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# DAYLIGHT & SUNLIGHT REPORT

9 Woodchurch Road  
West Hampstead NW6

Our Ref: 6041

28 July 2023

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## Report details

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Date of issue: 28/07/2023

# 1 Introduction

- 1.1.1 eb7 have been instructed to assess the quality of internal amenity within the proposed new development at 9 Woodchurch Road. These assessments consider the latest MDLR Architects scheme proposals dated July 2023.
- 1.1.2 The methodology and criteria used for these assessments is provided by Building Research Establishment's (BRE) guidance 'Site layout planning for daylight and sunlight: A guide to good practice' (BRE 209 3<sup>rd</sup> edition, 2022), which in turn references the British Standard BS EN17037:2018 'Daylight in buildings'.
- 1.1.3 In order to carry out an assessment, we have generated a 3D computer model (Test Environment) of the proposed development and the relevant surrounding obstructions. Using this model and our specialist software, we have calculated the daylight and sunlight levels within the proposed new dwellings.
- 1.1.4 The numerical criteria suggested within the BRE guidelines has been applied to each of the assessments mentioned above. It is important to note that these guidelines are not a rigid set of rules but are advisory and need to be applied flexibly according to the specific context of a site.

## 2 Guidance

### 2.1 Daylight & sunlight for planning

*'Site layout planning for daylight and sunlight: A guide to good practice', BRE 2022*

- 2.1.1 The Building Research Establishment (BRE) Report 209, *'Site layout planning for daylight and sunlight: A guide to good practice'*, is the reference document used by most local authorities for assessing daylight and sunlight in relation to new developments. Commonly referred to as 'the BRE guidelines', it provides various testing methodologies to calculate the potential light levels received by neighbours of a development site and provided within proposed new development.
- 2.1.2 The guidance given within the BRE document makes direct reference to the British Standard BS EN17037 (2018) and the CIBSE (Chartered Institute of Building Services Engineers) guide LG10: Daylighting – a guide for designers (2014). It is intended to be used in conjunction with these documents, which provide guidance on the assessment of daylight and sunlight within new buildings.
- 2.1.3 The 2022 update to the BRE guidance was published on 9th June 2022. The assessment methodologies and target metrics in respect of the impacts to neighbouring properties remain broadly unchanged from the earlier guidance save for some areas of clarification. The primary change relates to the assessment of internal daylight and sunlight amenity within proposed habitable accommodation. The new guidance reflects the British Standard BS EN17037, published in 2018, which was based on the relevant European Standard but, included a 'National Annex' clarifying the proposed application of the new internal guidance within the UK.
- 2.1.4 Detailed guidance upon the updated internal amenity standards is set out below. It is however important to note that the standards set out within BS EN17037 & BRE 209 (2022) are generally harder to achieve than the previous Average Daylight Factor (ADF) assessments adopted under the 2011 version of the guidance. A lower compliance rate with the new targets is not therefore indicative of a less acceptable scheme as the difference in the assessment metrics should be noted. This is particularly so in respect of urban development where a number of important design factors such as the provision of balcony private amenity space and limiting solar gain / overheating may lead to a trade-off against achieving higher internal amenity levels.

#### Daylight to new buildings or consented developments

- 2.1.5 The 2022 update to the BRE 209 document was published on 9<sup>th</sup> June 2022. The new guidance reflects the UK National Annex of the British Standard: BS EN17037 (2018) and provides two methodologies for assessing the internal daylight amenity to new residential properties. These assessment methods are known as 'Daylight Illuminance' or 'Daylight Factor' and are described in more detail below: -

### ***Daylight Factor Assessment***

- 2.1.6 The Daylight Factor method involves the computation of the daylight factor at each calculation point on the assessment grid.
- 2.1.7 The daylight factor is a ratio between internal and external illuminance expressed as a percentage. The calculation uses the CIE overcast sky model and is independent of orientation and location. In order to account for different climatic conditions at different locations different daylight factor targets may be applied for different cities with targets varying throughout the UK.
- 2.1.8 The daylight factor targets are to be achieved over at least 50% of the room assessment grid and are expressed as a median figure. For London these median daylight factor targets are:
- Bedrooms – 0.7%
  - Living Rooms – 1.1%
  - Kitchens – 1.4%
- 2.1.9 For multi-purpose living / kitchen / diner arrangements the higher 'kitchen' targets can be difficult to achieve due to the depth of internal space. In such cases, it is generally accepted that the living room target be used instead as this represents the predominant use of the space. The BRE guide gives the following: -

