

# UNLOCKING LONDON'S RESIDENTIAL DENSITY

## UNLOCKING LONDON'S RESIDENTIAL DENSITY



May 2017

**LONDON  
FIRST**  
in partnership with

**gia**

# EXECUTIVE SUMMARY

London's population is expected to grow to 11 million by 2050<sup>1</sup>, creating challenges in meeting its existing and future housing needs. London therefore needs to make better use of its existing land and develop at higher densities.

A new approach to daylight and sunlight guidance for dense urban environments is one of the key components to achieving a significant increase in new housing and maintaining good quality amenity. If this is addressed, we can unlock greater development in London to make better use of its land and deliver higher densities, whilst optimising the quality of new housing.

The most commonly used guidance on daylight and sunlight is published by BRE (Building Research Establishment). It contains nationally applicable best practice guidelines on the levels of daylight and sunlight that existing and new development should follow. Whilst it recommends a more contextual approach and setting alternative target values for city centres, urban environments and historic locations, it crucially does not set out what these are.

In the absence of this guidance, a "one size fits all" approach is taken by many Local Planning Authorities (LPAs), resulting in the same daylight/sunlight targets appropriate for a development in suburban locations being applied to developments in central London. This impedes London's ability to make the most efficient use of its land resulting in low site coverage and greater separation distances between buildings. Most importantly, it hinders London's ability to deliver the volume of homes that its population needs.

## **This report recommends that:**

- New contextual guidance on daylight and sunlight specific to London (and other urban environments) should be prepared to enable appropriate targets to be set for development in the capital. In turn, this will enable Local Planning Authorities (LPAs) to make better informed planning decisions to deliver more homes that still provide high quality living environments.
- An area's existing context, or one of a similar typology and character to the proposed development, should be used as a benchmark to determine the appropriate target levels of daylight and sunlight that should be achieved.

---

<sup>1</sup> London Infrastructure Plan 2050: A consultation, Greater London Authority: July 2014.

- The London Plan should include new guidance on determining the appropriate density of new development having regard to the development proposed, the site context and the relative access to a range of services, facilities and amenities.

**It concludes that:**

- There are alternative measures available to judge an area's existing prevailing density and built form including layout and site coverage (the amount of land built upon relative to open space). These measures could be included within the proposed new guidance to enable higher density development to be delivered through more efficient use of land, whilst maintaining the daylight and sunlight standards typical of the resulting urban grain.
- A step change in approaches to site masterplanning and design, such as varied street widths and using different building typologies at varying scales, will allow greater variety of architectural responses to be delivered. In addition, varying floor to ceiling heights and window design, such as bay windows, can ensure that the development maximises the available daylight and sunlight to new homes – thus enabling elements of London's existing street pattern to be replicated.
- Daylight and sunlight is only one of the factors influencing people's decision of where to live however, it is one of the main considerations used to assess the appropriateness of residential led planning applications including its density, layout and built form. Daylight and sunlight should be considered alongside a range of other amenities such as; location, access to public transport, open space, shops and recreation facilities. This will assist in assessing the degree of weight that should be given to daylight/sunlight relative to the site's context and access to other amenities in planning applications.
- In the recently published Housing White Paper: "Fixing our broken housing market" (February 2017), the Government set out its intention to amend the National Planning Policy Framework to ensure that effective use is made of land to deliver higher densities. The measures set out in this report will enable more efficient use of land in the capital to deliver more homes through higher density development.

# CONTEXT

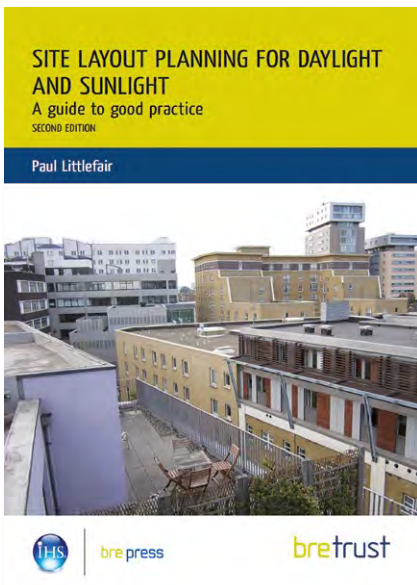
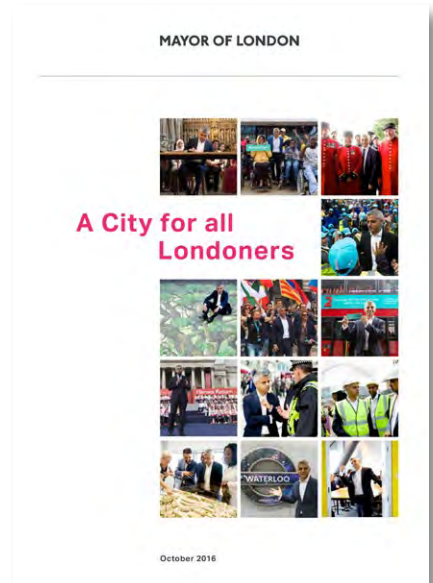
London's population is expected to reach 11 million by 2050<sup>1</sup>. The London Plan sets a target of 49,000 new homes per annum, however, last year only 26,000 were delivered.

London is not building enough homes to meet its existing and projected needs. Part of the solution to increasing housing development is to make more efficient use of land. One way this can be achieved is through building at higher densities. The Mayor's vision for London: 'A City for All Londoners' (November 2016) identifies a 'need to intensify development across the city'.

The levels of daylight and sunlight received by new and existing development is one of the significant factors influencing the layout, urban grain<sup>2</sup>, scale and therefore, density of new development. BRE's "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" (2011) is the most commonly used guidance to test the acceptability of daylight and sunlight levels of new development in planning applications. However, it is often being interpreted and applied too mechanistically by LPAs resulting in the same targets being demanded in suburban locations as central London and thus preventing the most efficient use of land and achievement of higher densities.

