all sites. While social infrastructure is not the primary driver for establishing appropriate densities, the need for such provision must be addressed on- or off-site and it should be recognised that these needs are a consequence of the dwelling size mix which influences the composition of new communities (noting that there is some evidence to suggest that the child yield associated with private rented housing is increasing). Further guidance on issues relating to play space are to be set out in the updated Shaping Neighbourhoods: Children and Young People's Play and Informal Recreation SPG (2012).

7.53. As boroughs adopt their Charging Schedules in the run up to April 2014, Community Infrastructure Levy (CIL) will be the main source of securing funding from proposed new development to help satisfy need for additional infrastructure.[22] However, planning obligations can still be used to secure specific infrastructure projects associated with particular development, including on-site provision.

7.54. CIL contributions to help fund off-site provision will have an effect on financial viability of all residential proposals (discussed below). In areas where land is scarce and / or expensive or the site is remote from existing centres, it may be necessary to incorporate social infrastructure provision on-site. This is most likely to be on medium and large sites in Urban and Central settings and large brownfield sites such as London Riverside. This most commonly includes health facilities (for example a GP surgery or health centre) and children's nurseries, but can include churches and other faith facilities, leisure and community facilities and primary schools.

7.55. It is common for health facilities and children's nurseries to occupy ground floor accommodation in flatted developments. These are often welcomed by developers as opportunities to secure some rental income and by developers and boroughs as ways of meeting need, as providing an active use for part of a site that may not be suitable for housing (e.g. on a busy road frontage) and as adding to vitality and character. The re-provision of churches, with new housing on part of a site helping to fund a new smaller facility is not uncommon and there are a number of examples of new housing helping to provide the on-site provision of new leisure and community facilities, as with the Loampit Vale development in Lewisham referred to above and in Illustration 9 (Central PTAL 4-6). For large sites, primary schools may be needed and there are examples of where these have been incorporated as part of mixed use buildings, with affordable or student housing above.

7.56. On-site provision of social infrastructure will have an effect on density by taking up space and contributing to the scale and mass of buildings and by its associated additional servicing and parking requirements. Design and specification issues that need to be resolved include:

- Integration of access, servicing and parking requirements;
- Integration of secure outdoor space and ensuring the safety and well-being of children (children nurseries and schools); and
- Managing noise outbreak to homes directly above and around (e.g. churches).

7.57. To help boroughs and infrastructure providers plan their service provision, it would be helpful if planning applications for large phased sites that are expected to be built out over a number of years includes a cumulative density assessment. This would show how proposed density would change over time by outlining the proposed density for Phase 1, proposed density for Phases 1 and 2, proposed density for Phases 1, 2 and 3 etc. This is discussed in more detail in Section 9E.

7.58. As discussed in more detail in Section 7G ('Housing design standards') the draft Housing SPG introduces a number of housing standards. Those standards that relate to amenity space, together with other policy requirements for play space, open space and the protection of trees, will have an effect on density as they take up land and space that might otherwise be used for housing, and as they also influence site planning/layout. This in turn will have an effect on financial viability (opportunity costs, additional build costs and additional on-going management costs), although it should be noted that this is not all negative, as open space and an attractive environment should have a positive effect on values.

7.59. The impact of retaining and incorporating trees of amenity and nature conservation value (including those covered by Tree Preservation Orders) is considered in Illustration 3 (Urban PTAL 2-3), but is particularly relevant in Suburban locations and can be an important early consideration for site planning on larger sites. It is important to ensure that open space and play space needs are considered from the outset and not retrofitted as an after-thought.

7.60. The requirement in the draft Shaping Neighbourhoods: Children and young people's play and informal recreation SPG to provide play space in addition to private amenity space could discourage the provision of houses and gardens; given that private gardens are often larger and more expensive to provide than balconies and terraces and do not satisfy the requirement for play space – which needs to be provided in addition. This would appear to be at odds with the encouragement to provide family housing at relatively low density (discussed in Section 7C – 'Family housing – General') and it is recommended that this is addressed before finalising this SPG.

7.61. It should also be noted that the pressure on space and density that play space requirements have mean that it is common for prospective developers to seek

to negotiate payments for the provision/upgrading of off-site provision of play space, particularly for space for older children.

7.62. However, there are also many recent good examples of the imaginative integration of amenity and play space into high density housing and mixed-use development, such as BSE 17 (Peabody Avenue). Design issues that need to be resolved include:

- ensuring that all publicly accessible and communal open spaces benefit from a degree of overlooking and natural surveillance;
- following relevant guidance on relationship with retained trees and their root systems;
- making sure that communal areas, particularly above ground, are accessible to all (including wheelchair users);
- incorporating planting, landscape and play features that create attractive, safe and inclusive open spaces (particularly on spaces that are above ground);
- safeguarding the privacy and amenity of neighbouring homes by good site planning, careful layout and the judicious use of planting and screening;
- safeguarding the privacy of homes that abut communal courtyards or terraces by introducing a private threshold space between dwellings and the adjacent open space;
- considering the sharing of space, including new school play areas; and
- thinking about management responsibilities and costs and insurance liabilities (particularly for play features) early on in the design process.

7.63. It is important that the implementation of the London Plan density policy does not penalise developers for providing publicly accessible open space and that the definition of net residential site area used to calculate density in 1.3.9 of the draft Housing SPG is amended to include such space. This is discussed in more detail in Section 9C.

Accordia in Cambridge (BSE 3). The masterplan was a careful response to the existing mature landscape.

Langerak in the Netherlands by Maccreanor Lavington. Formal play space is integrated into the development whilst hedges create effective visual barriers to dwellings.

7 Cross-cutting issues

G Housing design standards

Existing policy and guidance

7.64 London Plan Policy 7.1 (Building London's Neighbourhoods and Communities) calls for development to have a good relationship with surrounding land and improve people's access to social and community infrastructure, enable people to live healthy, active lives, maximise the opportunity for community diversity, inclusion and cohesion; and contribute to people's sense of place, safety and security. It goes on to make clear that places should be designed to meet the needs of the community at all stages of people's lives, and should meet the principles of lifetime neighbourhoods. Finally, it calls for development to help reinforce or enhance the character, legibility, permeability and accessibility of the neighbourhood. London Plan Policy 7.4 (Local Character) makes clear that development should have regard to the form, function, and structure of an area, place or street and the scale, mass and orientation of surrounding buildings.

7.65. London Plan Policy 3.5 (Quality and design of housing developments) sets out minimum space standards and the draft Housing SPG incorporates detailed standards that are included in the Mayor's Interim Housing Design Guide.

7.66. The draft Housing SPG sets out a more flexible / design-led response to safeguarding privacy, rather than prescribing particular standards (for example, the careful placement of windows serving habitable rooms can allow for separation distances to be reduced).

7.67. London Plan Policy 6.9 (Cycling) requires proposals to provide secure, integrated and accessible cycle parking and the draft Housing SPG calls for the provision of 1 space per 1-2 bedroom dwelling and 2 spaces per 3+ bedroom dwelling.

7.68. London Plan Policy 5.17 (Waste Capacity) requires the provision of suitable waste and recycling storage facilities and the draft Housing SPG provides guidance (drawing on Code of Sustainable Homes Technical Guidance).

7.69. London Plan Policy 7.3 (Designing out Crime) requires proposals to take account of the principles of Safer Places and Secured by Design and the draft Housing SPG (2.2.140) calls for new housing to incorporate seven relevant attributes of sustainable communities.

Particular issues

FLOORSPACE AND AMENITY SPACE STANDARDS

7.70 Section 2 of the draft Housing SPG incorporates standards that are set out in the Mayor's Interim Housing Design Guide (2010) in the form of 'baseline' and 'good practice' standards. 'Baseline' standards set the baseline that all new homes across all tenures should meet. Proposals that depart significantly from the baseline standards (in terms of failure to meet with a number of the standards, or the extent of failure to meet particular ones) are unlikely to be acceptable. Departure from individual 'good practice' standards may not justify refusal of planning permission. However, failure to meet a number of good practice standards will lead to a more thorough consideration of proposals. The majority of these standards are not new; but draw together existing London Plan policy requirements, including the Lifetime Homes Standards, and devolving from other relevant guidance minimum space standards. New standards were introduced in relation to the size of homes, shared circulation areas, single and dual aspect, ceiling heights, and minimum areas of private open space. The space standards have development plan status, being included in London Plan Policy 3.5.

7.71. An independent 'Cost and Delivery Impact Assessment' (GVA Grimley for the GLA and HCA, 2010) concluded that the standards should not have a significant impact on build costs or the number of units achievable on a site, with the exception of small schemes, for example, of less than 10 units. The draft Housing SPG introduces some flexibility in this respect. Other standards that were assessed by the report and were considered likely to affect the residential capacity of a small proportion of sites were the standards for dual

aspect, floor to ceiling heights and private open space. The possible effects of the introduction of new standards for private external space are discussed in Section 7A.6 ('Social infrastructure and open space'),

7.72. It should be noted that the London HCA (now part of the GLA) London Design Standards Design Proforma (December 2011) requires compliance with the majority of the Design Guide's 'good practice guidelines'; including minimum bedroom width and sizes. It is difficult to achieve these individual room standards within the minimum overall floorspace standards for some house types and it has been suggested that the overall size of affordable homes that receive grant may need to be between 5-10% larger than the minimum overall floorspace standards. This raises the prospect of at least some new affordable homes being larger than new private homes (which are less likely to be larger than the minimum standards), with possible issues in terms of vertically stacking affordable/private homes. It could also have an effect on density, particularly where scale and massing is a constraint to what can be achieved.

7.73. Given the concerns outlined above, it is recommended that the impact of the minimum room and overall dwelling floorspace standards have on density is monitored as part of assessing the overall impact of introducing the Mayor's housing design standards.

7.74. A forthcoming report for the GLA by HATC on the London Housing Standards[23] is expected to bring to light the importance of managing dwelling mix in implementing the new internal space standards, particularly in terms of bed spaces and occupancy. The UK housing market tends to emphasise the number of bedrooms rather than the size or intended occupancy of homes and a recommendation of the HATC report is that the Mayor should work with boroughs, developers, agents and other professionals to improve customers access to transparent, consistent information showing the size of the proposed dwellings in square metres and their intended occupancy in planning terms.

MANAGING PRIVACY

7.75 The importance attached to visual privacy is discussed in Section 5 of the Mayor's London Housing Design Guide (Interim Edition). This makes clear that in the past, planning guidance for privacy has been concerned with achieving visual separation between dwellings by setting a minimum distance of 18-21m between facing homes. Indeed, a number of boroughs continue to apply such standards. The Guide goes on to acknowledge these as useful yardsticks, but warns that adhering to them rigidly can limit the variety of urban spaces and housing types and can sometimes unnecessarily restrict density. References to these standards are currently missing in the draft Housing SPG and it is recommended that references be included; the SPG should also take the opportunity to clarify that such standards are between habitable room and habitable room as opposed to between balconies/terraces or between habitable rooms and balconies/terraces).

7.76. Having said this, requirements for the provision of private amenity space (including minimum depths for balconies) raises challenges in terms of safeguarding privacy – both of the amenity spaces themselves and nearby habitable rooms. Design solutions include the use of in-set balconies, the careful location of protruding private balconies and terrace areas so that they do not adjoin rooms in neighbouring flats, the careful planning of corner locations (including rooms in the same flat being either side of the corner), avoiding habitable rooms facing each other, the use of high level windows (where appropriate) and the judicial use of screens and landscaping.

7.77. It should also be noted that research[24] has found that sound transfer between adjoining properties, with neighbours being subjected to noise from next door and feeling at risk of being overheard, is a major concern to some residents. The answer to such concerns would appear to be a combination of effectively insulated walls and the design and stacking of properties; using less sound sensitive spaces such as hallways and kitchens as barriers and ensuring that main living areas

such as bedrooms and lounges do not abut directly on to the party walls or where they do that they adjoin rooms of a similar use.

BIKES AND BINS

7.78 The policy objectives of encouraging both cycling and recycling can require the provision of significant storage space at ground floor level for bikes and bins. Cycle storage areas need to be covered, secure, integrated and accessible - to encourage use. Refuse storage, including green waste and recyclables, needs to be accessible to residents, sufficiently ventilated and located within reasonable distance from vehicle access points for collection by refuse trucks. In flatted schemes in particular, these facilities are space hungry at ground floor and are difficult to integrate in ways that ensure the creation of attractive, legible and safe entrance areas.

7.79. There are some advantages to locating facilities in undercroft car parking or basement areas, where these are provided. However, location of refuse storage in basement areas, which requires mechanical ventilation and the collecting borough having the right lifting equipment, is more costly and will not be viable in many schemes. The location of bike storage in basement car parking areas, where provided, often makes it less convenient and attractive to use and is not encouraged.

7.80. The requirements of bike and bin storage often have a disproportionate impact on small schemes, where there is limited ground floor frontage area available and undercroft or basement options are often physically not possible and/or unviable. Such facilities also have a major impact on high-density residential towers, which have a small footprint relative to the number of homes provided. Waste management in larger high-density schemes often requires the help of a caretaker service, with this adding to on-going service charges.

ACCESS AND SECURITY

7.81 All new housing needs to be designed to be safe and secure and there is a lot of detailed guidance on this subject, including Safer Places and Secured by Design. The most relevant security issue related to higher density housing is access arrangements and the baseline guidance on shared circulation included in the draft Housing SPG (3.2.2) requires that:

"An access core serving 4 or more dwellings should provide an access control system with entry phones in all dwellings linked to a main front door with electronic lock release. Unless a 24 hour concierge is provided, additional security measures including audio-visual verification to the access control system should be provided where any of the following apply:
i. more than 25 dwellings are served by one core, or
ii. the potential occupancy of the dwellings served by one core exceeds 100 bed spaces, or
iii. more than 8 dwellings are provided per floor."

7.82. The above should help ensure that people living in high density flatted homes are safe and secure and also feel safe and secure.

Recommendations

- The Mayor should consider monitoring the impact that introducing baseline and good practice guidelines has on residential densities that are achieved in various settings as part of assessing the overall impact of introducing the Mayor's housing design standards.
- Amend paragraph 2.3.3.1 of the draft Housing SPG as follows: "Design and access statements should demonstrate how the design as a whole uses a variety of measures to provide adequate visual and acoustic privacy for every home in a development. Designers should consider the position and aspect of habitable rooms, gardens and balconies, and avoid windows facing each other where privacy distances are tight. **In the past, planning guidance for privacy has been concerned with achieving visual separation between dwellings by setting a minimum distance of 18-21m between facing homes (between habitable room and habitable room as opposed to between balconies or terraces or between habitable rooms and balconies/terraces). These are still useful yardsticks for visual privacy, but adhering rigidly to these measures can limit the variety of urban spaces and housing types in the city, and can sometimes unnecessarily restrict density.** It will often be beneficial to provide a set-back or buffer where habitable rooms directly face a public thoroughfare, street, lane or access deck. Privacy is also an important consideration in the design of private open space.

7 Cross-cutting issues

H Environmental sustainability

Existing policy and guidance

7.83 Chapter Five of the London Plan sets out a number of detailed policies that, amongst other things, seek to respond to climate change, minimse the use of energy and water and the production of waste and promote sustainable design and construction. These policies are supported by the Sustainable Design and Construction and other SPGs.

Particular issues

7.84 The policy objective of 'optimising' residential density and creating a compact city by directing denser development towards town centres and areas with better access to public transport helps make the best use of scarce urban land and discourages car use. Higher densities (and mixed-use) also help make the incorporation of on-site Combined Heat and Power (CHP) and other 'clean' energy sources and district heating networks more viable. Other key relevant environmental sustainability issues related to density include the need to:

- consider street and building orientation on larger sites to consider optimising solar gain (not too hot, not too cold);
- maximise dual-aspect homes and minimising north and south facing single-aspect homes to allow cross-ventilation, maximise natural lighting and reduce the need for mechanical ventilation;
- facilitate the meeting of Code for Sustainable Homes (CfSH) requirements, noting that it becomes harder to meet CfSH Level 5 and above at higher densities;
- encourage the use of bicycles and recycling participation rates by addressing the issues outlined above; and
- carefully consider the relationship between buildings to avoid overshadowing of lower buildings by their taller neighbours so that the provision of 'living roofs' and photovoltaic panels can be maximised.

7 Cross-cutting issues

I Tall buildings

Existing policy and guidance

7.85 London Plan Policy 7.7 (Location and design of tall buildings) includes the following set of criteria for decision making:
(a) generally be limited to sites in the Central Activity Zone, opportunity areas, areas of intensification or town centres that have good access to public transport;
(b) only be considered in areas whose character would not be affected adversely by the scale, mass or bulk of a tall or large building;
(c) relate well to the form, proportion, composition, scale and character of surrounding buildings, urban grain and public realm (including landscape features), particularly at street level;
(d) individually or as a group, improve the legibility of an area, by emphasizing a point of civic or visual significance where appropriate, and enhance the skyline and image of London;
(e) incorporate the highest standards of architecture and materials, including sustainable design and construction practices;
(f) have ground floor activities that provide a positive relationship to the surrounding streets;
(g) contribute to improving the permeability of the site and wider area, where possible;
(h) incorporate publicly accessible areas on the upper floors, where appropriate;
(i) make a significant contribution to local regeneration.

7.86 This policy is complemented by Policies 7.11 (London view management framework) and 7.12 (Implementing the London view management framework) and the associated London View Management Framework SPG (July 2011).

Particular issues

7.87 The London Plan (7.25) defines tall buildings as those that are substantially taller than their surroundings, cause a significant change to the skyline or are larger than the threshold sizes set for the referral of planning applications to the Mayor.[25] This acknowledges that the perception of what constitutes a tall building varies somewhat according to the scale and nature of the surrounding context. For example, in a suburban area with a relatively constant building height of two storeys, a six-storey building may appear substantially taller than its surroundings and be perceived as a tall building. The form of a building (tower, slab or deeper block) may also affect the perceived height.

7.88. The London Plan goes on to make clear that whilst high density does not need to imply high rise, tall and large buildings can form part of a strategic approach to meeting the regeneration and economic development goals laid out in the London Plan, particularly in order to make optimal use of the capacity of sites with high levels of public transport accessibility.

7.89. As made clear in London Plan Policy 7.7, tall buildings are most appropriate in the CAZ, opportunity areas, areas of intensification and town centres that have good access to public transport. Boroughs' LDFs typically include policies that direct tall buildings to these locations.

7.90. The Interim London Housing Design Guide (Section 2.1, 'Appropriate Density') touches on some of the qualitative factors around building height and typology in relation to density, and advises that the relationship between density and housing type is carefully considered at the early stages of design development.