*"2.1.15 Non-daylit internal kitchens should be avoided wherever possible, especially if the kitchen is used as a dining area too. Daylight levels in kitchen areas should be checked. If the layout means that a small internal kitchen is inevitable, it should be directly linked to a well daylit room. Further guidance for assessment of this situation is given in Appendix C."*

### **Sunlight to new buildings or consented developments**

- 2.1.10 In respect of direct sunlight, the 2022 BRE guidance reflects the BS EN17037 recommendation that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1<sup>st</sup> February and 21<sup>st</sup> March with cloudless conditions. It is suggested that 21<sup>st</sup> March (equinox) be used for the assessment.
- 2.1.11 The BS EN17037 criterion can be applied to all rooms of a unit but it is preferable for the target to be achieved within a main living room. Rooms in all orientations may be assessed and the sunlight received by different windows may be added together providing there is no 'double-counting'.
- 2.1.12 Where a group of dwellings are planned the site layout and design should maximise the number of dwellings with main living rooms meeting these targets. It is also advised that a dwelling has at least one window wall facing within 90 degrees of due south.

## 3 Application of the guidance

### 3.1 Scope of assessment

- 3.1.1 Our assessment has considered all of the proposed residential units within the scheme. The daylight assessment considers all of the main habitable rooms (bedrooms, living rooms, kitchens etc.), toilets, hallways and staircases are not considered habitable use.

### 3.2 Application of the numerical criteria

- 3.2.1 The opening paragraphs of the BRE guidelines state:

*"The guide is intended for building designers and their clients, consultants, and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings."*

- 3.2.2 It is therefore very important to apply the BRE guidance sensibly and flexibly, with careful consideration of the specific site context. Its numerical targets theoretically apply to any built environment, from city centres to rural villages. However, in more tightly constrained environments, achieving the default BRE targets can be very challenging and conflict with other beneficial factors of site layout design.

- 3.2.3 With the above in mind, rigid adherence to the BRE in certain situations could easily result in an inappropriate form of development. In which case it may be appropriate to adopt lower target values more appropriate to the location concerned. This is acknowledged in the BRE guidance at paragraph 2.2.3 (page 14):

*"Note that numerical values given here are purely advisory. Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints."*

#### Criteria for daylight assessment

*"2.1.14 Living rooms and kitchens need more daylight than bedrooms, so where there is a choice it is best to site the living room or kitchen away from obstructions. Dual-storey maisonette-type apartments may be planned with the main living rooms on the upper storey and the bedrooms on the lower floor for this reason. Areas without a special requirement for daylight, like bathrooms, stairwells, garages, and storage areas, can occupy the most obstructed areas such as internal corners of buildings. In mixed use developments commercial*

*uses may occupy the less well daylit areas, allowing residential parts to have better access to light."*

#### **Criteria for sunlight assessment**

*"3.1.14 The BS EN 17037 criteria are intended to apply to minimum, medium, and high levels of sunlight in a range of situations. However, in special circumstances the designer or planning authority may wish to choose a different target value for hours of sunlight. If sunlight is particularly important in a building, a higher target value or different target date may be chosen, although the risk of overheating needs to be borne in mind. Section 4 gives guidance on passive solar design. Conversely, if in a particular development sunlight is deemed to be less important but still worth checking for, a lower target value could be used. In either case, the sunpath indicators in Appendix A will still show whether the hours of sunlight received meet the target."*

## 4 Planning Policy

- 4.1.1 We have considered local, regional and national planning policy relating to daylight and sunlight. In general terms, planning policy advises that new development will only be permitted where it is shown to provide suitable amenity for occupants.
- 4.1.2 The need to provide suitable levels of amenity with new dwellings is echoed within recent publications from the Mayor of London and the Secretary of State for Housing, Communities and Local Government. Although, these documents also stress that current guidance needs to be used flexibly where developments are located in urban areas and intend to achieve higher densities. Specifically, these documents suggest that the nationally applicable criteria given within the BRE guidance needs to be applied in consideration of the development's context.