London First's report 'Redefining Density' published in 2015 called for the Mayor to change planning policy in London to support higher density development where appropriate. This report looks further at how increased residential densities can be achieved in London. It calls for new guidance on daylight and sunlight for London

to enable better use of available land to deliver more homes. This report also calls for new approaches to the assessment of residential density in the London Plan, including how residential amenity is considered as a factor in determining residential density.

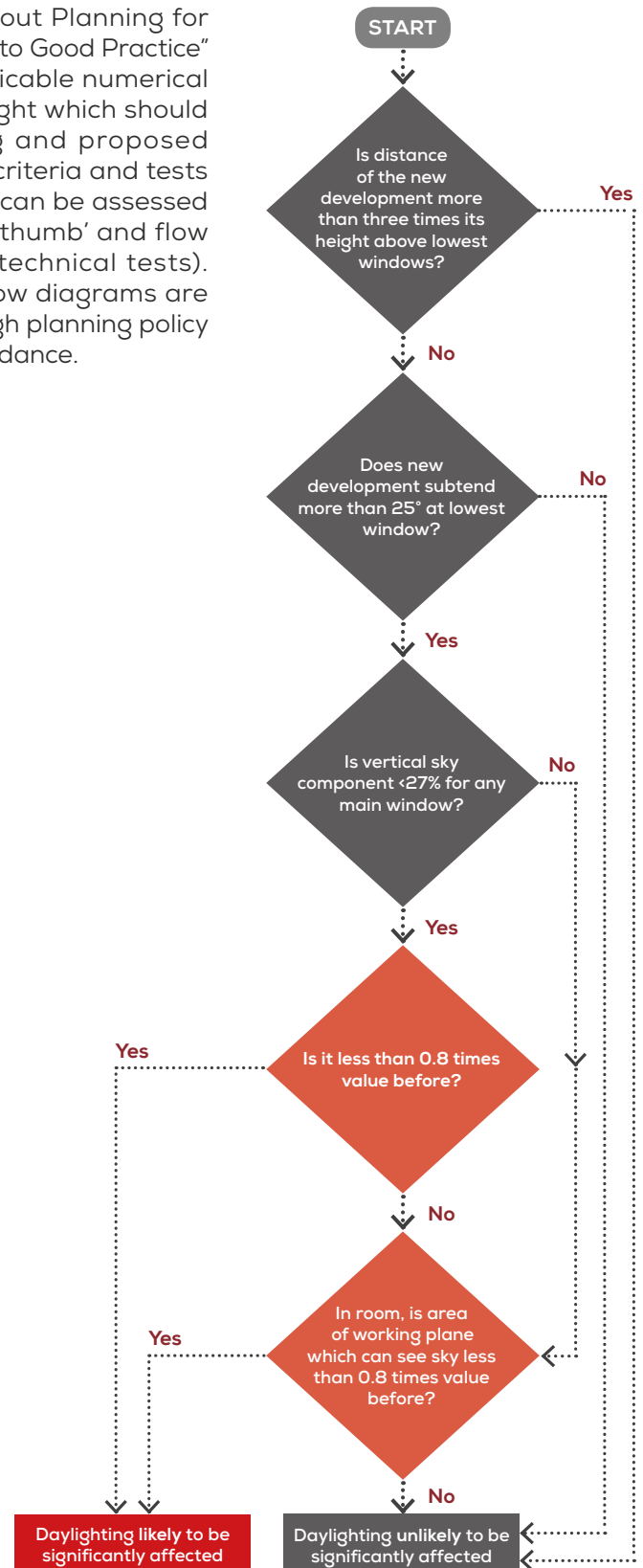


1 London Infrastructure Plan 2050: A consultation, Greater London Authority: July 2014.  
 2 Urban grain can be described as the pattern of the arrangement and size of buildings and their plots in a particular area.

# DAYLIGHT AND SUNLIGHT AVAILABILITY

In this report, daylight refers to the quantum of sky light entering a building. Sunlight refers to direct sunshine received within a building or an open space.

The BRE guidelines "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" (2011) set out nationally applicable numerical targets for daylight and sunlight which should be achieved within existing and proposed developments. They also set criteria and tests for how daylight and sunlight can be assessed (ranging from basic 'rules of thumb' and flow diagrams to more detailed technical tests). These 'rules of thumb' and flow diagrams are very often replicated in Borough planning policy or supplementary planning guidance.