7.91. In principle, different housing typologies have different limitations in terms of density. When a housing type is developed to the upper limit of its possible density range, the result can be a loss of privacy, light and amenity and a greater proportion of single aspect dwellings. This is discussed further in Section 8D 'Lessons on housing Typologies'.

7.92. Typical densities achieved with a series of common typologies are shown in Section 8D. These diagrams show in approximate terms, that:
- A three storey block of terraced houses with a 5m frontage and 18m separation distances can achieve up to around 64 u/ha (where none of the houses are converted to flats)
- A four storey block of stacked family maisonettes can achieve up to 67 u/ha
- A three storey block of walk-up apartments can achieve up to around 115 u/ha
- A four and five storey lift access apartment building with a low proportion of single aspect dwellings can achieve up to around 200 u/ha

– A five storey corridor access apartment building with a high proportion of single aspect dwellings can achieve up to around 270 u/ha

7.93. This analysis supports the statement that higher densities do not have to mean high-rise within a density range of 35-200 dwellings per hectare (or 35-270 dwellings per hectare where a high proportion of single aspect dwellings is introduced). The range 35-260 u/ha encompasses most of the settings categories with the exception of Central high PTAL (where the range is 140-405 u/ha or 650-1100 hr/ha).

7.94. Comparing these theoretical densities with the built example projects in Suburban and Urban settings, it is evident that:

– where site constraints such as access roads or existing trees or landscape features restrict the buildable area, for example BSE 3 (Accordia), the achievable densities are lower than the theoretical densities listed above, for similar housing types;
– in projects where separation distances are reduced and buildings are brought closer together, including the backland site of BSE 15 (Whatcotts Yard) and the low-rise high density council housing BSE 10 (Setchell Road) (97 u/ha), the density achieved with a scheme of predominantly two- and three-storey terraced housing can be increased to around 100 u/ha;
– combining terraced housing and apartments into small, compact blocks, as in BSE 11 (Claredale Street) and BSE 12 (Consort Road), can bring efficiencies by reducing the required separation distances, thereby enabling a moderate increase in density.

7.95. The density range for the Central, high PTAL setting is wider than other categories. The built scheme examples range in height from six storeys at the lower end of the density range – BSE 17 (Peabody Avenue) (157 u/ha) and BSE 18 (Colville Square) (200 u/ha) - up to seven and 30 storeys in BSE 19 (St Andrews, Bromley-by-Bow) and 10 storeys in BSE 22 (Bear Lane).

7.96. BSE 19 (St Andrews) achieves the highest densities of around 320u/ha (990hr/ha) with a mixed development of mid-rise and taller apartment blocks. At around 460 u/ha (1,228hr/ha), the numerical density of BSE 22 (Bear Lane) may be marginally exaggerated by site conditions (the almost 100% plot coverage) however, the scheme may nevertheless offer a demonstration of the effect on qualitative aspects of increasing density to the maximum level while restricting building heights:

– Dwellings are single aspect apart from at block ends.
– The number of dwellings per core exceeds 8 per floor and the total number per core is very high.
– Privacy is compromised in dwellings around the internal courtyard.
– Daylight and sunlight are compromised to lower level dwellings within the courtyard.

7.97. At the highest densities, tall buildings will generally be able to offer better levels of privacy, amenity and natural light, and a high proportion of dual aspect dwellings.

Recommendations

– 'High density does not necessarily need to mean high rise' is qualified by a discussion of the realistic density limits of low-rise (2-5 storey) housing typologies and a recognition that at the top end of the range, particular consideration may need to be given to balancing priorities for built form and massing with ensuring adequate provision of privacy, natural light and amenity and limiting the number of single aspect dwellings.

7 Cross-cutting issues

J Financial viability

Existing policy and guidance

7.98 The National Planning Policy Framework (NPPF) (March 2012) proposes that one of 12 core planning principles is that plans should take into account market signals such as land prices and housing affordability (para. 17). It goes on to make clear that "Pursuing sustainable development requires careful attention to viability and costs in plan-making and decision-taking". Furthermore, "to ensure viability, the costs of any requirements likely to be applied to development, such as requirements for affordable housing, standards, infrastructure contributions or other requirements should, when taking account of the normal cost of development and mitigation, provide competitive returns to a willing land owner and willing developer to enable the development to be deliverable" (para.173).

7.99. The only London Plan policies that make explicit reference to financial viability are those that relate to affordable housing (Policies 3.11 and 3.12), planning obligations (Policy 8.2) and Community Infrastructure Levy (Policy 8.3).

Particular issues

7.100 The amount and type of development on a site (i.e. its density) is a key factor that affects a scheme's financial viability and, therefore, its deliverability. The London Plan density matrix is based on both units and habitable rooms per hectare. However, habitable rooms per hectare represent a more accurate reflection of the amount of residential floorspace being proposed for a site and is more relevant when considering viability issues (including the provision of affordable housing). Having said this, as paragraph 1.3.15 of the draft Housing SPG makes clear, the provision of particularly large dwellings in parts of central London can undermine the implementation of affordable housing policy and in such cases it may be more appropriate to estimate affordable housing provision on the basis of proposed floorspace.

7.101. Whilst the amount of development is a key factor in terms of viability, it is not always the case that maximising development potential leads to maximising financial returns. There is an optimum combination of variables for any particular scheme which maximises residential value. The variables are discussed in more detail below.

7.102. As discussed above, tenure and dwelling mix play a large role in determining the size of new homes and the number of people that are likely to live in them, including the number of children. This in turn will affect the amount of CIL that is payable (noting that affordable housing is exempt) and the amount of on-site amenity space and play space that needs to be provided. It will also affect the need for any site-specific provision or financial contributions towards transport and other infrastructure. These factors may also have a bearing on proposed density, as there may be certain thresholds that trigger provision or financial contributions that in order to maximise financial returns a developer may wish not to exceed.

7.103. In addition, it can be relatively expensive to build taller buildings (as access and fire protection/ evacuation requirements increase) and such buildings can tie-up capital for longer by delaying the sale of flats until completion of the building as a whole. It is always more expensive to build basement car parking (as discussed under Section 7A.1 above) and it may not always be possible to recoup such additional costs from additional sales income. Furthermore, in some suburban locations, financial premiums attached to houses (as opposed to flats), generous sized gardens and generous car parking may encourage less dense development.

7.104. Land values are associated with demand. Generally, the highest residential prices and levels of market demand are in Central and West London, although values vary more locally – with public transport accessibility (a factor in the density matrix) being a key factor. In contrast, the largest areas of developable land are in East and South London, where the market has traditionally been weaker, where infrastructure is most limited and where enabling costs constrain financial viability.[26] Discussions with borough officers and site visits reinforce the finding that low value areas tend to attract less prestigious developers and design teams and that on the whole, the build quality of schemes in low value areas (detailing and the quality of external materials and landscaping) is lower than in higher value areas. It is also noted that on individual sites, the location of affordable housing may need to reflect the need to maximise sales values from private housing – which in turn can provide cross-subsidy to help fund the provision of affordable housing.

7.105. In previous years, public funding for affordable housing has underpinned the viability of many mixed-tenure schemes in more marginal locations. [27] There will always be sites that attract higher existing use values than alternatives, or that require exceptional costs to bring forward developments (such as contamination) and there is a continuing role for the Mayor and boroughs to encourage regeneration in low demand/ value areas. In April 2012, the Mayor became directly responsible for strategic housing, regeneration and economic development in the capital. The detail on the type, mix and design of new homes is set out in Sections 2.1 and 2.3 of the Mayor's revised London Housing Strategy.[28] This includes requirements for 36% of new Affordable Rent homes being 3-bed or larger (2.1C) and all homes funded meeting the Mayor's housing design standards.

7.106. As referred to above, whilst density, building form and typology are clearly important factors in determining the financial viability of a proposed development, there are many other variables that a prospective developer would need to take account of when appraising a scheme. The key variables are included in the GLA's Affordable Housing Development Control Toolkit[29] and discussed in the associated guidance notes. Taking account of the Toolkit, the key variables can be summarised as follows:

- Land costs – land values/purchase price, site clearance/demolition, remediation costs etc.;
- Build costs – which will reflect uses, building typology, building height, dwelling mix, floorspace (with wheelchair accessible and 'easily adaptable' homes being up to 25% bigger), amount and type of amenity/play space, amount and type of car and cycle parking (see discussion in Section 7A above), compliance with environmental standards (e.g. Code for Sustainable homes), party wall/rights of light, site access and landscaping etc.;
- Mitigation and policy compliance costs - linked with potential environmental impacts, social infrastructure provision, amount of affordable housing, phasing and dependencies etc (secured by planning conditions, obligations and CIL[30];
- Fees and surveys – including legal and other professional fees and surveys associated with land purchase/sale, stamp duty, pre-application discussions, public consultation, design and letting agents/marketing costs etc.;
- Financial costs – including phasing, peak borrowing, on-going management responsibilities/costs, contingency for risks/uncertainties etc.;
- Revenues/income – sales prices, rents/yields, grants/ affordable housing payments, cash flow (rate of sales/ letting space and voids) etc.; and
- Profit level – which will vary over time. For example, the Development Control Toolkit has a default value that assumes 17.5% profit, although in the current economic climate, some lenders are demanding higher profit levels of 20% plus before they are prepared to lend due to perceived higher levels of risk.

7.107. Different companies, who are in competition for developable land, will speculate on the different types and level of risk involved in each potential scheme and take differing approaches to these issues. They will also have different levels of land ownership, debt, access to finance etc which will inform the approach they take at any given time and on any given site.

7.108. The above underlines the importance of the boroughs and the Mayor taking account of the relationship between project viability and policy objectives, standards and design quality throughout the development management process. A key ingredient to optimising density is, therefore, the adoption of a constructive development management approach. Such an approach includes:

- engaging in pre-application discussions to help shape emerging proposals;
- understanding the financial drivers behind partners' positions and focusing on trying to find workable solutions;
- agreeing rules of engagement for working together over financial appraisal (including appropriate confidentiality around sharing of sensitive financial information, agreeing the use of the Toolkit or other acceptable financial appraisal model, the meeting of scrutiny costs incurred by the borough, sharing information and agreeing inputs/variables to be used in the appraisal); and
- setting targets for information sharing and decision-making.

7.109. The above approach could benefit from a formalised Planning Performance Agreement (PPA). In any event, as with any negotiating process, trade-offs may need to be made between policy objectives (including density) and the establishment of a financially viable scheme that is capable of being delivered.

7.110. Remote brownfield sites in areas of low demand pose particular challenges and a large number of schemes, some with the benefit of planning permission, have stalled given that in a period of continuing economic uncertainty, investors and developers will broadly favour higher value areas.[31] Developments in other locations have also stalled for a large number of reasons, including the availability and cost of finance for the developer, reduced public funding, mortgage availability and demand (particularly for first-time buyers), reductions in land values from when land was bought and servicing costs. Where development schemes have stalled for financial viability reasons, it may be appropriate for boroughs and the Mayor to review the degree of flexibility around the delivery of key planning components – including proposed density. The Homes and Community Agency's ATLAS team has suggested the following issues be addressed as part of a review[32]:

- Will the design and mix of land uses proposed deliver the expected outcomes / vision for the scheme and provide a resilient and adaptable framework to meet future demands and challenges?
- Are there abnormal development costs that could be addressed in a more cost-effective way, e.g. re-arrangement of uses and/or buildings to avoid ground conditions that are expensive to build on?
- Are commercial units included that could create value to cross-subsidise the costs of managing community facilities and the public realm?
- Is there flexibility over the phasing arrangements to reflect changing market demand if necessary? (this could include adjusting triggers for the delivery of certain uses or facilities)
- Are there opportunities to design and incorporate buildings and facilities that can be shared by different users to enable savings and economies of scale where possible? (e.g. the co-location of social infrastructure – schools and community spaces)
- Does the proposal include an effective and viable strategy for delivering and managing the public realm?
- Are there any appropriate temporary uses that can be put into a partially built scheme if there is no current market demand for proposed use. This could also be relevant for completed schemes – with 'meanwhile uses' of ground floor commercial units in mixed-use schemes helping to make places more vibrant and safer, which in turn could help sales rates and values of housing above.

7.111. In addition, S.106 agreements for larger phased schemes in London now commonly include an affordable housing review mechanism, whereby the amount and type of affordable housing is reviewed at identified times/phases in accordance with an assessment of financial viability at that time.

Recommendations

– Boroughs and the Mayor should take account of financial viability and the relationship between project viability and policy objectives, standards and design quality throughout the development management process.

8 Locations and typologies

Introduction

8.1. This section discusses some key locations and housing typologies, drawing on the Illustrations and Built Scheme Examples in Sections 4, 5 and 6 and making specific recommendations.

8 Locations and typologies

A Town centre and mixed use development

Existing policy and guidance

8.2 London Plan Policies 2.10 to 2.12 identify the Central Activity Zone (CAZ) as a focus of strategically and locally important development, including housing as part of mixed-use schemes, providing that it does not compromise identified strategic functions. Policy 2.15 (Town Centres) makes clear that outside the CAZ, town centres should be the main foci of development and intensification, including housing. Policy 4.3 (Mixed use development and offices) makes clear that within the CAZ and the north of the Isle of Dogs Opportunity Area, increases in office floorspace should provide for a mix of uses including housing, unless such a mix would demonstrably conflict with other policies.

8.3. The settings used in density matrix at Table 3.2 that supports Policy 3.4 (Optimising density) are based on town centres and distances from them. Sites within 800m of the boundaries of town centres have the highest indicative density ranges. They are particularly appropriate for high-density non-family housing, although family-sized housing is considered acceptable in principle (see Section 7D).

8.4. The draft Housing SPG (Part 7) sets out guidance for mixed use development, including in town centres, and the draft Land for Transport and Housing SPG (Section 11) includes guidance on industrial capacity and mixed-use development.

Particular issues

8.5 The CAZ and town centres provide the economic and social heart of London and a lot is expected of them (retail, leisure, entertainment, cultural, business and housing). They are (or should be) vibrant and exciting places and are often located along noisy main roads with relatively poor air quality. Housing needs to be integrated with other uses and is best located on upper floors, allowing ground and lower levels of a building to be used for other town centre activities and lifting uses into quieter / better quality air.

8.6. New housing can help ensure that the CAZ and town centres make good use of upper levels that may otherwise be under-utilised[33] and help ensure that places are active at all times of the day and

Neal Street in Covent Garden. Dwelling entrances are carefully integrated into shop front design to minimise their impact on the retail frontage.

week (adding to vitality and personal safety). It also introduces households with disposable income that can support local shops and businesses and thus helping with viability. They can also help fund through capital receipts / CIL / planning obligations social and other infrastructure, such as new leisure and community facilities. Finally, given limited residential car parking opportunities in town centres, new housing can assist in using and funding public car parking (as in the illustration and discussion for the Central PTAL 4-6 site in Section 6). Town centres can also be a suitable location for family, student and older people housing (see Section 7D), although housing in these locations brings with it the following challenges:

- Access and circulation for housing on upper floors and the need to avoid long corridors (particularly above larger retail units);
- Establishing clear 'fronts' and backs' and creating legible, safe and attractive separate entrances for housing, non-residential uses and car parking;
- The need to consider from the outset the ownership and management of different uses / parts of the building;
- The need to manage servicing arrangements and timing for deliveries and the night-time economy;
- The need to ensure that housing does not prejudice the future development of neighbouring sites for non-residential development by introducing sensitive receptors (daylight / sunlight, rights of light, noise etc.) adjacent to other sites (taking account of policy and any site specific allocations); and
- Demands for social infrastructure (schools, health, playspace, open space etc.) and the need to plan for and deliver this in relatively high value, sometimes already densely developed, locations.

Suburban District and Local Centres

8.7 These are traditional London high streets, with perpendicular residential terraced streets leading off. Opportunities and challenges include:

- hybrid urban blocks that consolidate apartments above retail and other non-residential uses on the high street and houses behind;
- servicing strategy is critical to success and interface with residential hinterland;
- depending on the depth of the shop units required, they could effectively incorporate an under croft parking garage for the proposed housing above;
- stair and lift cores could potentially be accessed from side streets to maximise retail frontage; and
- housing on upper floors provides overlooked high streets

Urban and Central CAZ, Metropolitan and Major Centres

8.8 These are large town centres which include large 'retail boxes' and other non-residential uses with housing above. Challenges and opportunities include:

- minimising the impact of stair and lift cores on the shopping frontage requires alternative solutions. Housing accessed from a high quality podium (an open platform above surrounding levels) allows shops and other non-residential uses to front the street at ground level and for housing to overlook the street at upper levels;
- the need for careful mediation of progression of spaces from the shopping street, to the podium and to the front door of people's homes;
- character of podium courtyard as well as the connection between the courtyard and the shopping street are critical;
- shopping and other non-residential uses needs to be carefully consolidated into the 'box', maximising qualitative street frontage and ensuring servicing does not have a negative effect;
- bin and bike strategies can be an issue and can require expensive larger lift;
- possible to include stacked family accommodation accessed from the podium with good quality amenity space;
- car parking can be an issue and can be solved by either underground garages or, if not financially viable, locating car parking above the retail space

8.9. Borough policies generally stress the importance of maintaining the retail character of identified core

or primary frontages as part of maintaining the vitality and viability of a town centre as a place to shop. Housing at ground level in these locations, other than residential entrances and lobbies, will not generally be appropriate. However, there are pressures on the fringes of town centres for housing to creep downstairs and occupy ground level space; in some cases because lack of demand for non-residential uses means that there are no financially viable alternatives. In circumstances where housing at ground level in town centres is deemed acceptable in principle, most likely in District (Urban setting) and Local (Suburban setting) locations, it will be important that design and management solutions result in acceptable levels of amenity for residents (privacy in particular) and a positive contribution to the character and appearance of the area (public realm in particular).

8.10. In mixed-use locations on the edge or outside of town centres, the inclusion of business or other employment generating floorspace will often be a policy requirement associated with the managed release of former industrial land (including Strategic Industrial Land (SIL)) and the objective of making attractive and vibrant new places (see Illustration 5 in Section 5). The Mayor of London's draft Land for Transport and Industry SPG[34] makes clear that good public transport accessibility is an essential pre-requisite for intensification and mixed use redevelopment of industrial land. It also stresses, amongst other things, that housing should not compromise strategic or locally important industrial land and that it must fulfill stringent design criteria for sustainable buildings, a complementary mix of activities and a safe, attractive environment for all uses including access to services, facilities, open space and children's play space.

Odhams Walk in Covent Garden. A continuous commercial plinth to busy shopping streets defines the exterior of the block whilst a calm residential courtyard defines the interior. Dwellings are accessed from this courtyard.

Recommendations

- The development of housing in town centre and mixed-use growth areas should be co-ordinated and managed by place specific policies and guidance in Core Strategies, other Local Plans, Supplementary Planning Documents and/or Opportunity Area Planning Frameworks.
- The design and management of housing in these locations should take account of the challenges identified above.