### 4.2 London Borough of Camden – Camden Local Plan 2017

- 4.2.1 The local plan gives the following: -

#### 3.139 High quality accessible homes

*"Many aspects of housing quality have a critical impact on the health and well-being of occupiers. These aspects of quality include the external environment, the condition of the property and its state of repair and decoration, accessibility, internal space and number of bedrooms, separation between functions such as kitchens, living rooms and bedrooms, adequate noise insulation, and daylight and sunlight and all of which can affect physical and mental health and influence life chances. The Council will therefore seek to secure a variety of high quality housing to meet the needs of different users, and will not sacrifice quality in order to maximise overall housing delivery."*

### 4.3 The London Plan – The Mayor of London (March 2021)

- 4.3.1 The Mayor of London's New London Plan gives the following: -

#### Policy D6 Housing quality and standards

*"C. Housing development should maximise the provision of dual aspect dwellings and normally avoid the provision of single aspect dwellings. A single aspect dwelling should only be provided where it is considered a more appropriate design solution to meet the requirements of Part B in Policy D3 Optimising site capacity through the design-led approach than a dual aspect dwelling, and it can be demonstrated that it will have adequate passive ventilation, daylight and privacy, and avoid overheating."*

*"D. The design of development should provide sufficient daylight and sunlight to new and surrounding housing that is appropriate for its context, whilst avoiding overheating, minimising overshadowing and maximising the usability of outside amenity space."*



#### **4.4 The Housing SPG – The Mayor of London (March 2016)**

- 4.4.1 The London Plan Housing SPG confirms the flexibility that should be applied in the interpretation of the BRE guidelines having regard to the 'need to optimise capacity; and scope for the character and form of an area to change over time.'

*1.3.45. Policy 7.6Bd requires new development to avoid causing 'unacceptable harm' to the amenity of surrounding land and buildings, particularly in relation to privacy and overshadowing and where tall buildings are proposed. An appropriate degree 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.*

#### **4.5 The National Planning Policy Framework - Department for Housing, Communities and Local Government (July 2021)**

- 4.5.1 The latest version of the National Planning Policy Framework was issued in July 2021. The document sets out planning policies for England and how these are expected to be applied. In respect of daylight and sunlight it stresses the need to make optimal use of sites and to take a flexible approach to daylight and sunlight guidance. Para 125 States: -

##### **11. Making effective use of land**

##### ***Achieving appropriate densities***

*"125. Area-based character assessments, design guides and codes and masterplans can be used to help ensure that land is used efficiently while also creating beautiful and sustainable places. Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances:*

*c) local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework.*

*In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards).*

## 5 Sources of Information & Assumptions

5.1.1 Architectural drawings, site photographs and Ordnance Survey information have been used to create a 3D computer model of the proposed development in the context of the surrounding buildings.

5.1.2 The full list of source of information used in this assessment is as follows: -

### 5.2 Modula Studio Ltd

#### 2D drawings

22034-MS-PL-00-DR-A-110.dwg  
 22034-MS-PL-01-DR-A-111.dwg  
 22034-MS-PL-02-DR-A-112.dwg  
 22034-MS-PL-B1-DR-A-109.dwg  
 22034-MS-PL-R1-DR-A-113.dwg  
 22034-MS-PL-XX-DR-A-140.dwg  
 22034-MS-PL-XX-DR-A-141.dwg  
 22034-MS-PL-XX-DR-A-142.dwg  
 22034-MS-PL-XX-DR-A-170.dwg  
 22034-MS-PL-XX-DR-A-171.dwg  
 22034-MS-PL-XX-DR-A-173.dwg  
 Received 29/06/2023

22034-MS-PL-02-DR-A-112-P4  
 22034-MS-PL-B1-DR-A-109-P5  
 Received 21/07/2023

### 5.3 Promap

OS map

5.3.1 In order to produce the daylight and sunlight assessments in line with BRE guidance, we have applied a number of inputs to represent the physical nature of the proposed development and surrounding context. These inputs are: -

### 5.4 Material reflectance values

Surface	Reflectance value
Interior walls	0.8 (white paint)
Interior ceilings	0.8 (white paint)
Floors	0.4 (light coloured carpet or flooring)
Exterior walls and obstructions	0.2