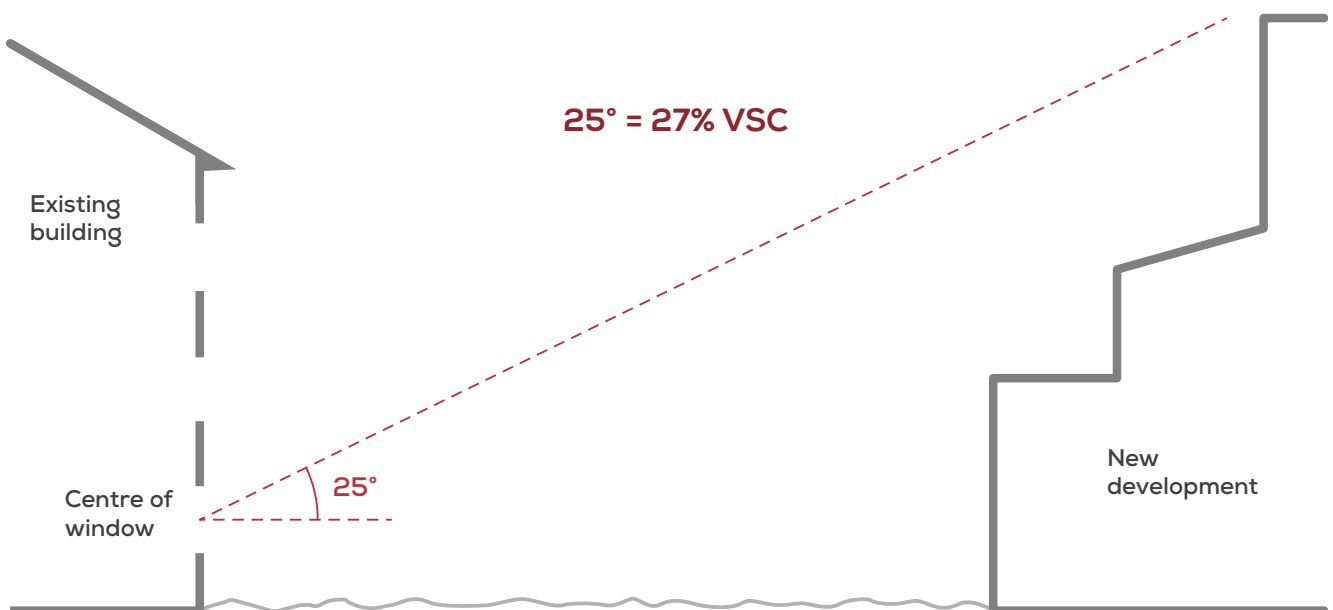
Example of 'rule of thumb' flow diagram - information taken from BRE Guidelines

## EXAMPLE OF BRE'S BASIC TESTS

BRE's **Vertical Sky Component (VSC)** test (i.e. how much sky light is visible from a window under an overcast sky) is used to assess the level of impact of a new development upon an existing building. Quite often a very simple rule of thumb is applied, taking a **25 degree vertical angle** from the **lowest windows** to dictate the achievable building envelope for the proposed opposing building.

If a development fails these basic tests, it does not automatically follow that daylight and sunlight levels will be insufficient. However, it does mean that more detailed assessments are required and more thought given to design details and layout.

The BRE handbook acknowledges that for an urban context or in an historic town centre, its "numerical guidelines should be interpreted flexibly since natural light is only one of many factors in site layout design" and amenity provision. Despite this, its targets are often applied mechanistically by LPAs in determining planning applications. In the worst cases, some LPAs take an over simplistic approach and use the basic 'rule of thumb' tests to restrict the layout and scale of development at pre-application/design stage without reliance on the more detailed tests or consideration for the context or aspiration of the proposed development.



Extract from BRE Guidelines showing how the 25 degree rule of thumb works



The current interpretation of BRE's daylight and sunlight levels is not making the most efficient use of London's land. Higher densities could be achieved if this issue is addressed - this is explained in further detail in the next section.

The principal shortfall of the BRE handbook is the absence of clear advice that different guidelines and approaches for setting appropriate alternative targets should be adopted in urban contexts, historic town centres or areas earmarked for higher density. It is not surprising therefore that the suggested numerical targets are often applied as standard by planning officers who often lack the resources to consider the matter in more depth. Equally, planning committees need to be more aware of this issue and its implications if they are to make informed decisions.



An example of traditional terraced houses in North London that comply with the '25 degree rule'

# THE PROBLEM

Density can be an emotive issue and the term is often incorrectly associated with low quality living environments, taller buildings or overcrowding.

However, some of the densest parts of London such as Covent Garden, Marylebone Mayfair, Shad Thames and Chelsea, are also some of the most sought after areas to live and work in as well as being predominantly low to mid-rise with good access to public transport and a range of amenities and facilities.

Many of these places, and indeed much of London's central areas, do not comply with current national standards or the daylight and sunlight levels expected by the BRE guidance. This does not mean that the quality of such accommodation is inadequate or the daylight levels poor. The images below illustrate that streetscapes and built form of some of London's most typical and highly valued locations would not be permitted today in planning terms if BRE's daylight and sunlight guidance were stringently applied. In a similar vein, it would be difficult to reproduce such built form in new developments given the common interpretation of BRE guidance.