Existing policy and guidance

8.11 London Plan Policy 7.1 (Building London's Neighbourhoods and Communities) calls, amongst other things, for development to have a good relationship with surrounding land to help reinforce or enhance the character, legibility, permeability and accessibility of the neighbourhood. Policy 7.4 (Local Character) sets out clear messages as to how development should respond to and reinforce existing character.

Particular issues

8.12 New housing development in edge of town centre locations will be typically required to manage interfaces with existing commercial uses or lower density and lower rise residential development. A failure to manage these interfaces in a positive way may result in design approaches that result in a loss of density, such as leaving over-generous separation distances where this could otherwise be avoided. Optimising densities on these sites may also involve departing from surrounding building heights or separation distances. Surrounding suburban areas are often relatively even in character and built form, and this can make changes in scale and character more pronounced.

8.13. The types of interface found in edge of centre locations raise particular issues in relation to 'place shielding' (which can be defined as managing the interface between different places; where new buildings on the edge of a site can protect the surrounding area from larger scale buildings within the site or protect the buildings within the site from larger scale buildings or non-residential uses around its edge) and 'place shaping' (which can be defined as the use of wider planning, housing, economic development and management tools to create a successful place, or more specifically, as the management of uses and the shaping of massing, building height and the layout of routes and urban spaces at a neighbourhood scale).

8.14. The interest by prospective developers in housing in edge of centre locations will tend to vary over time, dependent on the relative strength of the office and residential markets. If office (B1) rents and yields improve, this may lead to greater interest in retaining office accommodation.

8.15. The illustrations and built examples in this report illustrate a variety of place-shielding strategies seeking to integrate new development with the surrounding context and manage conflict. The common approaches include:

- mirroring the scale and massing of the surrounding context around the edge of a development while altering building heights or character in the interior of the site;
- paying particular regard to the interface of new development with existing low-density family housing with gardens. Arranging new, lower density terraced housing with back gardens against existing gardens to soften the interface and maintain the security of back gardens (see Illustrations 4 and 6);
- establishing more generous separation distances between existing and new housing than between new housing within the development (see Illustrations 1 and 2);
- using low-rise typologies against the boundary that avoid any overlooking of existing houses and gardens (see Illustration 3);
- managing abrupt changes in height or density across a street rather than between directly adjacent plots (see Illustrations 4 and 8);
- exploiting site conditions that may allow a sloping site (see BSEs 1 and 5 - St Bernards, Walter's Way and Segal Close and Illustration 5); and
- using trees and planting to provide privacy screening, interrupting the view between adjacent dwellings (see BSE 3 and BSE 5 – Accordia, and Walter's Way and Segal Close).

8.16. The default approach to place-shielding is often to focus on achieving a smooth transition in height between new development and the immediately adjacent buildings. However, jumps in scale or building height are sometimes desirable and other design measures involving materials, character, typology or

landscape and planting treatments may be more successful, depending on the context.

8.17. Other place shielding strategies aiming to protect the amenity of new residential development by managing the interface with incompatible or noise-generating uses include:

- ensuring all dwellings exposed to higher noise levels are dual aspect and offer a quiet side;
- the use of enclosed circulation spaces to buffer noise;
- the inclusion of walls and other features that act as noise barriers; and
- locating non-residential uses on the ground floor.

8.18. 'Place shaping' is a broader concept of how a new development contributes positively to and alters an existing place on a neighbourhood scale. In edge of centre locations there may not be a dominant character and Boroughs should ensure that they pay sufficient attention to these areas when they prepare policy documents and set out place-specific policies and guidance for managing the interface between town centres and surrounding areas.

Recommendations

- Amend the draft Housing SPG (1.3.30) to define 'place shielding' and 'place shaping' (as set out above).
- When preparing Local Plans and Supplementary Planning Documents etc, boroughs should ensure that they pay sufficient attention to the edges of town centres and set out place-specific policies and guidance for managing the interface between town centres and surrounding areas.

Existing policy and guidance

8.19 The London Plan (paragraph 3.34) supports boroughs if they choose to adopt a development plan-led presumption against development on back gardens and this presumption has been taken into account in setting the Plan's housing targets. The draft Housing SPG (1.2.18 to 1.2.25) provides further guidance on development of private gardens.

8.20. Given the above, sites involving the development of back gardens were discounted when choosing sites for the illustrations. However, one of the illustrations for Suburban PTAL 0-1 is based on a backland site.

Particular issues

8.21 "Backland development" can be defined as development on land that lies wholly to the rear of an existing building or buildings (i.e. land locked), except for the land needed to create a vehicular access to a road. In London, the term usually applies to small scale housing development on either former garden land or garages or industrial uses within the centre of a residential block; although larger backland sites can relate to the redevelopment of existing housing (see Illustrations 1 and 2). In London, they are most prevalent in suburban and urban areas, although they do occur in central locations.

8.22. Where the development of a backland site is acceptable in principle, it raises the following particular issues:

- Achieving safe and convenient vehicular and pedestrian access (including access for fire and other emergency vehicles) along what can be a relatively narrow strip of land and enabling sufficient maneuverability and turning space;
- The need to respect existing character by taking account of typical plot sizes, building lines, heights, rooflines and architectural style;
- The need to safeguard/improve the security of existing neighbouring rear gardens – placing private garden space next to existing garden space is the best way of doing this;
- Avoiding overshadowing existing gardens – the careful planning of new buildings on the site and considerate height are ways to achieve this;
- Safeguarding the privacy of occupiers of neighbouring homes and gardens – retaining existing trees of value, additional landscaping and careful location of upper floor windows/balconies is needed; and
- Introducing new high quality public realm.

8.23. The size of the site impacts greatly on capacity. The major constraints on development are ensuring privacy and safeguarding daylight, sunlight and outlook, and the loss of site area to access roads, particularly where backland sites have only one point of access.

8.24. In circumstances where new residential development on a backland site replaces an existing residential or commercial building (as with BSE 13, Whatcott's Yard, and BSE 15, Highwood Court), and existing backland buildings have a closer proximity to surrounding residential buildings than would normally be permitted as part of new development, tighter than normal separation distances can be deemed to be acceptable and the development potential of such sites can be significantly greater than otherwise would be the case.

8.25. Where backland development is in a low-density suburban area, there may be a greater expectation to achieve generous separation distances. Borough policies and guidance on separation distances varies and outer London boroughs tend to impose greater constraints than Inner or Central boroughs.

8.26. The need to use land for access roads means that a smaller proportion of the site area is available for development. If other constraints exist over form and massing, this can prevent a site being developed to its full theoretical potential.

Recommendations

- Boroughs should consider the particular issues identified above.
- Boroughs should consider removing the permitted development rights which allow for the extension of newly permitted dwelling houses in backland situations where spatial relationships are particularly tight.

Particular issues

8.27 Preferred housing typologies should be informed by location and context as they will create relationships with publicly accessible open spaces, help to reinforce/ create character as well as have particular parking and access arrangements. Buildings that include a mix of dwelling types are important for optimizing density with, for example, stacked maisonettes with ground floor gardens and roof top terraces and maisonettes wrapped around undercroft parking structures (with amenity space at first level above the parking) and smaller flats above both representing efficient forms of housing.

Housing typologies

8.28 Every housing typology has a particular density range within which it works well, and above which certain conditions tend to become compromised; privacy, daylight and amenity space are reduced, or there is an increase in single aspect dwellings. The density ranges of house typologies are more rigid than those of apartments, as apartments may continue to be stacked up vertically to increase the density of a scheme, whereas increasing the density of houses relies on decreasing the size or width of the plots and bringing the rows of houses closer together, and these variables have certain fixed limits.

8.29. Within the lower ranges of the density matrix, at 30-95 u/ha or 150-250 hr/ha, a high proportion of single family houses may be included. At densities of up to 50u/ha or 275hr/ha, schemes made up solely of two- and three-storey houses are achievable.

8.30. Semi-detached housing can achieve densities of up to 35u/ha or 200hr/ha. Types of semi-detached housing with parking on-plot offer the advantage of reducing the dominance of parked cars in the street. Semi-detached houses also provide independent access to rear gardens.

8.31. Short rows of terraced housing can offer a density, and sense of built-up-ness, that lies somewhere between semi-detached and terraced housing (see Suburban PTAL 0-1 illustration and the linked cottages in BSE 2, Asmun's Place).

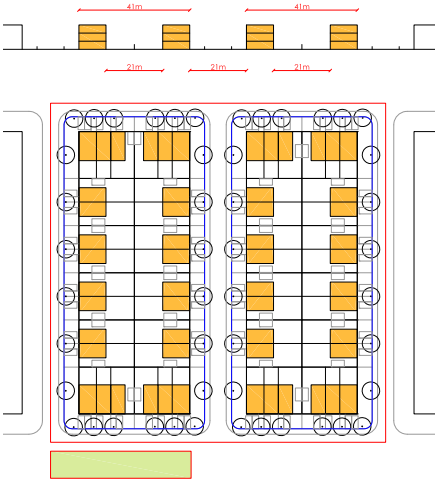
8.32. Densities of up to 50 u/ha can be achieved with terraced housing where unallocated on-street car parking is provided and separation distances are 18m to the front and rear. Increasing the density above this level, trade-offs would require smaller or narrower plot dimensions, reduced separation distances and lower levels of on-site play space and car parking.

8.33. In practice, increasing the density of a development predominantly made up of houses is often best achieved by introducing an element of apartment housing within the overall mix. Special dwelling types such as those discussed in paragraphs 8.42-8.52 below, are also employed in order to optimise densities, overcome particular constraints or introduce an elements of family housing into schemes of apartment housing.

The diagrams on the right are intended to represent typical densities achieved with particular housing typologies. The site area is defined as if the plots were part of a larger development, by including half of the surrounding road width. On sites where less land is required for access, higher densities closer to the net densities could be achieved. An area of dedicated play space calculated according to the methodology set out in the SPG 'Providing for children and young people's play and informal recreation' is illustrated next to each diagram and is taken into account in the site area and density calculations.

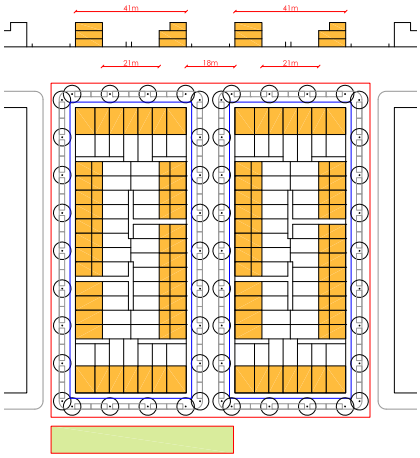
1. Semi-detached houses (3 storeys)

Gross - 35 u/ha, 194hr/ha
Net - 47 u/ha, 262hr/ha
1:1.86 Parking Ratio
9.3m² playspace / dwelling



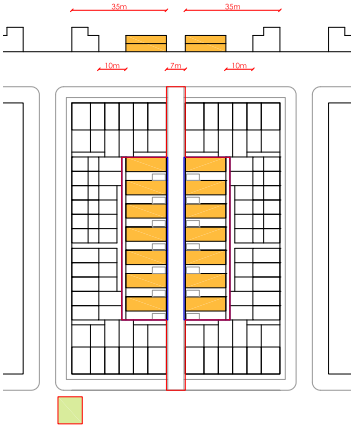
2. Terraced houses (2/3 storeys)

Gross - 50 u/ha, 273hr/ha
Net - 78 u/ha, 427hr/ha
1:1.15 Parking Ratio
8.9m² playspace / dwelling



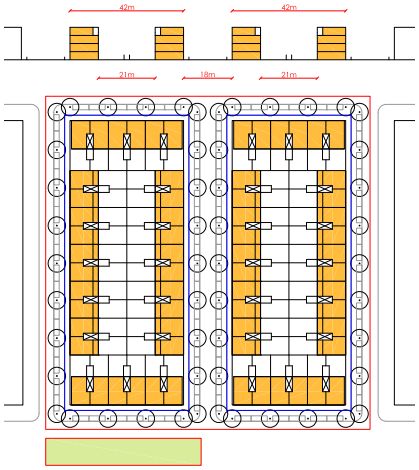
3. Mews / Patio house (2 storeys)

Gross - 48u/ha, 241hr/ha
Net - 67u/ha, 333hr/ha
1:1 Parking Ratio
6.4m² playspace / dwelling



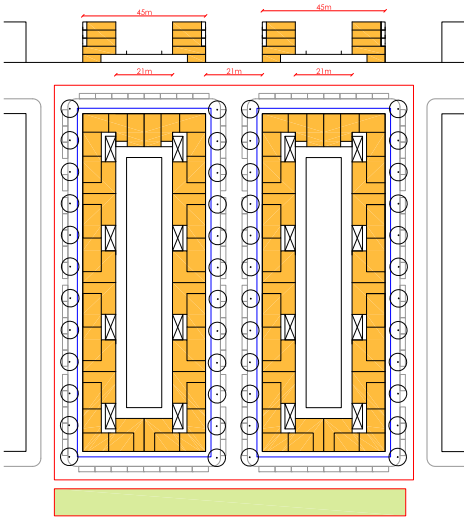
4. Walk-up maisonettes + apartments (4 storeys)

Gross - 99 u/ha, 348hr/ha
Net - 152 u/ha, 512hr/ha
1:0.6 parking ratio
3.9m² playspace / dwelling



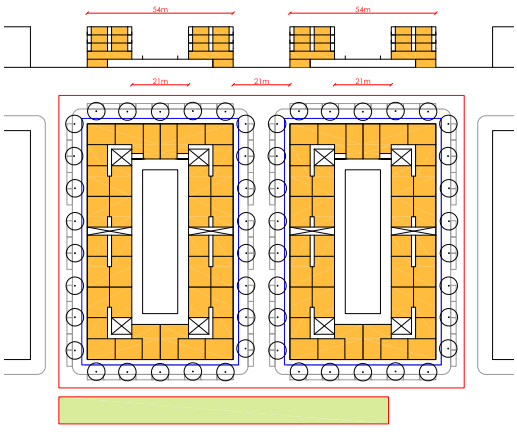
5. Small apartment buildings (5 storeys)

Gross - 162u/ha, 484hr/ha
Net - 263u/ha, 783hr/ha
1: 0.63 Parking Ratio
3.9m² playspace / dwelling



6. Corridor apartment buildings (5 storeys)

Gross - 173u/ha, 509hr/ha
Net - 285u/ha, 840hr/ha
1: 0.56 Parking Ratio
4.0m² playspace / dwelling



8.34. Patio, courtyard and mews typologies which overcome privacy issues and avoid overlooking by arranging the primary aspect towards an internal courtyard, can achieve densities of around 50u/ha or 250hr/ha.

8.35. Within the middle ranges of the density matrix, at 95-170 u/ha or 250-450 hr/ha, schemes are likely to be made up of a larger proportion of apartments, although houses may still appear to dominate the mix due to the fact that they occupy more site area than apartment buildings. Within this density band, apartment buildings of six storeys and under are possible. Single aspect apartments can generally be avoided.

8.36. Four-storey walk-up apartment buildings composed of maisonettes, which provide 100% dual-aspect accommodation with two dwellings per floor per core, can achieve densities of up to 100 u/ha or 350hr/ha, as typology illustration 4 demonstrates. Illustrations 5 and 6 show that at five-storey building heights, an apartment building with 4-6 dwellings per floor per core and 50% dual aspect apartments can achieve around 160 u/ha or 480 hr/ha (Illustration 5), while buildings of the same height with 6 dwellings per floor per core and 30% dual aspect apartments can achieve around 175 u/ha or 510 hr/ha (Illustration 6). Both types illustrated have maisonettes on the ground and first floors wrapping over an undercroft car park and avoid single aspect units that are north facing or contain three or more bedrooms.

8.37. Densities within this range may be optimised by using hybrid blocks containing a number of different typologies that are particular to their orientation and location within the block. Several of the examples and illustrations (BSE 11, Claredale Street, BSE 12, Consort Road, and Illustration 4) provide examples of this approach.

8.38. In the upper ranges of the density matrix, at densities of up to 260 u/ha or 700 hr/ha, apartment buildings of between six and 12 storeys are typical. In the highest range in the matrix - Central, high PTAL, extending up to 405 u/ha or 1100 hr/ha - apartment buildings of more than eight storeys are typical.

8.39. BSE 18 (Colville Square) and BSE 16 (Urban Housing, Finsbury Park) show that relatively high densities of 200 u/ha or 620-650 hr/ha can be achieved with dual aspect apartments in five and six storey buildings, where the dwelling mix is predominantly made up of one and two bedroom apartments and no on-site car parking is provided. (It should be noted, however, that both schemes predate current design and accessibility standards and would not comply with a number of the Mayor's housing design standards). BSE 17 (Peabody Avenue), on a different shape and size of site, achieves a lower density of 157 u/ha within a six-storey block of dual aspect apartments, with a higher proportion of three-bedroom dwellings.

8.40. At the highest density ranges, the principal choice or trade-off is between designing tall buildings and designing lower buildings which may be preferable in urban design or planning terms but may provide a much higher proportion of single aspect apartments, and may compromise daylight, sunlight and privacy to some of the dwellings.

8.41. It should be noted that only a limited number of basic housing typologies exist, and the degree of variation possible within these types is limited by the combined effect of space and design standards in London, including the Lifetime Homes standards. The interaction of standards and policies can influence the choice of typology within a given density range. This can have particular consequences family housing. For dwellings of three and more bedrooms, the easiest way to meet Lifetime Homes standards and other design and space standards is to design single storey apartments rather than two- or three-storey houses. Single storey dwellings also have smaller minimum GIAs in relation to occupancy. To deliver the best quality family

housing in compliance with Lifetime Homes standards at higher densities, it can be necessary to explore alternative housing typologies such as those discussed in paragraphs 8.42-8.52 below. Another policy that may contribute to developers choosing to accommodate family dwellings in apartments rather than houses is the requirement for on-site play space (see section 7F – Social infrastructure and open space).