Exterior ground	0.2
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*Table 1 - Surface reflectance of construction materials*

## 5.5 Glazing properties

- 5.5.1 We have assumed that the glazing used within the development will be standard clear double glazed with a low emissivity coating with a diffuse transmittance factor of 0.68. We have also applied a window framing factor, to account for the proportion of frame to glazing. We have used the standard BRE assumptions as listed in appendix C of the BRE guidance.
- 5.5.2 We have also applied a maintenance factor to the windows to account for the build-up of dirt. These are listed in the table below: -

Type of window	Urban
Vertical, no overhang	0.92
Vertical, sheltered from the rain	0.76
Sloping rooflight	0.84
Horizontal rooflight	0.76

## 6 Assessment results

### Daylight and sunlight within the proposed new dwellings

- 6.1.1 We have undertaken an assessment of the internal amenity to the proposed units in line with the assessments set out in the 2022 BRE guideline document. The results of these assessments are attached within the appendix 1.

#### **Daylight**

Assessment Method	No. of rooms assessed	Rooms meeting target
Daylight Factor	17	17 (100%)

*Table 2 - Summary daylight results for proposed accommodation*

- 6.1.2 The results of the daylight assessments demonstrate an excellent compliance given 100% of the proposed habitable rooms meet the BRE targets for their specific room use, with at least 50% of the assessment points achieving the daylight factor of 1.1% for LKDs and the recommended 0.7% for the bedrooms.

#### **Sunlight**

- 6.1.3 In respect of direct sunlight, the target is for the proposed unit to achieve at least 1.5 hours of direct sunlight on March 21st regardless of the orientation. The availability of direct sunlight to rooms is orientation specific.
- 6.1.4 The BRE guide acknowledges that it may not be possible for all rooms to enjoy a southerly aspect particularly in flatted developments. This is also the case with applications which utilise the existing building fabric and where the orientation is already fixed. The guidelines should therefore be interpreted flexibly and viewed on balance with other site constraints.

No. of units assessed	No. units that meet target
8	6 (75%)

*Table 3 - Summary sunlight results for proposed accommodation*

- 6.1.5 Our internal sunlight analysis indicates that the majority of the units will achieve the BRE recommendations with 6 of the 8 units (75%) meeting or exceeding the 1.5 hour target for sunlight. The remaining 2 units are 1<sup>st</sup> floor bedsits served by windows along the northern elevation and therefore sunlight levels will inevitably be limited given the windows are orientated outside of 90 degrees of due south. This is comparable to the existing condition, such that flexibility is appropriate and therefore the sunlight provision to the proposed accommodation is considered acceptable.
- 6.1.6 Overall, the internal sunlight exposure compliance level is considered to be good for

flatted development, particularly given the fixed orientation of the existing building and the full compliance for internal daylighting.

## 7 Conclusions

- 7.1.1 This practice has undertaken a detailed assessment of the daylight and sunlight amenity provided within the proposed new dwellings at 9 Woodchurch Road. These assessments have followed guidance set out within the BRE document BR209 '*Site layout planning for daylight and sunlight: A guide to good practice*' (BRE, 2022) and the British Standard BS EN17037:2018 '*Daylight in buildings*'.

### 7.2 Daylight within the proposed new dwellings

- 7.2.1 The assessment of daylight has been undertaken using the Illuminance and Daylight Factor tests as set out in the guidance. The results have shown that all proposed habitable rooms achieve daylight factor levels that exceed the recommended targets for their specific room use and are therefore in accordance with the BRE guidelines.

### 7.3 Sunlight within the proposed new dwellings

- 7.3.1 The results of the internal sunlight assessments demonstrate that the majority of the proposed units (75%) will achieve at least 1.5 hours of sunlight on the 21st of March thus meet the BRE targets. In isolated instances where 2 units fall short of the recommendations, this is inevitable given they are orientated outside of 90° of due south.
- 7.3.2 The BRE recognises that it may not be possible to ensure all units have a southerly aspect and that in such instances internal sunlight levels will be limited. Nevertheless, the sunlight exposure results show a good level of compliance with the BRE recommendations and is considered wholly acceptable for a flatted scheme - particularly where all units demonstrate full compliance for internal daylight amenity.
- 7.3.3 Overall, the proposal will provide a high-quality accommodation for the future occupiers. As such, the proposals are considered to be in line with the BRE guidelines and relevant planning policy in respect of daylight and sunlight.