## APPLYING THE BRE GUIDANCE



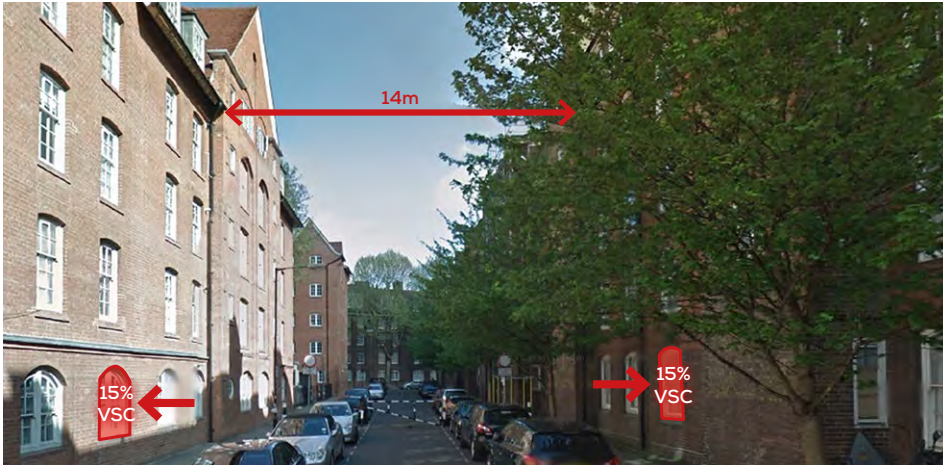
Image © Google Street View



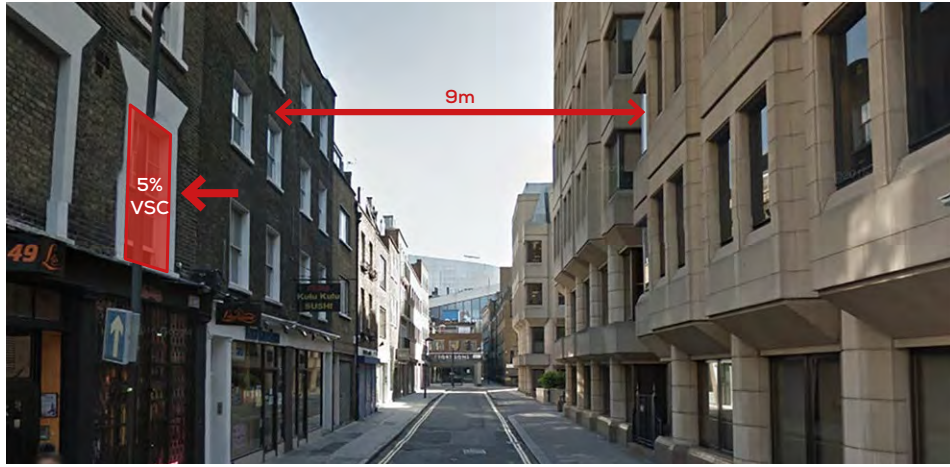
Image © Google Street View

Westminster





Shoreditch



Covent Garden



EMERGING CONTEMPORARY MASTERPLANS -  
DESIGN APPROACHES TO DELIVERING DENSITY



Image © Lendlease



Image © Berkeley South East



Image © Ballymore



Image © Allies and Morrison



Image © Anthony Charriton/ODA



Image © High Level Photography Ltd



A mechanistic approach to the interpretation of daylight and sunlight guidance (and the expectation of this in the planning application process) can be a limiting factor in the design and masterplanning of new developments. A new approach to the interpretation of daylight and sunlight standards would enable a greater variety and character of architectural responses and opportunities to be delivered on development sites.

## CURRENT LONDON PLAN POLICIES ON RESIDENTIAL DENSITY

The current number driven approach to residential density in the London Plan policies result in a target driven approach to site masterplanning.

### DENSITY MATRIX

| Setting           | Public Transport Accessibility Level (PTAL) |                 |                  |
|-------------------|---|-----------------|------------------|
|                   | 0 to 1                                      | 2 to 3          | 4 to 6           |
| <b>Suburban</b>   | 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/h     | 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    |
| <b>Urban</b>      | 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/h    | 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    |
| <b>Central</b>    | 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/h    | 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   |

hr = habitable room  
u = unit  
ha = hectare  
source: London Plan 2015

The London Plan includes several policies relating to residential density including the factors that should be taken into account; local context, design and transport capacity, and social infrastructure. The Density Matrix (opposite) forms part of this guidance and provides indicative density ranges based upon access to public transport (PTAL) and three types of settings which represent the character of the area – urban, suburban and central. The London Plan states clearly that the matrix should not be applied mechanistically and regard should be had to the other factors listed above when making planning decisions.

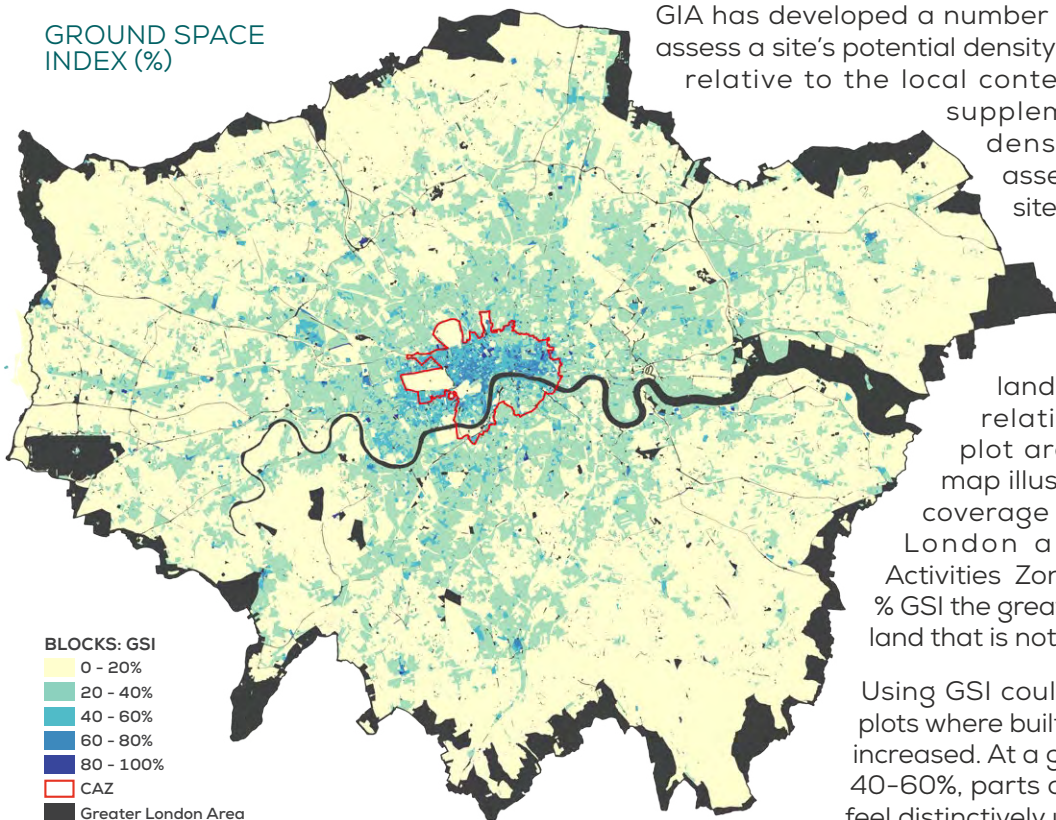
While the density matrix is a useful indicator of the number of homes that might be achievable it does not provide an indication of the quality of the proposed development and the factors contributing towards its character. For example, the range of amenities and facilities that would be expected on site or within the local area or the typologies of design that could be adopted to achieve this.