8 Locations and typologies

D Lessons on housing typologies

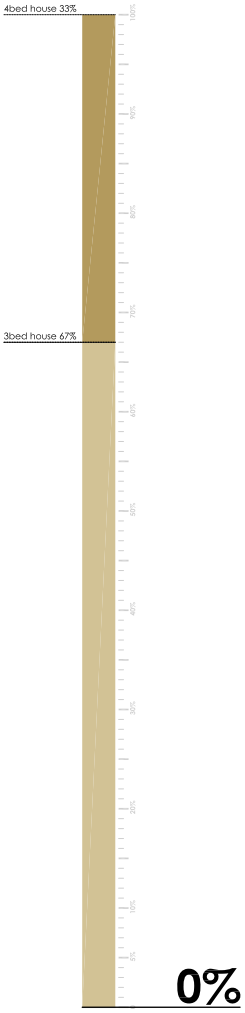
The diagrams below highlight the mix of different typologies used within the various Illustrations within this document. As density increases, the percentage of stacked accommodation, or apartments with their front door above ground level, increases. Stacked accommodation is indicated in dark blue in the diagrams below. Densities up to 300 hr/ha allow some flexibility in percentage of stacked accomodation depending on the required mix. Densities above 300hr/ha require a percentage of stacked accomodation of around 60% and above. Densities above 600hr/ha require a percentage of stacked accomodation of around 80% and above.

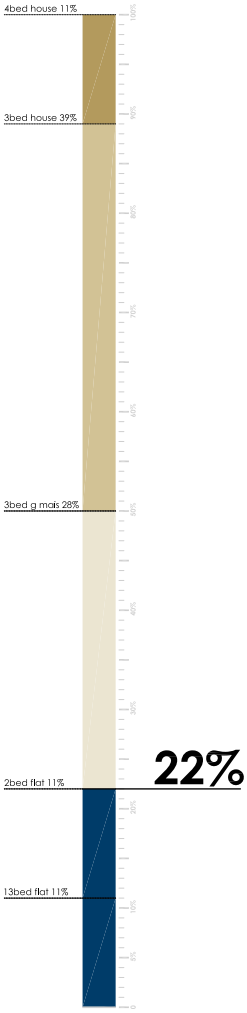
40 u/ha, 200 hr/ha

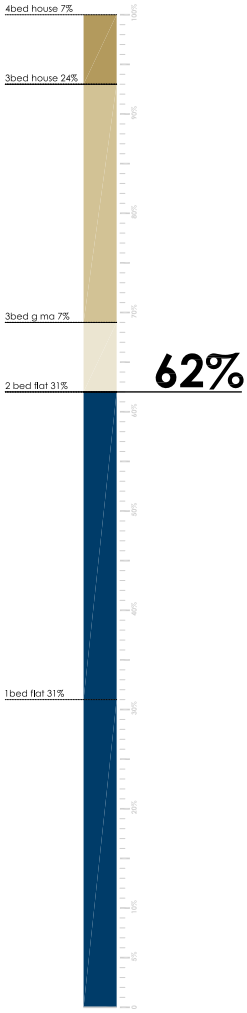
55 u/ha, 250 hr/ha

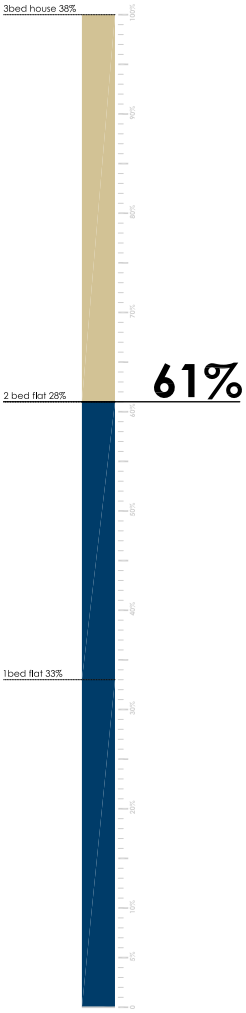
90 u/ha, 325 hr/ha

70 u/ha, 250 hr/ha







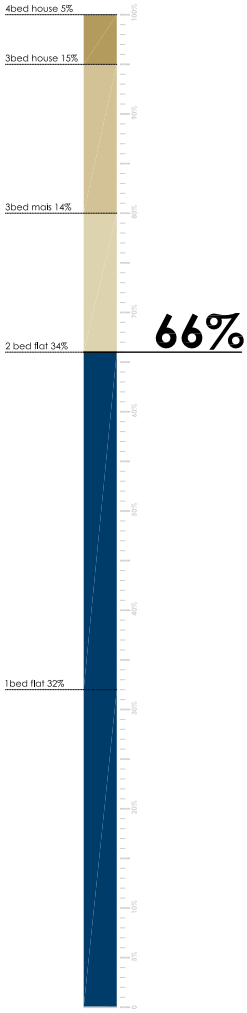


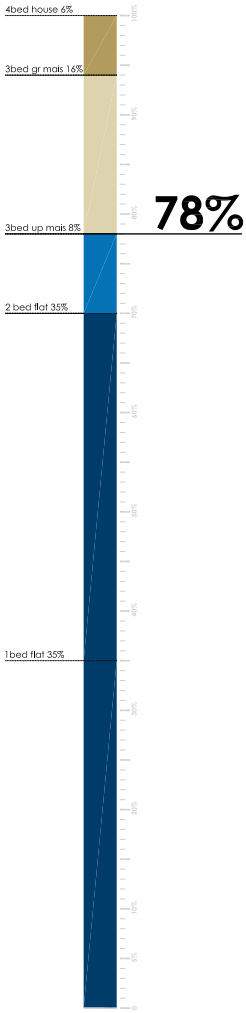
115 u/ha, 400 hr/ha

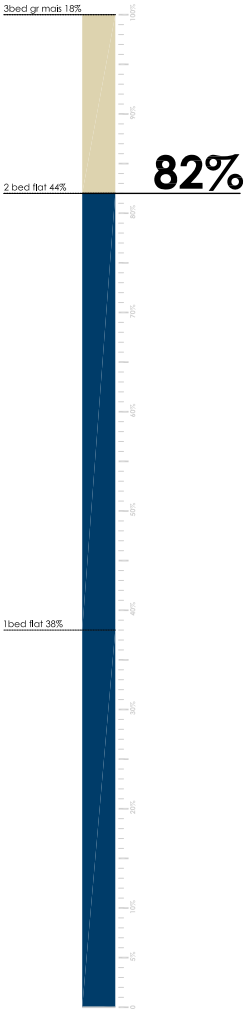
185 u/ha, 620 hr/ha

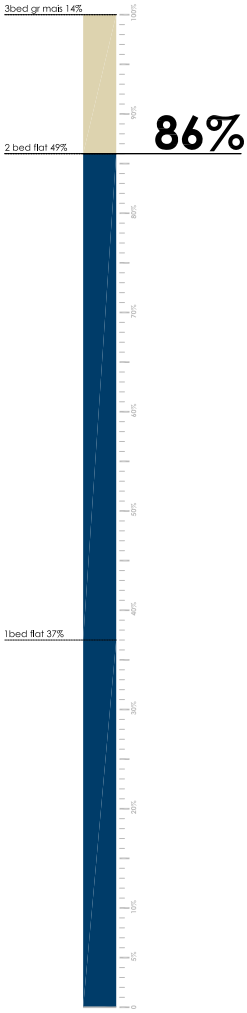
220 u/ha, 650 hr/ha

280 u/ha, 820 hr/ha









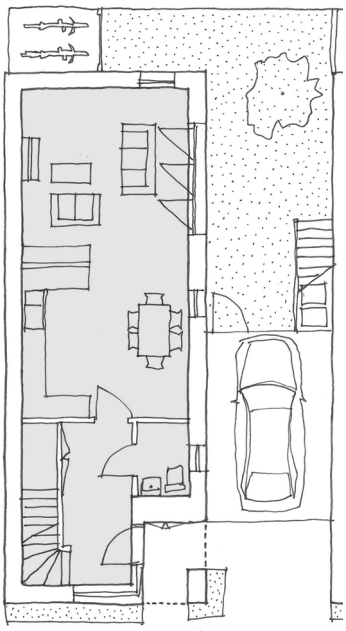
Patio house

8.42. A patio house is a house type that has its primary aspect towards a private courtyard garden that is within or to one side of the house. This illustration, which is also the basis of the typology illustration on page 152, shows a 5.3 x 14.6m house with a 3.3m wide patio to one side. This achieves a net density of 48u/ha or 241 hr/ha with a ratio of 1:1 on-plot car parking. To accommodate a wheelchair accessible parking space, a 3.6m wide patio would be necessary. This type of patio house is well suited to providing wheelchair accessible family units at relatively high densities because it provides in-curtilage car parking and is arranged over two storeys rather than three.

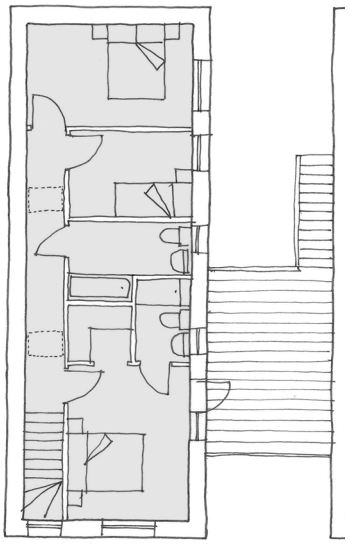
8.43. Higher densities than standard terraced housing can be achieved because the overlooking of neighbouring dwellings can be avoided and separation distances smaller than 18m may be used at the front and rear without compromising privacy.

8.44. The house provides two areas of private outdoor space; a ground level courtyard and a first floor terrace. There is a small strip of garden at the front to provide a buffer from the street and another small space at the rear for a bicycle store and allow another secondary aspect towards the rear. Windows in the rear elevation may alternatively be avoided.

Three bed patio house plans -1:200 scale



Ground floor plan



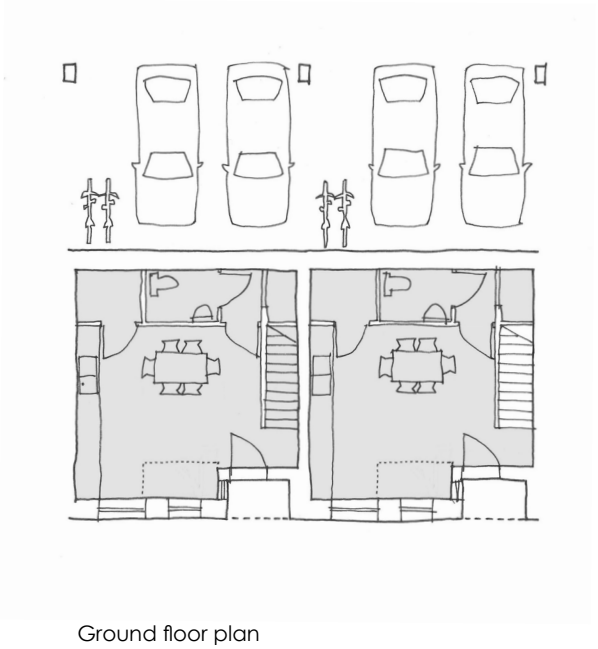
First floor plan

Maisonette wrapping over parking

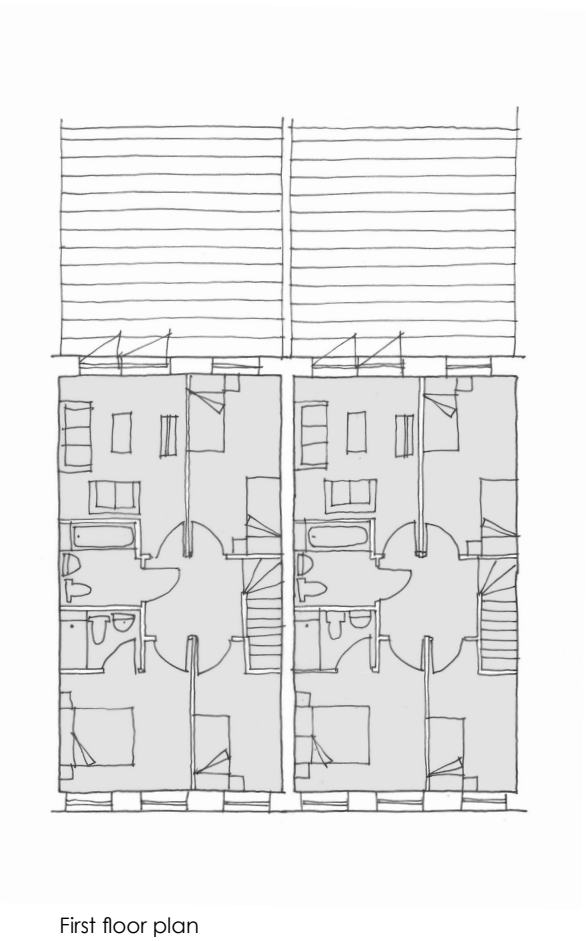
8.45. This type provides family maisonettes around the base of a block containing undercroft or podium car parking at ground floor level. The accommodation wraps up and over the parking garage, with a front door on the street leading to a smaller, single aspect ground floor level. The larger, dual aspect first floor level above connects with a garden located over the parking area.

8.46. The design meets Lifetime Homes standards by providing a kitchen / dining room and accessible wc on the ground floor and a living room and three bedrooms on the first floor. This division of the living space over two levels is one potential disadvantage of this type, although the kitchen / dining room is designed to be large enough to allow change of use into a bedroom, to take account of changing preferences and circumstances.

Three bed maisonette house plans -1:200 scale



Ground floor plan



First floor plan

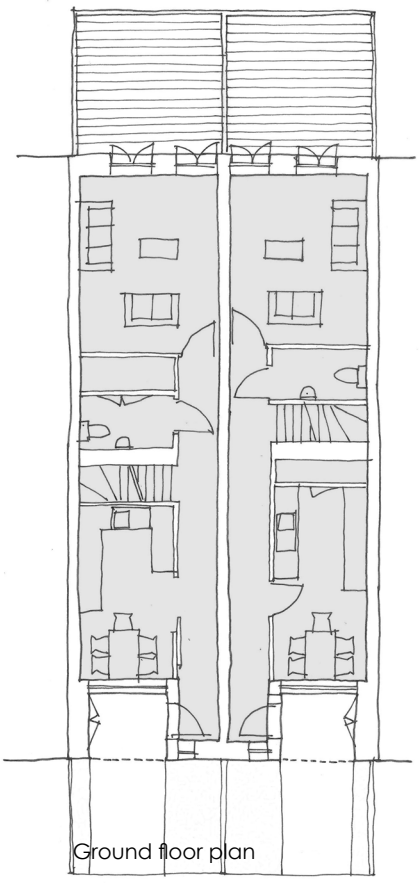
Three-bedroom maisonette at base of apartment block

8.47. This type provides three-bedroom family accommodation with ground level access at the base of a relatively deep plan apartment building. The design was developed by Maccreanor Lavington for the St Andrews project in Bromley-by-Bow (BSE 19). As well as maximising the amount of family accommodation with gardens within a high density apartment block, this type is also intended to create more welcoming and active street frontages on both sides of the block.

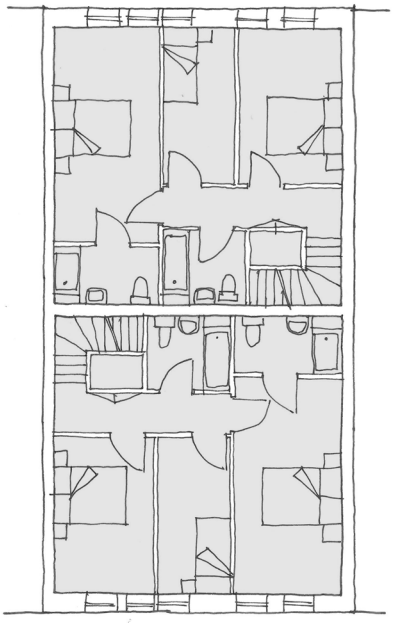
8.48. A general design problem with two-storey, three-bedroom houses is how to find a sensible plan configuration to accommodate three bedrooms (all requiring minimum façade frontage) on the first floor, above living accommodation on the ground floor that need not be so large or wide. The deeper the plan, the more difficult this is to achieve efficiently.

8.49. The solution in this scheme was to design the maisonettes in pairs, the ground floor containing the living spaces in a 4 x 15.5m plan stretching across the block, and the first floor accommodates three bedrooms side by side within a plan that is twice the width and half the length. The dual aspect ground floor and central staircase allow for cross ventilation.

Three bed maisonette house plans -1:200 scale



Ground floor plan



First floor plan

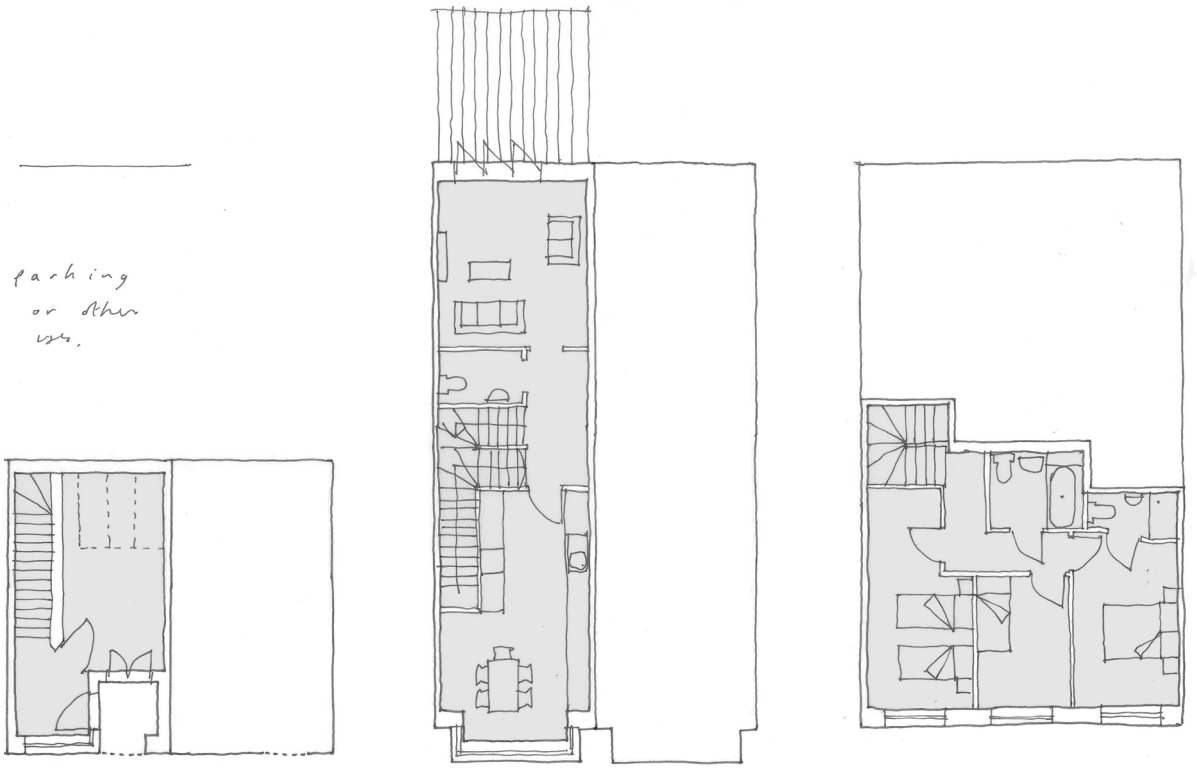
Maisonette with private entrance stair

8.50. Upper level flats with private entrance stairs have traditionally been used for accommodation over shops and other non-residential uses. They have also been used over ground level dwellings in low-rise, high density residential schemes, to maximise the number of homes with private front doors on the street. The type illustrated below was designed for a different reason, for an area at high risk of flooding, where no habitable rooms could be provided on the ground floor.