The latest Housing SPG (2016) goes some way towards acknowledging typologies, urban grain and the role of daylight and local context in assessing a site's residential density:

**1.3.45** *1.3.45 An appropriate level of flexibility needs to be applied when using BRE guidelines to assess the daylight and sunlight impacts of new development on surrounding properties, as well as within new developments themselves. Guidelines should be applied sensitively to higher density development, especially in opportunity areas, town centres, large sites and accessible locations, where BRE advice suggests considering the use of alternative targets. This should take into account local circumstances; the need to optimise housing capacity; and scope for the character and form of an area to change over time.*

**1.3.46** *The degree of harm on adjacent properties and the daylight targets within a proposed scheme should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London. Decision makers should recognise that fully optimising housing potential on large sites may necessitate standards which depart from those presently experienced but which still achieve satisfactory levels of residential amenity and avoid unacceptable harm.*

Whilst the SPG does not provide numerical guidance it does suggest how alternative daylight and sunlight levels could be arrived at which are contextual. In turn, measuring the levels arising from and within a proposed development against those contextual targets, would enable higher density development to be achieved.



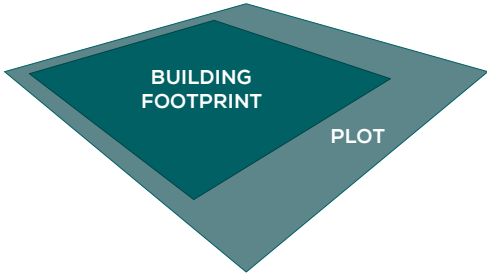
GIA has developed a number of new metrics to assess a site's potential density and site coverage relative to the local context. The aim is to supplement the current density measures to assess how much of a site is built upon.

Ground Space Index (GSI) is a measure of the amount of land that is built upon relative to the overall plot area. The adjacent map illustrates the ground coverage (or GSI) – across London and the Central Activities Zone. The smaller the % GSI the greater the quantum of land that is not built upon.

Using GSI could help determine plots where built footprint could be increased. At a ground coverage of 40-60%, parts of London begin to feel distinctively urban.



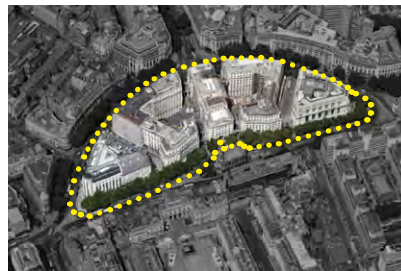
GROUND / PLOT COVERAGE (GSI)



0 - 20%



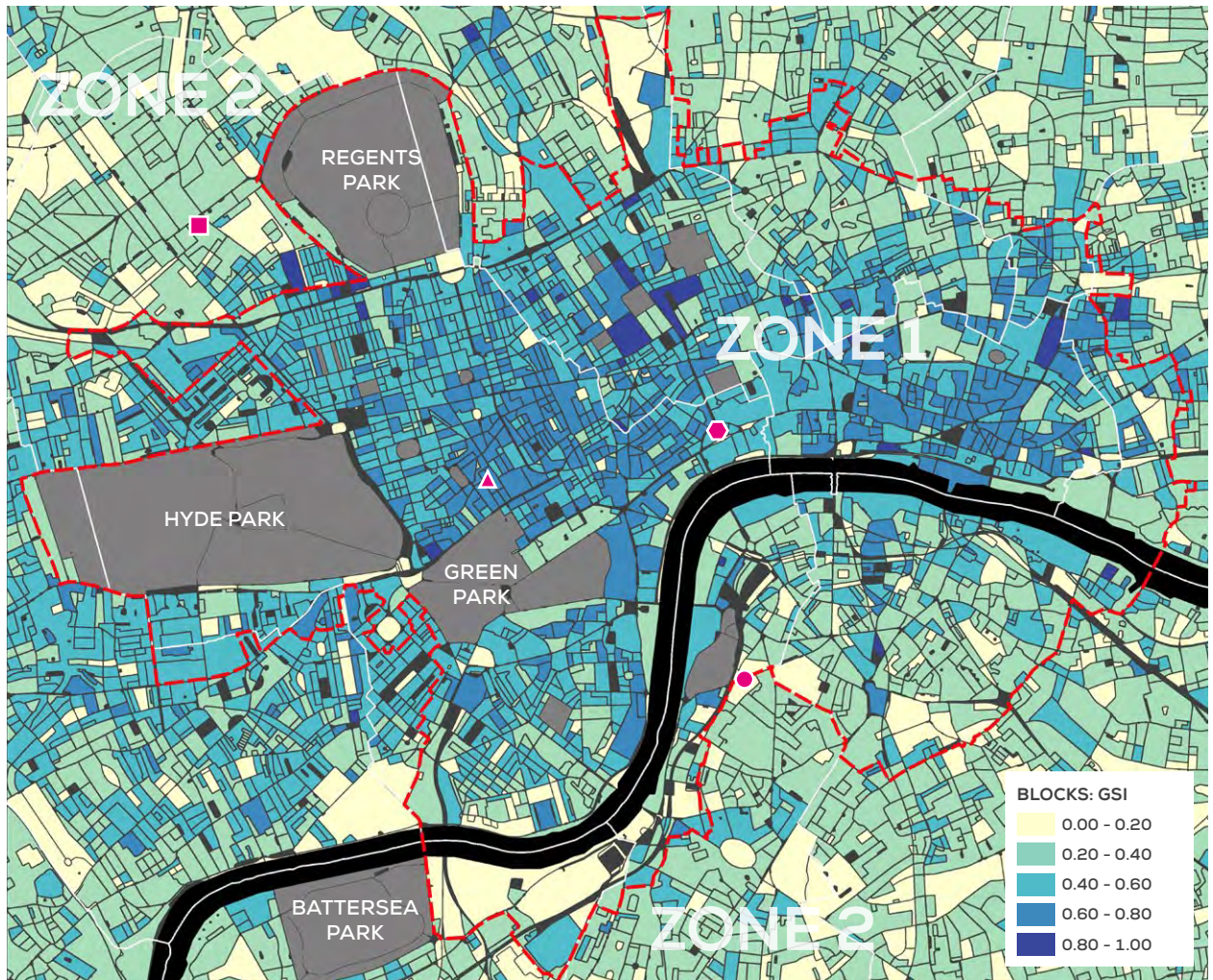
20 - 40%



40 - 60%



60 - 80%



Ground Space Index (%)

BLOCKS: GSI

- 0.00 - 0.20
- 0.20 - 0.40
- 0.40 - 0.60
- 0.60 - 0.80
- 0.80 - 1.00



## APPROACHES TO DELIVERING RESIDENTIAL DENSITY IN LONDON

In an attempt to understand the problem and identify practical solutions, an initial review was made of the existing approaches to delivering density in London and what we can learn from them. For example, the images below show comparable amounts of square feet on similar sites with two different approaches to density; the former adopting high levels of ground coverage and low to mid-rise development, the latter shows low ground coverage and high-rise buildings.

### GROUND COVERAGE



Image © Google Earth

High ground coverage

Ironically, it is not possible to easily replicate the built form of this first style in a new masterplan, even though narrow streets and mid-rise buildings often characterise areas that are praised for their quality.

When BRE's daylight and sunlight targets are mechanically applied by LPAs the outcome is more often than not high-rise and low ground coverage.

As a response to greater distance between buildings, high-rise development is adopted in an attempt to increase density over a small built footprint. This in turn, can however impact on build costs and delivery periods for new development due to the complex construction requirements of taller buildings.

It is also more challenging to deliver mixed residential tenures in taller buildings due to the impact on service charges. High rise and the resulting town scape can increase planning risk and therefore time scales to consent, which can also affect the development's viability. Larger and taller buildings further constraint construction phasing, whilst increasing maintenance costs.

Finally, the number of available contractors capable of delivering such schemes reduces proportionally to the size and height of the proposal, making bidding less competitive and increasing construction costs as a result.



Image © Fletcher Priest Architects / Berkeley Homes

Low ground coverage

# THE SOLUTION

Better use can be made of London's available land to deliver higher density development whilst delivering a high quality residential environment at a more comfortable human scale. There are however, a number of changes to the design and planning process required to deliver this.

## 1 **NEW GUIDANCE ON THE ASSESSMENT OF DAYLIGHT AND SUNLIGHT FOR LONDON**

More specific guidance on daylight and sunlight should be prepared for London and other urban areas that supplements the BRE guidelines. This will enable LPAs to make better informed planning decisions on the acceptable design, scale and density of development in the capital.

This guidance would set out that the expected daylight and sunlight levels within and around a new development should be determined with regard to the existing context, either local or of similar typology across the city.

A clearer methodology should be provided for how this can be assessed or guidance provided on where this information can be accessed. In other words, looking at the prevailing daylight levels within the local context or of similar urban grain across the city, in order to set local alternative daylight and sunlight targets.

Any proposed new guidance will not necessarily be numerical although some values for certain locations may be considered. The intention is not to repeat the opportunity to be linear or formulaic about daylight/sunlight.

This guidance should be underpinned by a National Planning Policy Framework and a London Plan policy that explicitly directs LPAs to request and interpret BRE's guidance on daylight and sunlight for central London and urban environments with regard to context.

## 2 **A NEW APPROACH TO THE DESIGN AND MASTERPLANNING OF SITES TO OPTIMISE DAYLIGHT AND SUNLIGHT IN THE CONTEXT OF WIDER AMENITY PROVISION**

Many of London's new residential developments share similar attributes, with designers, architects and developers adopting similar formats such as courtyard arrangements with towers sited on a podium and perimeter blocks located around a large, often elevated, open space. The layout and placement is habitually dictated by the need to maintain separation between building faces to maintain BRE's daylight and sunlight levels as well as privacy. However, the suggested distances (typically between 18-21 metres), when strictly adhered to, are uncharacteristic of city centre living and of London's denser and distinctive urban grain. More importantly, they pose a design threat to the delivery of a varied and rich urban streetscape.

New guidance on daylight and sunlight should enable development to respond to existing context or a desired streetscape in terms of building height and separation distances between buildings. This does not mean that poor daylight and sunlight levels would ensue.