8.51. This three-bedroom maisonette with a private entrance stair is entered from a glazed porch. This is important in making the entrance feel generous rather than cramped. There are no habitable rooms on the ground floor due to the risk of flooding. Instead, a utility room and bicycle store offers flexible space for storage, utilities and other non-habitable uses. The first and second floors are arranged like the third example above, with a narrower, dual aspect floor for living accommodation and a double width, single aspect floor for bedrooms.

8.52. In order to comply with Lifetime Homes requirements the stair provides 'easy access' (maximum risers of 170mm, minimum goings of 250mm and a minimum width of 900mm measured 450mm above the pitch line). Although in the Lifetime Homes Criteria the entrance level of a dwelling is generally deemed to be the storey containing the main entrance door, where there are no rooms on this storey, the first storey containing a habitable or non-habitable room can instead be considered the entrance level, if this storey is reached by a stair providing 'easy access'. The design also reflects the spirit of Lifetime Homes by providing an alternative means of access through the first floor courtyard to a storey containing the main living accommodation.

Three bed maisonette house plans -1:200 scale



Ground floor plan

First floor plan

Second floor plan

9 Application of density policy

Introduction

9.1. This section discusses issues relating to the practical implementation of London Plan Policy 3.4 and makes specific recommendations.

9 Application of density policy

A Overall approach / guidance for different settings

Existing policy and guidance

9.2 As noted in Section 2, the London Plan (paragraph 3.28) makes clear that the density matrix should not be applied mechanistically. The notes to Table 3.2 in the London Plan includes definitions for central, urban and suburban settings. The draft Housing SPG (1.3.24) makes clear that defining the setting of an area requires local knowledge and may entail an element of professional judgment. It goes on to recommend that boroughs define the setting and resulting appropriate density as part of their LDF process within the context and guidance of Policy 3.4 and the notes attached to Table 3.2. London Plan Policy 7.4 (Local Character) makes clear that development should have regard to the form, function, and structure of an area, place or street and the scale, mass and orientation of surrounding buildings. As outlined in Section 2, the key principles for understanding place and defining character are based on consideration of 'physical', 'cultural, social and economic', and 'perception and experience' elements.

Particular issues

9.3 As outlined in Section 2, a review of policies in 20 boroughs (62%) reveals that the most explicit attempts to define a borough in terms of 'Central', 'Urban' or 'Suburban' is undertaken by Havering and Southwark (which both have clear density policies related to identified character settings) and Hackney, which states that much of the borough is classified as 'urban'. In all other cases, boroughs generally describe their areas' differing character as context and frame policies in terms of preserving and enhancing locally distinctive character. In the vast majority of cases, therefore, settings are not defined in boroughs' LDFs.

9.4. In all cases, even where the setting is clearly defined, prospective developers and their designers should undertake an analysis of the site and its context (in accordance with guidance set out in the emerging Understanding Place SPG) as soon as possible when considering the development potential of a site and not wait to post rationalise a scheme's design when preparing a Design and Access Statement (DAS) at the planning application stage. Where the setting is not already defined, they should seek to agree the setting and PTAL rating of a site with borough officers as soon as possible. If agreement cannot be reached, they should then include their rationale in the DAS that accompanies a planning application.

9.5. The guidance in the draft Housing SPG (1.3.26) on determining setting would benefit from the following clarification:

- It would be helpful to clarify that the 'Central' setting generally applies to the whole of the Central Activities Zone, as there is a logic to referring to the CAZ in the same way as town centres (given that it is shown as being part of London's Town Centre network in Map 2.6 in the LP);
- It needs to refer to 800m walking distance as in the London Plan (800m 'as the crow flies' distance is different);
- The definition in the London Plan and referred to above does not make it explicit that this refers to in as well as within 800m of town centres or that it is measured from the edge of a centre; and
- The distance away from a town centre that 'Central' and 'Urban' settings apply is a significant issue for some boroughs and the qualification that this is not definitive would allow for some local variation (consistent with guidance in 1.3.24) i.e. that 800m is generally considered to be an appropriate walking distance from a Metropolitan, Major and District centre for the 'Central' and 'Urban' settings – but that boroughs could define more locally appropriate boundaries.

9.6. Revised text that incorporates the above comments is set out as a recommendation.

9.7. The common issues identified in Section 3 (Table 4) apply to all sites in all settings. Some issues will be particularly pertinent to a particular setting or settings. However, it is not considered helpful to seek to prepare specific guidance on density in each of the three settings.

9.8. Having said this, prospective developers and their designers that are less experienced at working on sites in a particular setting should reflect on the different challenges that face them before starting work and ask themselves questions such as: what are the similarities and differences, what skills and experience is transferrable and what issues may be different? For example, Suburban sites in Outer London will pose very different challenges to Urban and Central sites in Inner or Central London. These include context (physical, social, economic and planning policy); budgets available for materials and landscaping; the perceptions and expectations of local people in relation to architectural style, privacy, car parking, trees etc.; the capacity of local people to get involved in the process; and local political sensitivities and pressures.

Recommendations

- Where the setting is not already defined, prospective developers and their designers should seek to agree the setting (and PTAL rating) of a site with borough officers as soon as possible. If agreement cannot be reached, they should then include their rationale in the Design and Access Statement that accompanies a planning application.
- mend the draft Housing SPG (1.3.26) to read: "For the sake of clarity, the 'central' setting applies generally to locations in or within 800 metres walking distance of the edge of the Central Activities Zone, an International, Metropolitan or Major town centre as listed in the town centre network in Annex 2 where the character of existing area is as described above. Locations in or within 800 m of the edge of a District centre are generally considered to give an area an 'urban' setting. These extend along main arterial routes and substantial parts of the remainder of inner London. The 800m distance is taken to approximate to 10 minutes walking distance and has its roots in the Sustainable Residential Quality (SQR) research report of 2000 ('Exploring the Housing Potential of Large') which introduced the concept of 'Ped-Shed' areas that connect town centres with their hinterlands. The character of areas around the CAZ and town centres can change quickly and the Central and Urban settings should be applied to a shorter distance where a character appraisal prepared or agreed by a borough indicates that a tighter boundary would be appropriate."
- Prospective developers and their designers that are less experienced at working on sites in a particular setting should reflect on the different challenges that face them before starting work, as discussed above.

9 Application of density policy

B Sites that do not fit neatly into a particular PTAL setting

Existing policy and guidance

9.9 As noted in Section 2, the London Plan (paragraph 3.28) makes clear that the density matrix should not be applied mechanistically. The notes to Table 3.2 in the London Plan include definitions for central, urban and suburban settings. The draft Housing SPG (1.3.24) makes clear that defining the setting of an area requires local knowledge and may entail an element of professional judgment. It goes on to recommend that boroughs define the setting and resulting appropriate density as part of their LDF process within the context and guidance of Policy 3.4 and the notes attached to Table 3.2.

Particular issues

9.10 Some sites do not fall neatly in to one existing/ expected PTAL rating. In cases where PTAL varies across a site, prospective developers and boroughs should take a common sense approach to identifying the most appropriate PTAL rating or ratings. For small and medium sites (1 to 149 homes), it will usually be most appropriate to use an average existing / expected PTAL rating for the site as a whole and to apply the density matrix in the normal way. For larger sites (150 homes plus), it may be more appropriate to assign different existing / expected PTAL ratings to identified sub-areas or phases to establish the relevant indicative density range for distinct parts of the site; with proposed density expected to be broadly associated with the varying PTAL levels of each phase.

9.11. London is a large, complex city and whilst it will be relatively straight forward to characterise some sites as clearly falling into a particular setting for the purposes of applying the density matrix, it is common for sites to exhibit characteristics of more than one setting. In cases where a site does not meet all the characteristics of a particular setting, it would be appropriate for the planning authority to consider the indicative density range of the two settings with a particular PTAL and use professional judgment as to the most appropriate indicative density. For example, it may be considered that for a site that has a PTAL of 2 to 3 but characteristics of both a suburban and urban setting should have a density of 55-145 u/ha or around 350 hr/ha.

Recommendations

- Amend the draft Housing SPG (1.3.22) to read: "In cases where PTAL varies across the site, for example large Opportunity or Intensification Areas, prospective developers and boroughs should take a common sense approach to identifying the most appropriate PTAL rating or ratings. For small and medium sites (1 to 149 homes), it will usually be most appropriate to use an average existing / expected PTAL rating for the site as a whole and to apply the density matrix in the normal way. In advising the Mayor of the PTAL level for development proposals referred to him, TfL may undertake more site specific assessments which cannot be shown on a higher level map and it may be appropriate to assign different existing / expected PTAL ratings to identified sub-areas or phases, with different densities being appropriate for different parts of a site."
- Where sites exhibit characteristics of two settings, it would be appropriate for boroughs and the Mayor to consider the indicative density range of the two settings with a particular PTAL and use professional judgment as to the most appropriate indicative density.

C Definition of Net Site Area

Existing policy and guidance

9.12 The London Plan (3.31) states that "residential density figures should be based on net residential area, which includes internal roads and ancillary open space." The draft Housing SPG (1.3.9) states that the London Plan "… defines density in terms of net residential site area (which only includes homes, gardens and internal access roads)…"

Particular issues

9.13 The above definitions are fairly limited and the opportunity should be taken to provide a fuller definition of what is meant by net site area, taking account of the definition that was set out in the former PPS3 (Housing) (June 2010), which is now superseded by the NPPF, and the policy objective of securing additional accessible open space, as discussed in Section 7F ('Social infrastructure and open space')

9.14. Net site area relates to the 'red line' planning application site boundary and excludes adjoining footways, carriageways, paths, rivers, canals, railway corridors and other existing open spaces. It should generally include proposed on-site open spaces (including publicly accessible spaces), gardens and children's play areas so that the application of London Policy 3.4 on optimising density does not disincentivise developers from providing such space. However, counting very large on-site open spaces (such as those proposed for some London Plan Opportunity Areas) could serve to artificially lower density calculations and applicants proposing particularly large on-site publicly accessible open spaces (relative to the size of the site) should seek to agree a bespoke method of calculating density in discussion with borough and, where appropriate, GLA officers.

Recommendations

- Amend the draft Housing SPG (Section 1.3.9) to read as follows: "The LP defines density in terms of net residential site area. This relates to the 'red line' planning application site boundary and excludes adjoining footways, carriageways, paths, rivers, canals, railway corridors and other existing open spaces. It includes the proposed homes, non-residential uses in mixed-use buildings, ancillary uses, car and cycle parking areas and proposed internal access roads. It generally includes proposed on-site open spaces (including publicly accessible spaces), gardens and children's play areas. However, counting very large on-site publicly accessible open spaces, such as those proposed for some London Plan Opportunity Areas, could serve to artificially lower density calculations and applicants proposing particularly large such spaces (relative to the size of the site) should seek to agree a bespoke method of calculating density in discussion with borough and, where appropriate, GLA officers. The LP expresses density both in terms of dwellings and, to take better account of the needs of different types of household, habitable rooms per hectare. …"
- Delete footnote 36 which defines habitable rooms – the definition of habitable rooms is discussed in Section 9.G below.

9 Application of density policy

D Calculating density in mixed-use schemes

Existing policy and guidance

9.15 Paragraph 3.30 of the London Plan includes the following: "The Housing SPG will provide further guidance on implementation of this policy in different circumstances including mixed use development, taking into account plot ratio and vertical and horizontal mixes of use".

9.16. The draft Housing SPG (1.3.39) notes that while combining residential uses with other uses can lead to more effective use of common infrastructure (e.g. water, sewerage, power), if density is measured in units per hectare or habitable rooms per hectare, it can underestimate the 'massing' impact of the development. It goes on to make clear that in vertically-mixed schemes (i.e. where housing is on top of non-residential uses); proposed non-residential floorspace should be deducted from the total floorspace indicated by the housing density matrix to avoid creating development out of scale with its context. It finishes by stating that where schemes have a substantial proportion of non-residential uses e.g. more than 35%, the density matrix can usefully be complemented by plot ratio (the ratio between the total proposed floorpace and net site area).

9.17. The draft Housing SPG (7.2.8) goes on to state that as a general guideline, plot ratios of 3:1 can usually be achieved where there is, or will be, good public transport accessibility and capacity. In highly accessible areas in central London and some other locations, ratios closer to 5:1 may be achievable.

Particular issues

9.18. As outlined in Section 2 of this report, the objective of London Plan Policy 3.4 is to help manage the scale and massing, activity and demand for services associated with housing. Proposed non-residential floorspace in mixed use buildings directly contributes towards the scale and mass of the proposed building (although floor to ceiling height and hence scale can vary significantly depending on the particular use) activity and, to a lesser extent than housing, demand for services. It is important, therefore, that non-residential space is taken into account as part of calculating residential density in mixed-use schemes.

9.19. At present, different boroughs take different approaches to proposed non-residential floorspace in proposed mixed-use schemes. Some appear not to take any account of this space at all. Others deduct either all or part of the proposed non-residential floorspace from the net site area before calculating residential density in the normal way or, in the case of Southwark, convert the proposed non-residential space into habitable rooms, based on the average area required to create one habitable (including shared circulation space and non-habitable rooms such as bathrooms) before applying the density matrix in the normal way. Given this, it would be helpful if there was one consistent way of taking account of non-residential floorspace in mixed-use schemes.

9.20. A number of options for taking account of proposed non-residential floorspace were identified and discussed and led to the identification of the following key principles:

- 1APP planning application forms, emerging CIL Charging Schedules and existing London Development Database monitoring are based on Gross Internal Area (GIA). Whilst plot ratio calculations for non-residential floorspace have historically been based on Gross External Area (GEA), the difference between GIA and GEA is relatively small and it would be more practical to use GIA;
- Proposed floorspace both below and above ground should be taken into account as all floorspace contributes either directly or indirectly to activity and demand for services. This includes ancillary space such as basement and in-structure car parking/loading, plant areas and all other areas that fall within the definition of GIA);
- The most practical way of taking account of non-residential floorspace in density calculations for vertically stacked mixed-use schemes is to reduce the size of the site area by an amount that is equivalent to the proportion of total floorspace allocated to non-residential uses before calculating residential in the normal way. The worked example set out as part of the recommendations overleaf explains this approach; and
- As discussed in Section 2 of this report, the density matrix in the London Plan is based on managing dwelling houses (Use Class C3) and is not appropriate for managing C2 institutional uses, hostels or student housing. For the purposes of calculating density in mixed-use schemes, proposed floorspace for these uses should be counted as non-residential floorspace.

9.21. The above principles inform the recommendations set out overleaf. It is acknowledged that deducting proposed non-residential space from the site area before calculating residential density could be regarded as disincentivising the provision of employment and other beneficial non residential uses in mixed-use buildings and introducing active uses at ground level. However, the benefits associated with non-residential floorspace should be taken into account in considering the overall merits of the proposals, including the proposed resi-

dential density, and (as discussed in Section 9.E below) can be a factor in considering proposed densities that exceed the relevant indicative density range.

9.22. For mixed use schemes where proposed non-residential floorspace comprises more than 35% of all proposed floorspace, the draft Housing SPG states that it may be appropriate for the density matrix to be complemented by plot ratio. It would be helpful if the final Housing SPG clarified that this was in addition to (not instead of) calculating residential density in accordance with the recommended methodology and that, for these purposes, plot ratio is to be based on GIA.

9.23. Paragraph 7.2.8 of the draft Housing SPG states that as a general guideline, plot ratios of 3:1 can usually be achieved where there is, or will be, good public transport accessibility and capacity. In highly accessible areas in central London and some other locations, ratios closer to 5:1 may be achievable. These ratios have their roots in the plot ratio zones that were included in County of London Plan (1957) and do not relate to the densities for non-residential buildings that are currently being considered acceptable, PTAL levels or character settings. It is recommended, therefore that these references are removed from the final SPG.

Recommendations

Replace paragraph 1.3.39 in the draft Housing SPG with the following:

- Research suggests that while combining residential uses with other uses can lead to more effective use of common infrastructure (e.g. water, sewerage, power), minimise the need to travel and help provide active street uses, if density is measured in units per hectare or habitable rooms per hectare (as in the Density Matrix) without taking account of proposed non-residential floorspace, it can underestimate the impact of the development in terms of scale and massing, activity and demand for services. In calculating density in vertically-mixed schemes (i.e. where housing is on top of non-residential uses),the size of the site area should be reduced by an amount that is equivalent to the proportion of total floorspace allocated to non-residential uses (both below and above ground, measured as GIA) before calculating residential in the normal way . Where schemes have a substantial proportion of non-residential uses e.g. more than 35%, the density matrix can usefully be complemented by plot ratio in addition to calculating residential density. In calculating plot ratio for these purposes, the total floorspace of all uses (measured as GIA) should be divided by the net site area.
- All proposed non-residential floorspace (counted as Gross Internal Area (GIA) is to be counted. GIA is to be as defined in the Royal Institution of Chartered Surveyors (RICS) 6th Edition 'Code of Measuring Practice: A guide for Surveyors and Valuers' (or subsequent updated editions).
- The floorspace of proposed student housing and residential institutions (Use Class C2) should be counted as non-residential space.

Worked example:
Net Site Area: 1.6ha
Residential GIA: 25,200sqm including 75 basement car parking spaces (78%), Non-residential GIA: 7,000sqm (22%)
Number of dwellings: 250

Dwelling Mix (unit):
- 1-bed – 87 (35%), 2-bed – 120 (48%), 3-bed – 30 (12%), 4-bed – 13 (5%)

Number of Habitable Rooms: 719

Density calculation based on 78% of the net site area (reducing the site area by 22% - the proportion of proposed non-residential floorspace, giving a site area for density purposes of 1.25ha.

Density: 200 u/ha (575 hr/ha)

- Amend paragraph 7.2.7 in the draft Housing SPG as follows: "There have been concerns that mixed use development can lead to over- development when the Plan's housing density matrix (rather than the full range of considerations on optimising **residential** development set out Part 1 of this SPG) is applied to a mixed use proposal **without making allowances for proposed non-residential floorspace in vertically-mixed schemes and/or without full** regard to local circumstances. The Plan is clear that local context, public transport accessibility and the other design principles set out in 7.1-7.13 should also be key considerations."
- Delete the whole of paragraph 7.2.8 of the draft Housing SPG.