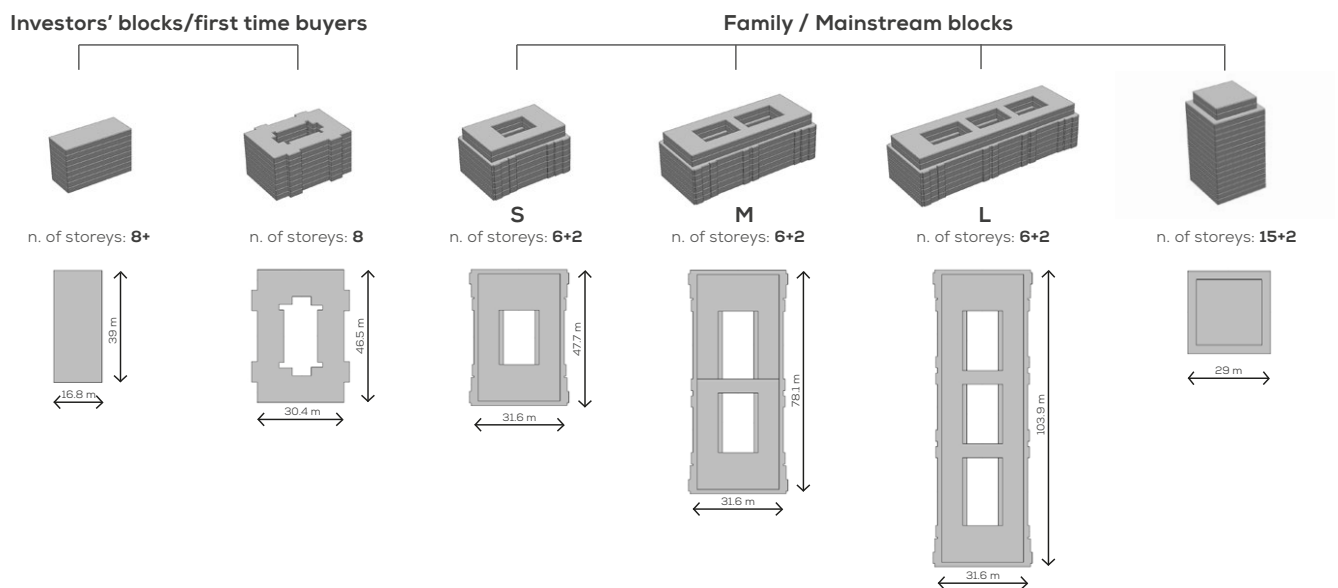
Developers and masterplanners may need to consider new approaches to the design and layout of buildings to optimise daylight and sunlight available whilst making the best use of land. For example, tests undertaken by GIA demonstrate that increased floor to ceiling heights allow buildings to sit closer together and comply with daylight guidance (at 14m distance face to face).

The use of bay windows, while providing side views, can also increase the amount of light into the room they serve.

Double aspect buildings, whilst helping with cross ventilation, can enable the provision of living areas at the front and bedrooms at the back, where there is a need for less light throughout the day time.


The guidance would also mean that larger sites will be less constrained in design terms, setting their own character, sometimes more than one, but always with reference to an existing urban context example. By taking a combination of current approaches to site masterplanning and the new approaches suggested in this report, increased densities can be delivered whilst also providing new open spaces in new development.

- 1 TAILORING LAYOUTS TO OCCUPANTS BY DESIGNING BUILDINGS FROM THE INSIDE OUT
- 2 KEEPING BUILDINGS' STRUCTURE SIMPLE BY REDUCING THE UNIT MIX THEY PROVIDE
- 3 ADOPTING A GREATER NUMBER OF TYPOLOGIES TO DELIVER VARIETY




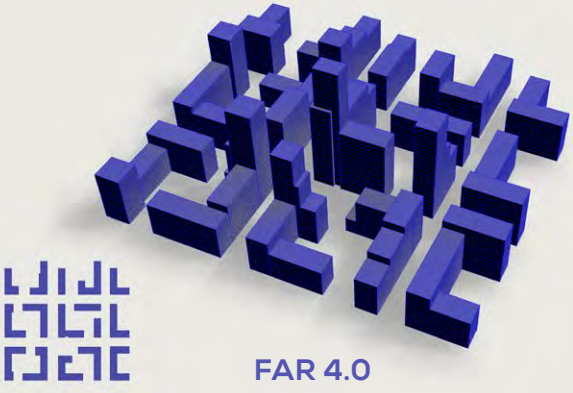


**DUPLO**




**LEGO**





**FAR 4.0**



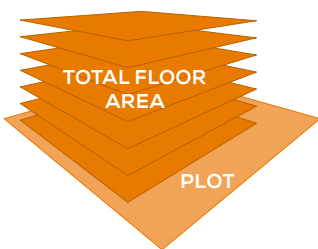
**FAR 4.0**

**HOW CAN WE:**

- Lower planning risk?
- Make buildings cheaper to construct and
- Quicker to deliver?
- Allow for greater variety of streetscapes?

WHAT IS FAR?

**Floor Area Ratio** is the total floor area of a building over the size of the plot of land upon which it is built.



3 **THE NEW LONDON PLAN SHOULD ADOPT NEW APPROACHES TO DETERMINING APPROPRIATE RESIDENTIAL DENSITY**

If London is to deliver higher density development, particularly in London’s town centres, transport nodes and suburbs, a new approach to the determination of appropriate residential densities should be taken by the London Plan.

London First’s Redefining Density Report identified that density is the output of a broader range of factors such as transport connectivity, the location and characteristics of the site and social infrastructure requirements. Ensuring these factors are properly addressed and, in particular, that new homes (or a mixed-use development) are well-designed and of a high-quality, allows for higher densities to be achieved.

Whilst the London Plan’s density matrix is a helpful tool to determine the quantum of new homes that may be appropriate for an area with a given transport access level, it does not indicate how this density may be delivered on a particular site nor the overall quality and residential amenity that can be achieved.

This report has identified that some of London’s most sought after addresses do not reflect the typical interpretation of BRE’s daylight and sunlight targets, yet these command some of the highest property prices and people still desire to live there. This demonstrates that there are a variety of factors influencing choice of where to live.