9 Application of density policy

E Calculating density on large, phased sites

Existing policy and guidance

9.24 Does not currently address this issue.

Particular issues

9.25 It can be helpful in considering impacts on transport infrastructure and demand for social infrastructure to understand how it is proposed that residential density builds up over time in relation to large phased development. Such calculations can also be helpful baselines for considering subsequent Reserved Matters applications and any stand-alone applications to vary permitted schemes.

9.26. To assist boroughs and other service providers it is recommended that a cumulative density assessment is prepared by the applicant when promoting application for large phased developments that are expected to be built out over a number of years.

Recommendations

– Amend the draft Housing SPG to make clear that for large phased sites that are expected to be built out over a number of years, a cumulative density assessment should be prepared by the applicant. This would show how proposed density would change over time by outlining proposed density for Phase 1, proposed density for Phases 1 and 2, proposed density for Phases 1,2 and 3 etc. as set out in the worked example below.

– Phase	Net Site Area	Proposed Floorspace (sqm GIA)	Density
1	1.6ha	Residential: 25,200 (78%) Non-residential: 7,000 (22%) No. of dwellings: 250 No. of habitable rooms: 719	Residential site area (78%): 1.25ha u/ha: 200, hr/ha: 575
1+2	2.8ha (1.6+1.2)	Residential: 49,200 (25,200+24,000) (79%) Non-residential: 13,000 (7,000+6,000) (21%) No. of dwellings: 480 (250+230) No. of habitable rooms: 1,374 (719+655)	Residential site area (79%): 2.21ha u/ha: 217, hr/ha:621
1+2+3	3.8ha (1.6+1.2+1.0)	Residential: 75,200 (25,200+24,000+26,000) (85%) Non-residential: 13,000 (7,000+6,000+0) (15%) No. of dwellings: 740 (250+230+260) No. of habitable rooms: 2,115 (719+655+741)	Residential site area (85%):3.23ha u/ha:229, hr/ha:654

9 Application of density policy

F Going above or below the indicative density range

Policy and guidance

9.27 The justifying text to London Plan Policy 3.4 (para. 3.28) makes clear that housing density is only the start of planning housing development, not the end, and that it is not appropriate to apply the density matrix mechanistically. In other words, the density ranges are indicative of what is achievable and account needs to be taken of other factors relevant to optimising potential. The justifying text to London Plan Policy 3.4 (para. 3.28) also makes clear that the broad density ranges provide the framework within which boroughs can refine local approaches to its implementation.

9.28. The draft Housing SPG (1.3.34) makes clear that where proposals are made for developments above the relevant density range they must be tested rigorously, taking particular account of factors covered by Policy 3.4 and other policies which are relevant to exceptionally high density development. These include different aspects of 'liveability' related to proposed dwelling mix, design and quality (including all the issues outlined in Sections 2.2 to 2.4 of the SPG) and the wider context of the proposal taking account of its contribution to local 'place shaping' as well as concerns over 'place shielding'. Physical access to services and long-term management of communal areas are also considered to be important considerations. These are referred to in Section 3 of this report as the common issues that need to be taken into account for all sites when considering the optimal amount of housing.

Common issues

9.29The acceptability of a proposed scheme that is above the indicative density ranges in the density matrix is therefore dependant on the scheme being judged acceptable in terms of all the identified common issues; subject to any trade-offs that are considered acceptable (see below). This in turn may depend on the use of planning conditions and/or planning obligations to secure the delivery of particular necessary uses or features of the scheme, on-going management arrangements and/or the provision of particular necessary physical measures or services off-site.

Particular issues

9.30 Some key particular issues that may justify exceeding the relevant indicative density range are:
Anticipating and facilitating committed and funded improvements in public transport accessibility in the future (for example Crossrail or other fixed-rail schemes);
- Helping to meet policy objectives in relation to the vitality and viability of a town centre or other growth area by helping to deliver retail, leisure, business or other beneficial non residential floorspace;
- Helping to bring a 'stubborn site' with abnormal costs (e.g. contamination) into productive use;
- Helping to safeguard the long-term future of listed building, locally listed building or non-listed building that makes a positive contribution to a conservation area;
- Delivering a relatively high level of affordable housing in a way that is consistent with building mixed and sustainable communities; and
- Financial viability (see Section 7J).

9.31. There is currently no national blanket guideline as to the minimum density for development. However, given the unique level of urbanisation which supports London and in order to make the most effective use of scarce land resources, the density matrix assumes 35 units per hectare as normally being the minimum for areas with poor PTAL (all settings) and areas with a PTAL 2-3 in an urban setting. The draft Housing SPG (1.3.36) makes clear that proposals for development below the indicative ranges in the density matrix should be addressed as exceptions. Some key particular issues that may justify going below the relevant indicative density range are:

- Ensuring that new development relates positively to the character of the surrounding area;
- Preserving or enhancing the character and/or appearance of a heritage asset (listed building, locally listed building, non-listed building that makes a positive contribution to a conservation area, , archaeology or a World Heritage Site);
- Helping to safeguard the long-term future of high amenity value trees and those covered by a Tree Preservation Order;
- Delivering a relatively high level of affordable housing in a way that is consistent with building mixed and sustainable communities; and
- Financial viability (see Section 7J).

Recommendations

- In relation to proposed developments above the indicative density range, amend the draft Housing SPG (1.3.34) so that it reads: "Where proposals are made for developments above the relevant density range they must be tested rigorously, taking particular account not just of factors covered by Policy 3.4 but also other policies which are relevant to exceptionally high density development. These include different aspects of 'liveability' related to proposed dwelling mix, design and quality **(including all the issues outlined in Sections 2.2 to 2.4 below), physical access to services, long-term management of communal areas and spaces and the wider context of the proposal** taking account of its contribution to local 'place shaping' as well as concerns over 'place shielding'.
- Include in the draft Housing SPG (after paragraph 1.3.23) a clear statement that when agreeing proposed housing densities which are based on future transport improvements (including PTAL), mechanisms to secure and deliver these improvements have been put in place either through planning obligations or other commitments.

9 Application of density policy

G Other technical issues

9.32 Set out below are a number of recommendations relating to other technical issues that are not referred to under the other topic headings.

Recommendations

- Include a definition of 'optimisation' (1.3.1): developing land to the fullest amount consistent with all relevant planning objectives.
- Make clear that the density matrix at Table 3.2 in the London Plan relates only to dwelling houses (Use Class C3) and is not intended to help manage proposals for short-term let serviced flats, student housing or residential institutions (Use Class C2) as defined in the Town and Country Planning (Use Classes) (Amendment) (England) Order 2010. (1.3.2)
- Make clear that the density matrix is focused on new-build proposals and has only limited value in considering proposals for the conversion of existing buildings to create additional homes (1.3.2)
- Amend the draft Housing SPG (1.3.14) as follows: "For planning purposes a habitable room is usually defined as "any room used or intended to be used for sleeping, cooking, living or eating purposes. Enclosed spaces such as bath or toilet facilities, service rooms, corridors, laundries, hallways, utility rooms or similar spaces are excluded from this definition." **In some circumstances, a large kitchen or kitchen/dining room may be counted as a habitable room, but the approach varies between boroughs.** There is no statutory **definition for a kitchen to be counted as a habitable room;** nor is there any statutory size threshold ~~for kitchens~~. ~~Most~~ **Many** ~~local planning authorities , however,~~ **boroughs** include a ~~figure~~**size threshold** of between 13 and 15 square meters in their ~~appropriate SPG~~**LDDs**: any kitchen above the minimum is counted as a habitable room. ~~Kitchen/diners are more difficult, and are treated differently by each LPA~~Generally, ~~though,~~ a kitchen with a small table and chairs ~~tucked away in a~~ **in one** corner, or ~~with~~a kitchen 'bar' would ~~be defined as a kitchen, and the relevant size threshold would apply~~ **not be counted as a habitable room**. A ~~space~~ **room** with a clearly defined kitchen at one end and a clearly defined dining area at the other (with a dining table and chairs) would be counted as a habitable room (see also Part 2 on Quality, Standard 4.4.1).

10 Conclusions and Recomendations

Introduction

10.1. Sections 7, 8 and 9 discuss particular issues relating to cross-cutting issues, locations and typologies and the application of the London Plan density policy. In doing so they make a number of specific recommendations. This section sets out all of the recommendations in one place, under headings that relate to the objectives of the study and draws some general conclusions .

Recommendations to inform the final Housing SPG

1. Include a definition of 'optimisation' (1.3.1): "developing land to the fullest amount consistent with all relevant planning objectives." See Section 9G.

2. Make clear in the that the density matrix at Table 3.2 in the London Plan relates only to dwelling houses (Use Class C3) and is not intended to help manage proposals for short-term let serviced flats, student housing or residential institutions (Use Class C2) as defined in the Town and Country Planning (Use Classes) (Amendment) (England) Order 2010. Also make clear that the density matrix is focused on new-build proposals and has only limited value in considering proposals for the conversion of existing buildings to create additional homes (1.3.2). See Section 9G

3. Amend the draft Housing SPG to make clear that for large phased sites that are expected to be built out over a number of years, a cumulative density assessment should be provided with planning applications. This would show how proposed density would change over time by outlining the proposed density for Phase 1, proposed density for Phases 1 and 2, proposed density for Phases 1, 2 and 3 etc as set out in the worked example below. See Section 9E.

to make clear that family-sized homes are suitable in principle in town centres (including those with an Urban or Central setting) where open space, play space, car parking, social infrastructure and other relevant factors are satisfactorily addressed. See Section 7D.

5.Amend the draft Housing SPG taking account of findings of research into the housing needs of older people and ensure that the proposed London Plan Shaping Neighbourhoods SPG takes account of the findings and recommendations of the HAPPI report as part of promoting 'Lifetime neighbourhoods'. See Section 7E.

6. Amend the draft Housing SPG (Section 1.3.9) to read as follows: "The LP defines density in terms of net residential site area. This relates to the 'red line' planning application site boundary and excludes adjoining footways, carriageways, paths, rivers, canals, railway corridors and other existing open spaces. It includes the proposed homes, non-residential uses in mixed-use buildings, ancillary uses, car and cycle parking areas and proposed internal access roads. It generally includes proposed on-site open spaces (including publicly accessible spaces), gardens and children's play areas. However, counting very large on-site publicly accessible open spaces, such as those proposed for some London Plan Opportunity Areas, could serve to artificially lower density calculations and applicants proposing particularly large such spaces (relative to the size of the site) should seek to agree a bespoke method of calculating density in discussion with borough and, where appropriate, GLA officers. The LP expresses density both in terms of dwellings and, to take better account of the needs of different types of household,

– Phase 4. Amend	Net Site Area paragraph 1.3.12 of the draft Housing SPG	Proposed Floorspace (sqm GIA)	Density
1	1.6ha	Residential: 25,200 (78%) Non-residential: 7,000 (22%) No. of dwellings: 250 No. of habitable rooms: 719	Residential site area (78%): 1.25ha u/ha: 200, hr/ha: 575
1+2	2.8ha (1.6+1.2)	Residential: 49,200 (25,200+24,000) (79%) Non-residential: 13,000 (7,000+6,000) (21%) No. of dwellings: 480 (250+230) No. of habitable rooms: 1,374 (719+655)	Residential site area (79%): 2.21ha u/ha: 217, hr/ha:621
1+2+3	3.8ha (1.6+1.2+1.0)	Residential: 75,200 (25,200+24,000+26,000) (85%) Non-residential: 13,000 (7,000+6,000+0) (15%) No. of dwellings: 740 (250+230+260) No. of habitable rooms: 2,115 (719+655+741)	Residential site area (85%):3.23ha u/ha:229, hr/ha:654

habitable rooms per hectare. …"

Delete footnote 36 which defines habitable rooms. See Section 9C.

7. Amend the draft Housing SPG (1.3.14) as follows: "For planning purposes a habitable room is usually defined as "any room used or intended to be used for sleeping, cooking, living or eating purposes. Enclosed spaces such as bath or toilet facilities, service rooms, corridors, laundries, hallways, utility rooms or similar spaces are excluded from this definition." **In some circumstances, a large kitchen or kitchen/dining room may be counted as a habitable room, but the approach varies between boroughs.** There is no statutory **definition for a kitchen to be counted as a habitable room;** nor is there any statutory size threshold ~~for kitchens~~. ~~Most~~ **Many** ~~local planning authorities , however,~~ **boroughs** include a ~~figure~~**size threshold** of between 13 and 15 square meters in their ~~appropriate SPG~~**LDDs**: any kitchen above the minimum is counted as a habitable room. ~~Kitchen/ diners are more difficult, and are treated differently by each LPA~~Generally, ~~though,~~ a kitchen with a small table and chairs ~~tucked away in a~~ **in one** corner, or ~~with~~a kitchen 'bar' would ~~be defined as a kitchen, and the relevant size threshold would apply~~ **not be counted as a habitable room**. A ~~space~~ **room** with a clearly defined kitchen at one end and a clearly defined dining area at the other (with a dining table and chairs) would be counted as a habitable room (see also Part 2 on Quality, Standard 4.4.1). See Section 9G

8. Amend the draft Housing SPG (1.3.22) to read: "In cases where PTAL varies across the site, for example large Opportunity or Intensification Areas, prospective developers and boroughs should take a common sense approach to identifying the most appropriate PTAL rating or ratings. For small and medium sites (1 to 149 homes), it will usually be most appropriate to use an average existing/expected PTAL rating for the site as a whole and to apply the density matrix in the normal way. In advising the Mayor of the PTAL level for development proposals referred to him, TfL may undertake more site specific assessments which cannot be shown on a higher level map and it may be appropriate to assign different existing/expected PTAL ratings to identified sub-areas or phases, with different densities being appropriate for different parts of a site. See Section 9B

9. Include in the draft Housing SPG (after paragraph 1.3.23) a clear statement that when agreeing proposed housing densities which are based on future transport improvements (including PTAL), mechanisms to secure and deliver these improvements have been put in place either through planning obligations or other commitments. See Section 9F.

10. Amend the draft Housing SPG (1.3.26) to read: "For the sake of clarity, the 'central' setting applies generally to locations in or within 800 metres walking distance of the edge of the Central Activities Zone, an International, Metropolitan or Major town centre as listed in the town centre network in Annex 2 where the character of existing area is as described above. Locations in or within 800m of the edge of a District centre are generally considered to give an area an 'urban' setting. These extend along main arterial routes and substantial parts of the remainder of inner London. The 800m distance is taken to approximate to 10 minutes walking distance and has its roots in the Sustainable Residential Quality (SQR) research report of 2000 ('Exploring the Housing Potential of Large') which introduced the concept of 'Ped-Shed' areas that connect town centres with their hinterlands. The character of areas around the CAZ and town centres can change quickly and the Central and Urban settings should be applied to a shorter distance where a character appraisal prepared or agreed by a borough indicates that a tighter boundary would be appropriate." See Section 9A.

11. Amend the draft Housing SPG (1.3.30) to define 'place shielding' and 'place shaping' (as set out in Section 8B – 'Edge conditions: interface of different uses and characters).

12. In relation to proposed developments above the indicative density range, amend the draft Housing SPG (1.3.34) so that it reads: "Where proposals are made for developments above the relevant density range they must be tested rigorously, taking particular account not just of factors covered by Policy 3.4 but also other policies which are relevant to exceptionally high density development. These include different aspects of 'liveability' related to proposed dwelling mix, design and quality **(including all the issues outlined in Sections 2.2 to 2.4 below), physical access to services, long-term management of communal areas and spaces and the wider context of the proposal** taking account of its contribution to local 'place shaping' as well as concerns over 'place shielding'. See Section 9F.

13. As outlined in Section 9.D, replace paragraph 1.3.39 in the draft Housing SPG with the following:

- Research suggests that while combining residential uses with other uses can lead to more effective use of common infrastructure (e.g. water, sewerage, power), minimise the need to travel and help provide active street uses, if density is measured in units per hectare or habitable rooms per hectare (as in the Density Matrix) without taking account of proposed non-residential floorspace, it can underestimate the impact of the development in terms of scale and massing, activity and demand for services. In calculating density in vertically-mixed schemes (i.e. where housing is on top of non-residential uses),the size of the site area should be reduced by an amount that is equivalent to the proportion of total floorspace allocated to non-residential uses (both below and above ground, measured as GIA) before calculating residential in the normal way . Where schemes have a substantial proportion of non-residential uses e.g. more than 35%, the density matrix can usefully be complemented by plot ratio in addition to calculating residential density. In calculating plot ratio for these purposes, the total floorspace of all uses (measured as GIA) should be divided by the net site area.
- All proposed non-residential floorspace (counted as Gross Internal Area (GIA) is to be counted. GIA is to be as defined in the Royal Institution of Chartered Surveyors (RICS) 6th Edition 'Code of Measuring Practice: A guide for Surveyors and Valuers' (or subsequent updated editions).
- The floorspace of proposed student housing and residential institutions (Use Class C2) should be counted as non-residential space.

Worked example:
Net Site Area: 1.6ha
Residential GIA: 25,200sqm including 75 basement car parking spaces (78%), Non-residential GIA: 7,000sqm (22%)
Number of dwellings: 250

Dwelling Mix (unit):
- 1-bed – 87 (35%), 2-bed – 120 (48%), 3-bed – 30 (12%), 4-bed – 13 (5%)

Number of Habitable Rooms: 719

Density calculation based on 78% of the net site area (reducing the site area by 22% - the proportion of proposed non-residential floorspace, giving a site area for density purposes of 1.25ha.

Density: 200 u/ha (575 hr/ha)

- Amend paragraph 7.2.7 in the draft Housing SPG as follows: "There have been concerns that mixed use development can lead to over- development when the Plan's housing density matrix (rather than the full range of considerations on optimising **residential** development set out Part 1 of this SPG) is applied to a mixed use proposal **without making allowances for proposed non-residential floorspace in vertically-mixed schemes and/or without full** regard to local circumstances. The Plan is clear that local context, public transport accessibility and the other design principles set out in 7.1-7.13 should also be key considerations."
- Delete the whole of paragraph 7.2.8 of the draft Housing SPG.

14. Amend paragraph 2.3.3.1 as follows: "Design and access statements should demonstrate how the design as a whole uses a variety of measures to provide adequate visual and acoustic privacy for every home in a development. Designers should consider the position and aspect of habitable rooms, gardens and balconies, and avoid windows facing each other where privacy distances are tight. **In the past, planning guidance for privacy has been concerned with achieving visual separation between dwellings by setting a minimum distance of 18-21m between facing homes (between habitable room and habitable room as opposed to between balconies or terraces or between habitable rooms and balconies/terraces). These are still useful yardsticks for visual privacy, but adhering rigidly to these measures can limit the variety of urban spaces and housing types in the city, and can sometimes unnecessarily restrict density**. It will often be beneficial to provide a set-back or buffer where habitable rooms directly face a public thoroughfare, street, lane or access deck. Privacy is also an important consideration in the design of private open space". See Section 7G.

Recommendations to guide the interpretation of "optimising" density

15. Prospective developers, housing providers, the boroughs and the Mayor need to consider the interrelationship between optimising density, dwelling mix and tenure in terms of the design, management and maintenance of particular schemes and the demand for social infrastructure as part of helping to create successful mixed communities. See Section 7B.

16. 'High density does not necessarily need to mean high rise' is qualified by a discussion of the realistic density limits of low-rise (2-5 storey) housing typologies and a recognition that at the top end of the range, particular consideration may need to be given to balancing priorities for built form and massing with ensuring adequate provision of privacy, natural light and amenity and limiting the number of single aspect dwellings. See Section 7I.

17. Boroughs and the Mayor should take account of financial viability and the relationship between project viability and policy objectives, standards and design quality throughout the development management process. See Section 7J.

18. The development of housing in town centre and mixed-use growth areas should be co-ordinated and managed by place specific policies and guidance in Core Strategies, other Local Plans, Supplementary Planning Documents and/or Opportunity Area Planning Frameworks. The design and management of housing in these locations should take account of the challenges identified in Section 8A.

19. When preparing Local Plans and Supplementary Planning Documents etc, boroughs should ensure that they pay sufficient attention to the edges of town centres and set out place-specific policies and guidance for managing the interface between town centres and surrounding areas. See Section 8B.

20. Where the setting is not already defined, prospective developers and their designers should seek to agree the setting (and PTAL rating) of a site with borough officers as soon as possible. If agreement cannot be reached, they should then include their rationale in the Design and Access Statement that accompanies a planning application. See Section 9A.

Recommendations to draw out design and management pointers.

21. The design and management of housing in town centre locations should take account of the challenges identified in Section 8A ('Town centre and mixed-use development).

22. Prospective developers should integrate car parking provision into residential and mixed-use schemes to help optimise density by developing car parking strategies that take account of the issues identified in Section 7A ('Car parking).

23. In promoting family-sized housing in town centres, boroughs should develop strategies in their Core Strategy, other Local Plans or Supplementary Planning Document that deliver the factors that are likely to make family housing in town centres attractive and recognise the need to grow a private housing market and build mixed neighbourhoods over time (identified in Section 7D – 'Family-sized housing at higher densities in town centres and growth areas').

24. The Mayor should consider preparing London-wide guidance on the design and management, viability and deliverability of specialist housing for students and older people. See Section 7E.

25. The Mayor should consider monitoring the impact of introducing baseline and good practice guidelines has on residential densities that are achieved in various settings as part of assessing the overall impact of introducing the Mayor's Design Guide standards. See Section 7G.

26. Boroughs should consider the particular issues identified in Section 8C ('Backland sites') in relation to backland site.

27. Boroughs should consider removing the permitted development rights which allow for the extension of newly permitted dwelling houses in backland situations where spatial relationships are particularly tight. See Section 8C.

28. Prospective developers and their designers that are less experienced at working on sites in a particular setting should reflect on the different challenges that face them before starting work, as discussed in Section 9A ('Overall approach/guidance for different settings').

29. Where sites exhibit characteristics of two settings, it would be appropriate for boroughs and the Mayor to consider the indicative density range of the two settings with a particular PTAL and use professional judgment as to the most appropriate indicative density. See Section 9B.

10 Conclusions and Recomendations

General Conclusions

10.2. Residential density policy is about everything and nothing. On the one hand it informs everything to do with housing design and management. On the other hand, the actual density calculation of an acceptable development (in terms of units or habitable rooms per hectare) is a product of all of the relevant design and management factors; if they are all met, the resultant density figure is what it is and is arguably irrelevant. Anyone grappling with the thorny issue of density tends to go around in circles – moving between these two extreme positions.

10.3. Density calculations (XXu/ha and XXhr/ha) on their own are perhaps most useful in helping to estimate the capacity/development potential of a particular site before a scheme has been designed. Using an appropriate point in the relevant indicative range in the density matrix as a guide, density calculations can:

- Help the GLA and boroughs identify and deliver sources of new housing to meet strategic and local demand/need (e.g. Strategic Housing Land Availability Assessments and affordable housing and Community Infrastructure Levy viability assessments);
- Inform estimates of likely future population changes and demand for school places, health services etc.; and
- Help landowners and prospective developers identify development potential and undertake initial land valuations.

10.4. As outlined in Section 2, the current London Plan density policy has its roots in the former LPAC commissioned research in the late 1990's; a time of urban renaissance, calls for a denser more compact city and concern over the negative effects of mechanistically applying standards. Attitudes towards density have changed dramatically over time and arguably the challenge going forward is to manage developer expectations as part of the objective of 'optimising' (as opposed to 'maximising') density. The recommendations, examples and suggestions in this report should help implement the current policy.

10.5. It needs to be remembered that the density policy sits alongside many other related London Plan policies, that density figures can be affected by different site characteristics (including exactly what is counted as 'the site' and size of site) and that the usefulness of density calculations need to be kept in perspective. Residential density calculations based on units and habitable rooms per hectare are a rather crude indication of scale and massing and intensity of use and are perhaps most useful at the feasibility/outline stage of design.

10.6. Whilst the purpose of the study was focused on helping make the existing policy as effective as possible, the study and the responses to a draft report have raised a number of issues concerning the policy and the matrix themselves. There is some sense that we have lost focus on what exactly it is that the density policy and matrix is supposed to help achieve; accommodating growth within the existing boundaries of London and wider environmental sustainability objectives; ensuring that new development is at an intensity that is compatible with public transport and services in the surrounding neighbourhood; or ensuring that at a site level the scale and massing of development respects and responds positively to its existing context? Can the same indicative density ranges set out in the matrix really be equally appropriate to all three objectives? As and when the Mayor decides to review current policy and/or the density matrix, the opportunity should be taken to consider these questions and address the following issues:

(a) The assumed number of habitable rooms per unit for each setting and the number of units allowed for in that setting, as set out in the matrix, would allow for outcomes that fall outside of the relevant indicative habitable rooms per hectare density range. For example, the Suburban setting cells for very poor PTAL areas allow for indicative average dwelling sizes of 3.8 habitable room per unit (hr/u) and 35 units per hectare (U/ha) and 4.6hr/u and 55u/h. A combination of 3.8hr/u and 35u/ha would result in 133hrph, which is below the relevant 150-200hr/ha range, and a combination of 4.6hr/u and 55u/ha would result in 253hr/ha, which is above the relevant range. This would benefit from a review and clarification as to how the matrix is to be interpreted;

(b) The Mayor should consider re-invigorating plot ratio as a development management tool for mixed-use schemes where the proposed non-residential content exceeds 35% of all proposed floorspace. This should include considering the need for appropriate plot ratio ranges for parts of London with different PTAL ratings and character settings

(c) The need for further guidance on the density implications of types of housing that are currently not covered by the matrix (e.g. student housing, specialist housing for older people that falls within Use Class C2, hostels and supported housing);

(d) PTAL is a measure of the accessibility of a particular location to the public transport network but does not consider where public transport goes to or the opportunities and services that people will want to reach. At present, the proximity of new homes to bigger town centres is taken as a proxy for access to services (including employment, education, health services and food shopping) and the density matrix directs higher density development to within 800m of such centres. TfL's emerging Access to Opportunities and Services (ATOS) indicator aims to broadly measure access to essential services and employment by public transport and/or walking. This complements PTAL. A review of the matrix could provide the opportunity to investigate whether and how ATOS might complement PTAL and proximity to town centre variables; and

(e) Residential density is only a crude measure of scale and massing; as too is plot ratio – with the floor to ceiling heights of non-residential uses varying from around 3m for a shop to 12m for a leisure/sports use. Given the emphasis on character and context and the range of policy and guidance that relate to this, a review of the density policy would enable a re-consideration of the dual objectives of density policy (to manage activity, demand for services and scale and massing) and whether it would be more appropriate for density policy to focus exclusively on activity/demand for services.

(f) While the London Plan and the draft Housing SPG currently define family housing as three bedroom or larger, households with children can occupy any dwelling larger than a one bedroom flat. Families are likely to be under some pressure when living in two bedroom, three and four person accommodation at full occupancy. We recommend that as and when the London Plan is revised, the definition of 'family housing' is reviewed and consideration given to recognising that two bedroom, three person dwellings and larger are included in the definition of 'family dwellings', and that three bedroom, five person dwellings are defined as 'larger family dwellings'.

Appendix 1

Key issues identified in the specification of requirements

Set out below is the list of key issues that were identified in the client's brief; organised into nine themes.

1 - EDGE / CHARACTER INTERFACE

Site size: larger sites appear to offer greater scope to create their own identity/realise their full density potential providing there is a successful design resolution to the interface with adjoining areas. Conversely, the character of surrounding areas can pose design challenges in realising the theoretical potential of smaller sites.

Can implementation of density policy draw on the concept of 'place shielding', for example by using design to reduce the impact of new housing development on surrounding residential areas, or of neighbouring commercial uses on new housing.

2 - EDGE / USE INTERFACE

Town centre and edge of centre sites: these usually have good public transport accessibility and good theoretical development potential, but the interface with adjacent commercial areas can create challenges in securing a good quality, new residential environment and the interface with adjacent existing residential areas (which in outer London can be of low density even though abutting the town centre) can present design constraints on realising their theoretical capacity. These locations may be of increasing future importance in maximising London's overall housing output.

Can implementation of density policy draw on the concept of 'place shielding', for example by using design to reduce the impact of new housing development on surrounding residential areas, or of neighbouring commercial uses on new housing?

3 – BACKLAND SITES

Backland sites: the Plan provides flexibility for boroughs to justify protection of garden land, but there are other backland sites within predominantly residential areas which can have theoretical potential above that of the existing surrounding housing.

4 – TOWN CENTRE/MIXED USES

Surplus town centre/ CAZ commercial sites: how can these be developed to realise their considerable theoretical potential while providing an attractive residential environment and contributing to other relevant policy objectives e.g. for town centre renewal?

What guidance is required to balance this with objectives to secure the vitality and viability of town centres; the operation of short and longer term market forces and identified need for commercial premises?

How can density and mixed use policy be integrated most effectively in appropriate locations?

5 – TALL BUILDINGS

'High rise' development: the Plan makes clear that higher density development does not have to mean 'high rise'. How should guidance be framed to address this in different types of location and taking account of the Plan's high building s polices.

6 - LOW VALUE LAND / FINANCIAL VIABILITY

Remote brownfield sites (some with existing permissions for relatively high densities/contamination costs): how can density policy (and other policy) be applied to new proposals for the development of these in ways which can address valuation issues and other constraints on realising their potential

How can implementation of the density policy best ensure the viability and deliverability of housing development in different types of location?

Are there any particular issues which need to be addressed in areas of low land value – can examples and practical solutions be given?

Are there any particular market related points e.g. consumer/affordable housing provider preferences for different types of development in different areas which bear especially on implementation of density policy?

7 – TENURE AND DWELLING MIX

Social mix, affordable housing and density policies: what design solutions are appropriate to resolve the objectives for these policies in different types of location Special needs e.g. students, older people and density policies: what design solutions are appropriate to resolve the objectives for these policies in different types of location.

Can or should the needs of families be addressed in high density locations like town centres. How will the viability dimension to affordable housing policy bear on this?

8 – CAR PARKING

The Outer London Commission and TfL are developing a more locationally specific and sensitive approach to car parking policy and standards. Given its implications for land take, how can this be integrated most effectively with density policy?

9 - GENERAL OVBSERVATIONS

Should implementation of the policy be supported by guidance on how it might be addressed in the different circumstances of Inner, Outer and Central London e.g. to complement the 'settings' categories?

In general terms, what sorts of 'trade-offs' have to be made between the different policies of the Plan and when optimising housing outputs on sites in different sorts of location? Can these be quantified e.g. in terms of number of units 'lost' relative to theoretical potential?

In what circumstances may it be appropriate to go above/below the indicative density range for a location?

How can social infrastructure and amenity space requirements be best addressed in light of density policy applied in different types of location/to sites of different sizes.

How can the new housing standards and wider environmental and neighbourhood policies most effectively complement density policy in different types of location?

Appendix 2

Borough examples

Introduction

Chief planning officers in each of the 32 boroughs and the City of London were invited to put forward a built residential or mixed-use scheme that they thought represented a good example of where residential density had been successfully optimised. At the time of finalising this report, 18 of the 33 local planning authorities had nominated a scheme or schemes. In addition, GLA officers have nominated one scheme.

These schemes are set out below, together with a brief overview of the number of homes, number of car parking spaces, setting, PTAL and residential density – where known. It should be noted that these schemes were permitted and built prior to the adoption of the current London Plan (July 2011) and the publication of the Mayor of London's Interim Housing Design Guide (August 2010). Furthermore, some of these schemes received planning permission on appeal and are not necessarily endorsed by councillors in the relevant borough, the Mayor of London or the consultant team. It should also be noted that in the time and budget available, the consultant team has not been able to seek out the opinions of residents or people living close to these examples to ascertain what they think about the schemes.

It should also be noted that it is not always clear whether the density quoted for vertically stacked mixed-use schemes takes account of the non-residential floorspace contained within the development. Even if such space were always accounted for, it is most likely that this has not been done in a consistent way.

Not withstanding the above limitations, the examples represent an interesting collection of built schemes that professional planners working in the boroughs and the GLA consider to be successful – in the context of the policies, guidelines and standards that pertained at the time that they were granted planning permission.

Barking and Dagenham

BARKING CENTRAL

Site located in Barking Town Centre and has a PTAL of 6. A collection of mixed-use buildings comprising a Learning Centre (library, cafe, art gallery and one-stop-shop), a Tesco Express, hotel, cafes and restaurants, a new public open space and over 500 residential flats (mainly one and two-bed, but with some three-bed properties). The residential site area is about 1.5ha, giving a residential density of approximately 332u/ha. This is within the Central (PTAL 4-6) setting indicative density range of 140-405 u/ha (650-1,100hrph).

TANNER STREET

A collection of residential terrace homes ranging from one-bedroom flats to four-bedroom houses to the north of Barking Town Centre.

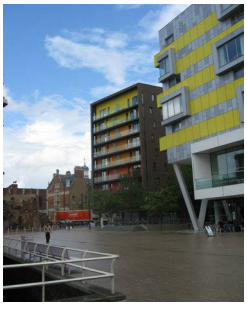
The residential site area is unknown, but the residential density is approximately 97u/ha. This is within the Urban (PTAL 4-6) setting indicative density range of 45-260 u/ha (200-700hrph).

CADIZ COURT

Urban setting about 20 minutes south of Dagenham East. PTAL unknown. A residential development comprising 54 mixed tenure properties, ranging between two-storey houses and five-storey blocks of flat. The residential site area is 0.45ha, giving a residential density of 120u/ha.

ACADEMY CENTRAL

The former University of East London campus at Longbridge Road. A residential development comprising 936 homes, ranging from one, two and three-bed apartments to three and four-bedroom houses, in addition to a new primary school and public open space. Part developed, with final phase anticipated to be completed in 2016. The residential site area is 7.8ha, giving a residential density of 120u/ha.



Bexley

13-15 HATHERLEY ROAD, SIDCUPS

The site (0.34ha) is located within Sidcup Major District Centre, about 90m north of Sidcup High Street, and has a PTAL of 3. Residential scheme (3 and 4 storey) of 57 1, 2 and 3-bed flats. 43 car parking spaces are provided (0.75:1). The density is 168 u/ha or 458hrph. This is at the top end of the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hrph).

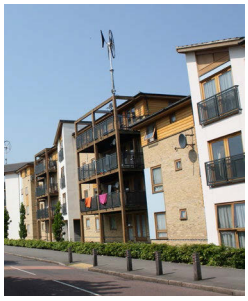
Croydon

SOUTH QUARTER - PURLEY WAY

This 3.1hectare sized flat is on Purely Way, has an Urban setting and a PTAL of 3-4. The scheme comprises just over 500sqm of commercial space (A1, B1 and B8) and undercroft car parking on the ground floor with residential above, in a range of three to nine-storey buildings around a new central open space. The scheme comprises 470 one, two and three-bedroom flats and 26 3-bedroom houses (496 homes in total) and includes 296 car parking spaces (a ratio of 0.6:1). The residential density of 160u/ha (425hr/ha). This is within the Urban (PTAL 4-6) setting indicative density range of 45-260 u/ha (200-700hrph).

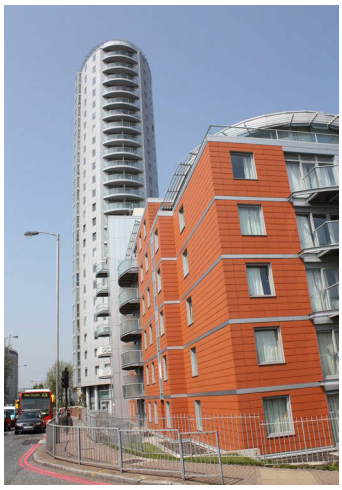
QUEENS HOSPITAL, QUEENS ROAD

This is a 3.7 hectare site which has an Urban setting and a PTAL of 2-3. The scheme comprises the retention and incorporation of a Grade II listed tower and the construction of two, three and four-storey buildings to provide a total of 360 new flats and houses. There are 250 car parking spaces (a ratio of 0.7:1). The resultant density is 100u/ha (250hr/ph), which is within the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hrph).



LAND ADJACENT TO CROYDON PARK HOTEL (Altitude 25). This 0.48hectare site is in Croydon Metropolitan Centre and has a Central setting and a PTAL of 6b. The development comprises a five-storey building of 20 flats and a four to 26- storey building comprising 216 flats (236 one and two-bedroom flats in total). There are 121 off-street car parking spaces (a ratio of 0.51:1).

The resultant density is 492u/ha (873hr/ha), which is above the Central (PTAL 4-6) setting indicative density range of 140-405 u/ha, but within the indicative habitable room density range of 650-1,100hrph.



Ealing

GEEN MAN LANE ESTATE

Housing estate that straddles the Ealing Metropolitan Centre to the south and low-scale Victorian neighbourhood to the north, with a PTAL that varies between 2 and 4. The scheme comprises the redevelopment of the existing stock (464 units) and the development of 706 new homes, public and private open space, a gym, cafe, community centre and enterprise units (for small and start-up businesses). The residential site area is approx. 4.64ha, giving a residential density of 152u/ha (440hr/ha). This is within the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hrph).