#### 4 AMENITY: FINDING THE BALANCE

There are a variety of factors influencing choice of where to live and these include but are not limited to - transport accessibility, the size of the property, access to a range of different amenities and services such as shops, restaurants, leisure facilities, social infrastructure, schools, healthcare, parks and open space.

##### WHAT IS AMENITY?

*Its dictionary definition is: "the pleasantness or attractiveness of a place". For urban environments, this will normally include access to **public transport, shops, cafes, restaurants and leisure facilities**, as well as **open space**. It also incorporates scale, grain, architecture and townscape.*

##### HOW DO WE MAKE USE OF THE DIFFERENT TYPES OF OPEN SPACE?

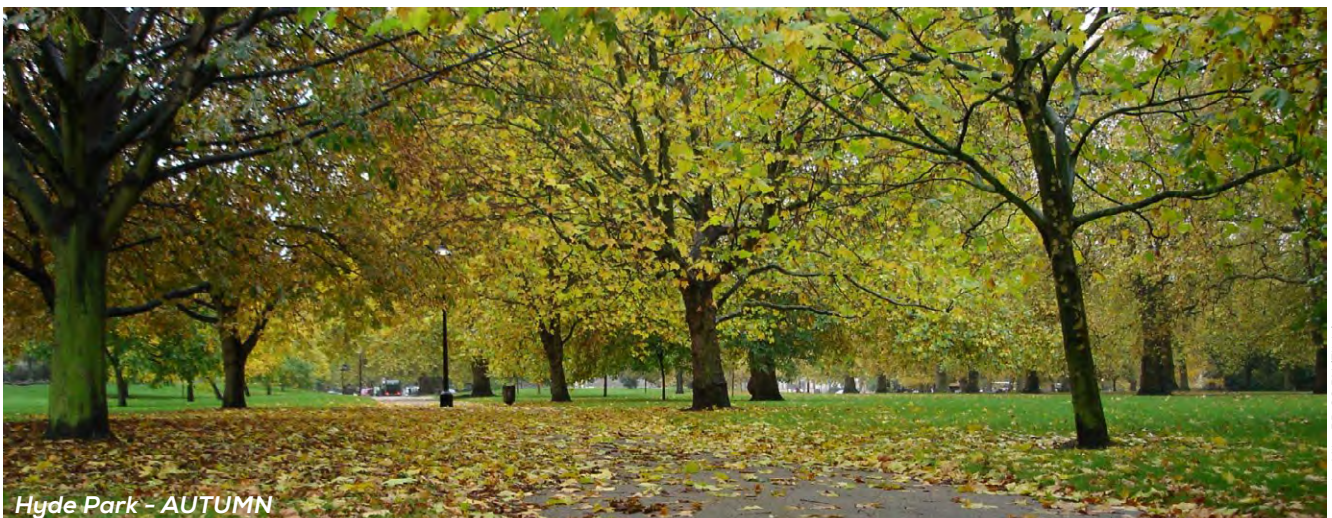


Image by Mike PD CC BY (Flickr)



The GLA should consider developing a set of complementary tools to assess a site's relative accessibility to a range of services, facilities and amenities in determining its appropriate density – an Amenity Index, which could also identify a reduction in communal open space requirement on site due to the existence of parks or open space in the surrounding area for example. A commitment towards the upgrade and maintenance of local open spaces is sometimes the most effective way to balance amenity and density.

Such an Index would be a helpful tool to evaluate whether higher densities are sustainable and to determine the mix of uses that should be provided on site or in the surrounding area alongside new homes.





Image © Evening Standard





# THE LONDON PLAN...

The London Plan should acknowledge that the drivers for homes in central London, urban and suburban areas are different.

It should therefore recognise the importance of setting a vision and encourage the studying of context before setting targets for residential density.

## CONTEXTUAL AMENITY INDEX: COULD THIS THEREFORE BE A WAY FORWARD?



Image © Google Earth & Street View

SUBURBAN (Surbiton)



Image © Google Earth & Street View

URBAN (Notting Hill)

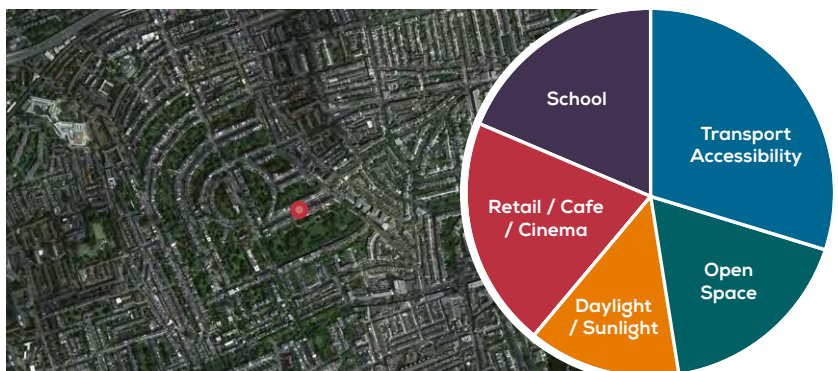


Image © Google Earth & Street View

CITY CENTRE (Covent Garden)









**ADDRESS**

MIDDLESEX HOUSE  
34-42 CLEVELAND ST  
LONDON W1T 4JE

**CONTACT**

T 020 7665 1500

[ehutchinson@londonfirst.co.uk](mailto:ehutchinson@londonfirst.co.uk)

[WWW.LONDONFIRST.CO.UK](http://WWW.LONDONFIRST.CO.UK)



**ADDRESS**

THE WHITEHOUSE  
BELVEDERE ROAD  
LONDON SE1 8GA

**CONTACT**

T 020 7202 1400

F 020 7202 1401

[mail@gia.uk.com](mailto:mail@gia.uk.com)

[WWW.GIA.UK.COM](http://WWW.GIA.UK.COM)