Appendix 2

Borough examples

FORMER FEATHERSTONE SCHOOL, FEATHERSTONE ROAD, SOUTHALL
The scheme comprises the redevelopment of a former school and the erection of a three-storey and part three/four-storey residential buildings and the retention/ alteration of an existing locally-listed building to provide 146 flats and associated private and communal amenity space. Total residential car parking = 87 (0.6:1). The residential site area is approx. 0.86ha, giving a residential density of 170u/ha (399hr/ha). This is within the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hrph).

CAMBRIDGE YARD, CAMBRIDGE ROAD, HANWELL
The scheme comprises the erection of buildings ranging from two and five-storeys, incorporating approx. 1,400sqm of B1 office space and 130 residential units. The residential site area is approx. 0.95ha, giving a residential density of 137u/ha (398hr/ha). This is within the Urban (PTAL 2-3) setting indicative density range of 70-170 u/ha (200-450hrph).

GLA
QUEENSBRIDGE QUATER HACKNEY
The scheme forms part of the redevelopment of the Holly Street estate, located to the south east of Dalston Major Town centre. The site is served by bus services along Queensbridge Road and has a PTAL of 4-5. The scheme comprises a total of 151 new homes in a range of two-storey houses and four to six-storey flats. There are 50 car parking spaces (0.33:1). 6 The residential site area is approx. 1.31ha, giving a residential density of 115u/ ha (410hr/ha). This is within the Urban (PTAL 4-6) setting indicative density range of 45-260 u/ha and 200-700hr/ ph.

Hackney
DALSTON SQUARE
This site is within Dalston Major Centre, directly above the extended East London Line and Dalston Junction Station, and has a PTAL of 5. The scheme comprises part 7, part 10, and part 18/19 storey buildings, a public space and a new bus interchange containing around 1,700sqm of non-residential space and 309 fats (78 x 1 bed flats, 135 x 2 bed flats and 96 x 3 bed). There are 35 car parking spaces for disabled occupiers/users (a ratio of 0.11:1)
The residential site area is approx. 0.8ha, giving a residential density of 386u/ha (1,181hr/ha). This is within the Central (PTAL 4-6) setting indicative density range of 140-405 u/ha, but above the 650-1,100hr/ph range.

Hounslow
661 LONDON ROAD
Site located about 500m to the west of Hounslow Town Centre and has a PTAL of 5. Residential scheme of (5, 7, 8 and 10 storeys) containing 190 flats with 89 car parking spaces (0.5:1). The density is (774hrph). This is above Urban (PTAL 4-6) setting indicative density range of 45-2600 u/ha (200-7000hrph, but within the Central (PTAL 4-6) setting indicative density range of 140-405 u/ha 965-1100hrph).

LASCARWORK, STAINES ROAD
Site located about 500m to the west of Hounslow Town Centre and has a PTAL of 3. Mixed-use scheme comprising approx. 4,750sqm of employment space (B1(c)/B2/B8) and 225 houses and flats with 178 car parking spaces (0.8:1). The site is split into residential and employment parts.The residential site is about 1.82ha, giving a density of 123u/ha (373hrph). This is within the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hrph).

FORMER ALFA LAVAL SITE, GREAT WEST ROAD
Site located between the elevated M4 in the north and two-storey properties to the south and has a PTAL of 2-3. Mixed-use development comprising the retention and refurbishment of Alfa Laval building into a 159-bed hotel, car showroom and service station (approx. 6,500sqm), a further new-build hotel, office space (approx. 4,600sqm), retail/community uses (approx. 230sqm) and 206 flats, maisonettes and houses. Total residential car parking = 181 (0.9:1). Work dues to start on-site in spring 2012. The residential density is 519hr/ha. This is above the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hrph).

FORMER CAMPION HOUSE, ISLEWORTH
Site located on the west side of Thornbury Road and has a PTAL of 2-3. Retention and conversion of Campion House and Tiger Hall, demolition of annex buildings and re-development to provide 82 homes together with the provision of new reconfigured local open space on the site. Total residential car parking = 146 (1.8:1). The residential site area is just over 2ha, giving a residential density of approx. 42u/ha (238hr/ha). This is within the Suburban (PTAL 2-3) setting indicative density range of 35-96 u/ha (150-250hrph).

FORMER WEST MIDDLESEX HOSPITAL, TWICKENHAM ROAD
Site located at the junction of Twickenham Road and Park Road and has a PTAL of 2-3. Demolition of hospital and erection of 280 new homes (flats and houses) together with amenity space and landscaping. Total residential car parking = 197 (0.7:1).The residential density of approx. 369hr/ha. This is above the Suburban (PTAL 2-3) setting indicative density range of 35-96 u/ ha (150-250hrph) – considered acceptable as a result of high quality design, adequate amenity and parking provision and good standard of accommodation.

LAND ADJACENT TO KEW BRIDGE, KEW BRIDGE ROAD
Site located to the west of Kew Bridge next to the Thames, with a PTAL of 2-3. Mixed-use development comprising approx. 3,700sqm of mixed commercial space (A1-A4, B1, D1-D2), 308 new homes with basement car and cycle parking, hard and soft landscaping and use of two arches of Kew Bridge for river related uses and installation of a pontoon. The residential site area is 1.82ha, giving a residential density of 169u/ha (585hr/ha). This is above the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hrph) – considered acceptable as a result of high quality design, adequate amenity and parking provision and good standard of accommodation, the inclusion of affordabe housing, good amenity space, large amount of family homes (103 3-bed+), design responsive to riverside setting and adjoining site designations and s.106 package.

Kingston

RED LION PUB SITE
Site located on a main road within Tolworth District Centre and has a PTAL of 3. Redevelopment of former pub site to provide approx. 1,150sqm of non-residential uses (A1, A2, A3 and A4) on ground floor and 50 mixed-tenure new homes above, comprising 18 x 1-bed, 27x 2-bed and 5x 3-bed apartments, rear car parking and servicing, decked amenity space and landscaping. Total residential car parking = 50 (1:1).
The residential site area is approx. 0.36ha, giving a residential density of 138u/ha (369hr/ha). This is within the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha (200-450hr/ph).

Lambeth

CLAPHAM ONE – MARY SEACOLE HOUSE (UNDER CONSTRUCTION)
Site located on Clapham High Street with a PTAL of 6a, within Clapham High Street Conservation Area. Mixed-use development comprising a library and health use on the ground floor and 136 flats above. Total residential car parking = 43 (0.3:1). The site area is 0.4ha, giving a residential density of 340u/ha (860hr/ph). This is above the Urban (PTAL 4-6) setting indicative density range of 45-260u/ha (200-700hr/ha) – considered acceptable as the height of the scheme in conjunction with the bold contemporary design appropriate for a building with important civic use, creative elevational treatment contrasts and compliments the historical setting and other benefits accruing from the scheme.

63A EFFAA ROAD (UNDER CONSTRUCTION)
Former industrial backland site to the south of Brixton Town Centre, with a PTAL of 6a. The scheme comprises the redevelopment of a vacant site to provide 42 residential units and associated landscaping. Total residential car parking = 4 (all for disables people (0.1:1). The site area is approx. 0.43ha, giving a residential density of 98u/ha (343hr/ph). This is within the Urban (PTAL 4-6) setting indicative density range of 45-260u/ha (200-700hr/ha).

FABRINK, COLDHARBOUR LANE
Site located to the east of Brixton Town Centre, about five minutes walk from Loughborough Junction, with a PTAL of 4.The scheme comprises the provision of two new buildings ranging between 5 and 8 storeys (plus lower ground floor level) in height to provide 108 self contained flats (100% Affordable Housing). Total residential car parking = 8 (all for disabled residents) (0.07:1).
The site area is approx. 0.43ha, giving a residential density of 251u/ha. This is within the Urban (PTAL 4-6) setting indicative density range of 45-260u/ha.

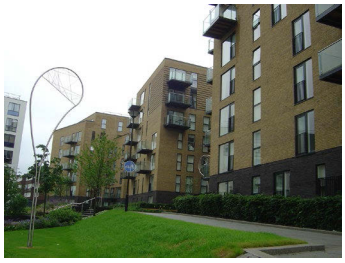
Appendix 2

Borough examples

GARAGES TO REAR OF WAVETREE COURT(NOT YET BUILT)
Lock-up garage site to the rear or Waventree Court (a 1930's mansion block), to the east of Streatham Hill District Centre with a PTAL of 6a. The scheme comprises the development of six three-storey and a three-storey building comprising of 6 self contained flats (12 residential units in total), together with managed car parking, landscaping works and provision of refuse/ recycling storage, with all access provided from Wavertree and landscaping. The car parking includes one ach for the six houses and a proportion of a further 23 spaces that are provided to compensate for the loss of existing car parking. The site area is approx. 0.22ha, giving a residential density of 55u/ha (514 hrph). This is within the Urban (PTAL 4-6) setting indicative density range of 45-260u/ha (200-700hr/ha).

FREEMAN'S SITE, CLAPHAM ROAD
The site is located on a main arterial road between Oval and Stockwell and comprises the former Freeman's catalogue warehouse/offices The scheme comprises the retention of and alterations to the listed building at 135 Clapham Road, retention of the locally listed Victorian print works building and erection of new buildings varying in height (maximum six storeys) containing 260 residential units and approx 13,200sqm of A1-A4/B1 uses, with a basement car park. Total residential car parking = 84 (0.3:1).The residential site area is approx. 1ha (discounting land used for non-residential purposes), giving a residential density of 260u/ha (747 hrph). This exceeds the Urban (PTAL 4-6) setting indicative density range of 45-260u/ha (200-700hr/ha).

Lewisham
SILVERMILL
This site adjoins Lewisham Town Centre, is five minutes from Lewisham Station (mainline and DLR) and has a PTAL of 6.The scheme comprises the construction of two x four to seven-storey buildings and one x five to eight-storey building containing 132 dwellings (73 1-bed, 47 2-bed and 9 x 3-bed) together with associated landscaping. This is a car-free scheme. The residential site area is approx. 0.27ha, giving a residential density of 488u/ha (1,170hr/ha). This is above the Central (PTAL 4-6) setting indicative density range of 140-405 u/ha (650-1,100hr/ph).



Newham
AREA 3, CANNING TOWN
The site (3.68ha in total, 3.38ha for density purposes) is situated to the south of the A13 and the Canning Town District Centre. It has a PTAL of 4. The development comprises redevelopment to provide a new primary school and 649 1, 2, 3 and 4-bed homes in buildings ranging between 3 and 20 storeys. There are 268 car parking spaces (0.41:1). The density is 192 u/ha or 610hrph. This is within the Urban (PTAL 4-6) setting indicative density range of 45-260 u/ha (200-700hrph).

43 CHURCH STREET
The site (0.2ha) is about 400m east of Stratford Metropolitan Town Centre. It has a PTAL of 3. The development comprises two 5-storey buildings containing 54 homes. There are 29 car parking spaces (0.54:1). The density is 270 u/ha or 712hrph. This is above the Central (PTAL 2-3) setting indicative density range of 65-240 u/ha (300-650hrph).

GREEN GATE HOUSE, 89 GREENGATE STREET
The site (0.38ha) is within Greenstreet District Centre and has a PTAL of 2. The development comprises the conversion and extension of an existing building and the erection of a new building at the rear. Together this provides 64 one and two-bedroom flats. There are 34 car parking spaces (0.53:1). The density is 168 u/ha. This is within the Urban (PTAL 2-3) setting indicative density range of 45-170 u/ha.

Redbridge
REPTON PARK
Repton Park. The former Claybury Hospital, Manor Road, Redbridge with a PTAL of 1. The development comprises the retention and re-use of a number of listed buildings and the conversion development of a total of 390 apartments and 500 houses. The residential site area is approx. 112ha, giving a residential density of 8u/ha. This is below the Suburban (PTAL 0-1) setting indicative density range of 35-75 u/ha (150-200hr/ph).

Harrow
SANMORE PLACE, HONEYPORT LANE, STANMORE
See BSE 7 in Section 4 of main report.

Havering
ACADEMY FIELDS
See BSE 4 in Section 4 of main report.

Southwark
BERMONSEY SPA
Site E-H of the larger Bermondsey Spa area, the site is around 0.57ha, has an Urban setting and a PTAL of 3. The scheme comprises 300sqm of retail and undercroft car parking on the ground floor of buildings that range between four and eight storeys. There are a total of 139 flats (1,2,3 and 4-bed) and 51 car parking spaces (a ratio of 0.4:1). The residential density is 244u/ha (680 hr/ha). This is above the Urban (PTAL 2-3) setting indicative density range of 45-75 u/ha (200-450hr/ph).


Sutton
THE HAMPTONS
Development of the former Worcester Park Sewage Treatment Works and Sutton Computer Centre. Development of 672 new homes on 12.1hectares of land and a new public park (12.5ha). Suburban setting with PTAL of 1B. There are a total of 992 car parking spaces, giving a ratio of 1.5:1. The density for the residential part of the site is 56u/ha. This is within the Suburban (PTAL 0-1) setting indicative density range of 35-75 u/ha.


WHYTE MEWS
Former Dairy Crest Site, Ewell Road. Part retention and conversion of existing buildings (8 homes) and part new-build of four new buildings (39 homes) on site of former dairy. The scheme contains 49 car parking spaces (just over 1 space per home).The 0.46ha site is on the edge of Cheam District Centre and has a PTAL of 2. The density for the site is 85u/ha (276hr/ha). This is within the Urban (PTAL 2-3) setting indicative density range of 45-170u/ha (200-450hr/ha).

BEDZED
Suburban site in Hackbridge. New housing completed in 2002. Residential density unknown.
Water Gardens Sutton. No information available.

Wandsworth
QUEEN MARY HOSPITAL SITE ROEHAMPTON
See BSE 6 in Section 4 of main report

Westminster
PEABODY AVENUE
See BSE 17 in Section 4 of main report

1-5 BERWICK STREET
This is a mixed use development on a relatively small, enclosed site within the Soho Conservation Area. It includes retail units at ground floor level with 15 flats above, comprising a mix of one, two and three bed units.

Officers at Westminster City Council also identified the Hallfield Estate (1940's) and St Georg's Field Estate (1970's) as schemes with architecturally distinguished blocks of flats within mature and generous landscaping. The Lisson Gove Estate was identified as a bad example – with high density blocks, porrsly designed with little landscaping, monotonous architecture and a rigid orthogonal layout.

Notes

1. Gross External Area (GES), Gross Internal Area (GIA) and Net Internal Area (NIA) references in this report are based on the RICS Code of Measuring Practice 6th Edition.

2. For a discussion of actual densities of occupation see The Density Debate: A Personal View, Christine Whitehead, LSE Publications (2008).

3. As described in Chapter 4 of Duncan Bowie's book 'Politics, Planning and Homes in a World City' (2010).

4 Section 344 The GLA Act 1999 and Section 24(1) of the Planning and Compulsory Purchase Act 2004.

5. Officers at LB Bexley, Croydon, Havering, Redbridge and Sutton.

6. Following discussion with the client, it was agreed that it was not necessary to prepare illustrations for sites with a Central setting and a PTAL of 0-1, since such sites are very rare.

7. The definition of 'medium' sites corresponds with the definition of 'major' development in The Town and Country planning (Development Management Procedure) (England) Order 2010 and the common threshold for the provision of affordable housing, included in the 2008 Consolidated London Plan. The definition of 'large' sites is those major developments that are also referable to the Mayor of London under the terms of Category 1A of the Town and Country Planning (Mayor of London) Order 2008.

8. CABE (2005) What Home Buyers Want: Attitudes and Decision making amongst Consumers. CABE (2005) What's it Like to live There: The Views of Residents on the Design of New Housing.

9. Llewelyn Davies, South Bank University, Environment Trust Associates. The Quality of London's Residential Environment. LPAC, 1994.

10. Residential Car Parking research, CLG, 2007.

11. Housing in London: The evidence base for the London Housing Strategy (October 2010), GLA.

12. Overcrowding in social housing: A London action plan (July 2010), GLA.

13. This issue is most recently discussed in the draft London Plan SPG 'Providing for children and young people's play and informal recreation' (February 2012) - although there is some evidence to suggest that child yield rates are increasing for the private rented sector.

14. See main SHMA scenario, set out in Table 3.10 of the draft Housing SPG and London Plan Policy 3.8.

15. Capital Gains: making high density housing work in London (July 2002), London Housing Federation.

16. Best Practice Guide on Wheelchair Accessible Housing (2007), GLA.

17. Capital Gains: making high density housing work in London (July 2002), London Housing Federation.

18. Living StreetsWalk to School website accessed 23-03-12http://www.livingstreets.org.uk/take-action/

19. Croydon Housing Typologies (August 2010), part of LB Croydon's LDF evidence base (prepared by the consultant team and GVA) http://www.croydon.gov.uk/planningandregeneration/croydons-planning-policy-framework/ldf-evidence-base/homes

20. Housing our Ageing Population Panel for Innovation report (2009).

21. BPF, Planning for Social Infrastructure in Development Projects: A guide to tackling the key challenges (April 2010) and the HCA Advisory Team for Large Developments (ATLAS) Social Infrastructure Matrix (2011).

22. Section 216 of the Planning Act 2008 (as amended) defines 'infrastructure' as: (a) roads and other transport facilities, (b) flood defences, (c) schools and other educational facilities, (d) medical facilities, (e) sporting and recreational facilities, and (f) open spaces.

23. London Housing Standards 2009/10, HATC April 2012.

24. Perceptions of Privacy and Density in Housing, Popular Housing Group (August 2003).

25. The Town and Country planning (Mayor of London) Order 2008, Category 1C, defines these thresholds as (a) buildings more than 25 metres high adjacent to the River Thames, (b) buildings more than 150 metres high in the City of London and (c) buildings more than 30 metres elsewhere.

26. Evolving London: The future shape of the capital, GVA in association with Centre for Cities (Spring 2012).

27. Development, Investment and New Homes Focus: A question of balance; matching development viability with housing need, London, Savills (2011).

28. 'The Revised London Housing Strategy' published for consultation purposes, December 2011.

29. GLA Development Control Toolkit – May 2011 version and associated Guidance Notes (May 2011).

30. The Mayor and borough CIL Charging Schedules have to be supported by financial viability testing and do / will include differential rates for different uses / geographical areas to reflect different market demand / land values in different parts of London.

31. Centre for Cities interviews. See also Parkinson M, Ball M, Blake N, Key T (2009) The Credit Crunch and Regeneration: Impact and Implications, London, DCLG.

32. HCA ATLAS Topic Practice Note T1.2.2 'Reviewing the Components of Stalled Scheme' (January 2010).

33. See for example the Mayor of London's draft Best Practice Guidance (2004) on 'Making Better Use of Supermarket Sites.

34. Section 11, draft Land for Transport and Housing SPG (Feb 2012).

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Barking Central - GLA
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