# Appendix 1

Drawings of proposal and detailed results of the daylight and sunlight assessment



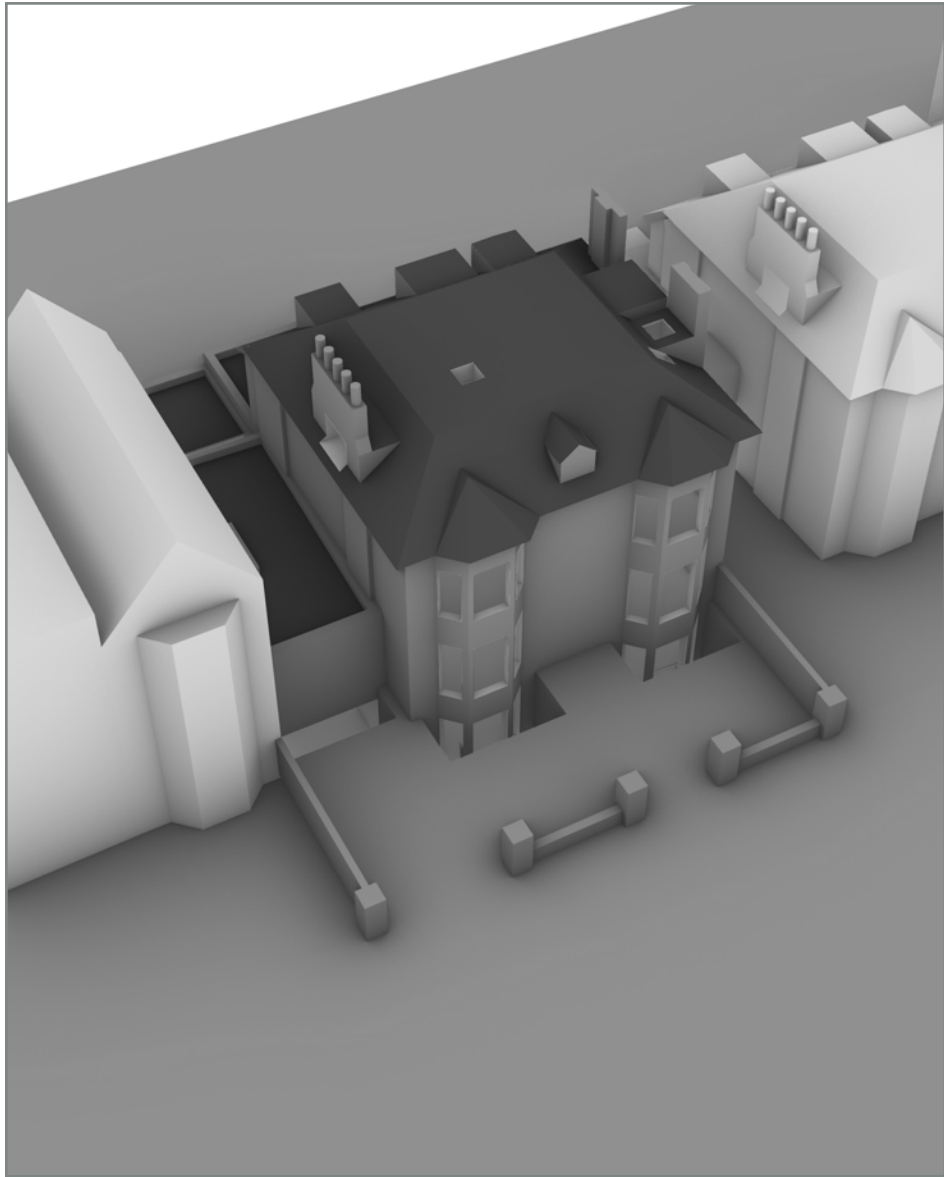


Fig. 1: Bird's Eye View - Proposed Scenario

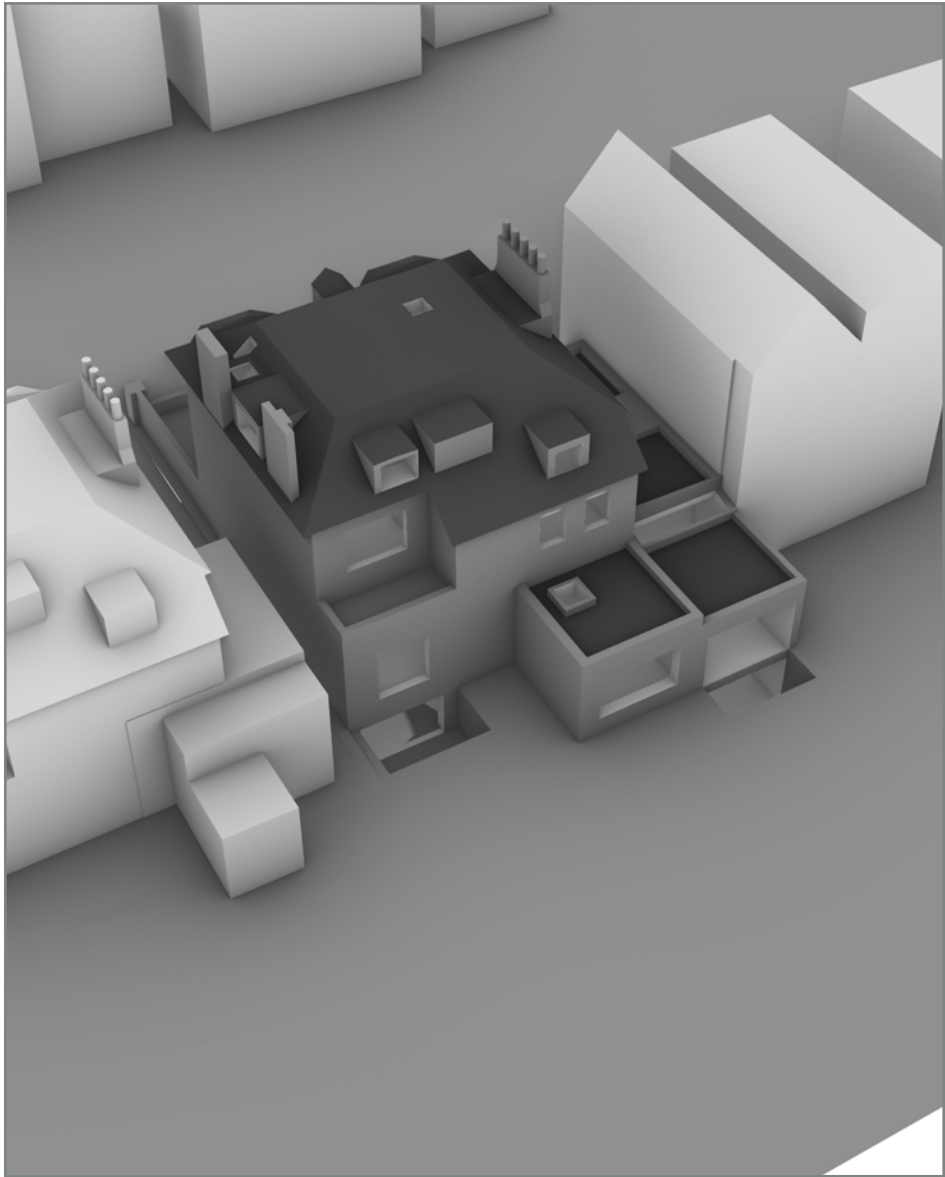


Fig. 2: Bird's Eye View - Proposed Scenario

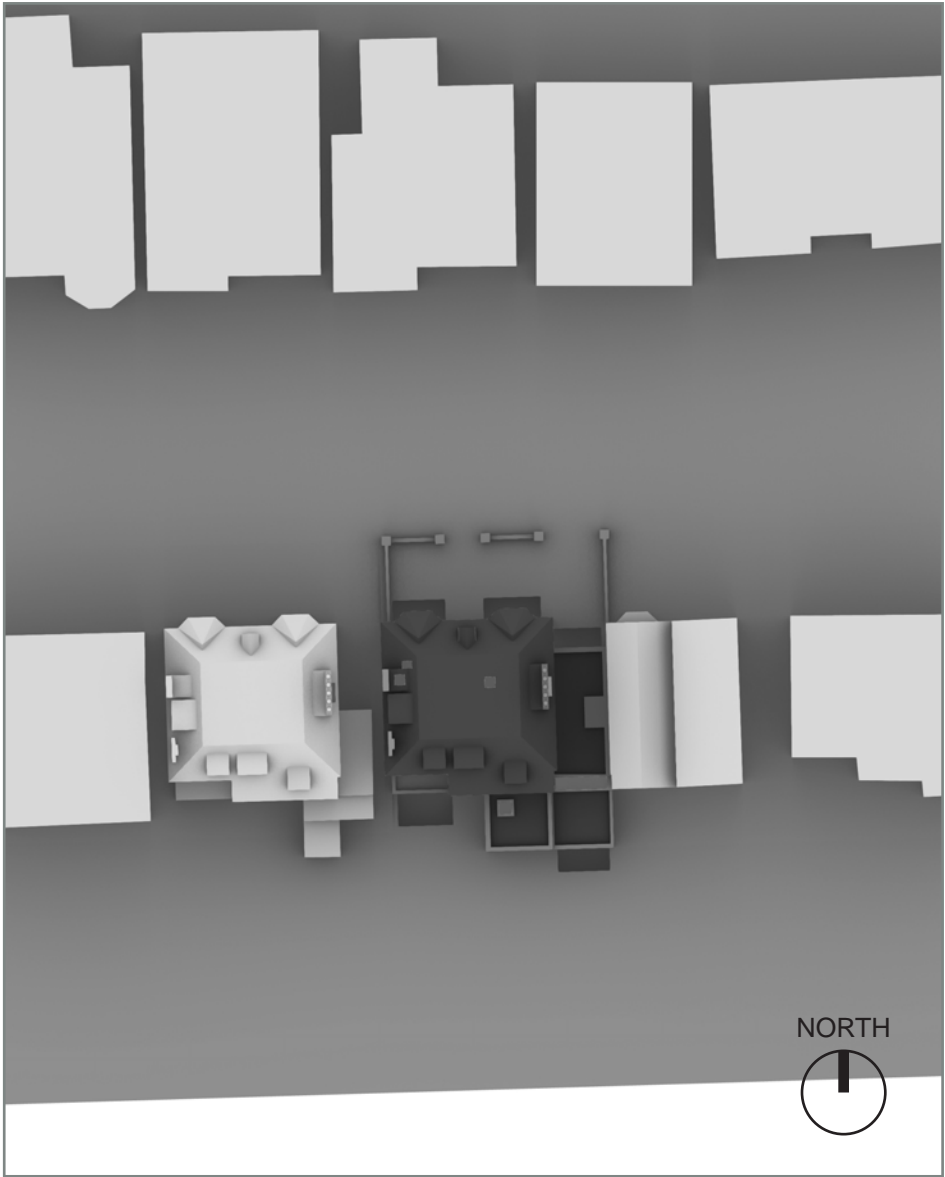


Fig. 3: Top View - Proposed Scenario

Calculation assumptions		
<p>Reflectances:</p> <p>Internal floors: 0.4</p> <p>Internal walls: 0.80</p> <p>Internal ceilings: 0.80</p> <p>Façade: 0.20</p> <p>Patio walls: 0.60</p> <p>Patio floors: 0.40</p> <p>Surrounds: 0.2</p>	<p>Windows:</p> <p>Light transmittance 0.68</p> <p>Maintenance factor 0.92</p> <p>Framing factor 0.80</p> <p>Calculation grids:</p> <p>Maximum cell size: 300mm</p> <p>Boundary offset: 300mm</p> <p>Weather file:</p> <p>London Gatwick</p>	<p>Daylight targets (London):</p> <p>Bedrooms: 100 lx / 0.7% DF</p> <p>Living rooms: 150 lx / 1.1% DF</p> <p>Kitchens / LKDs: 200 lx / 1.4% DF</p> <p>Time targets: 50% of daytime</p> <p>Spacial targets: 50% of the daylit area (discarding the boundary offset)</p>

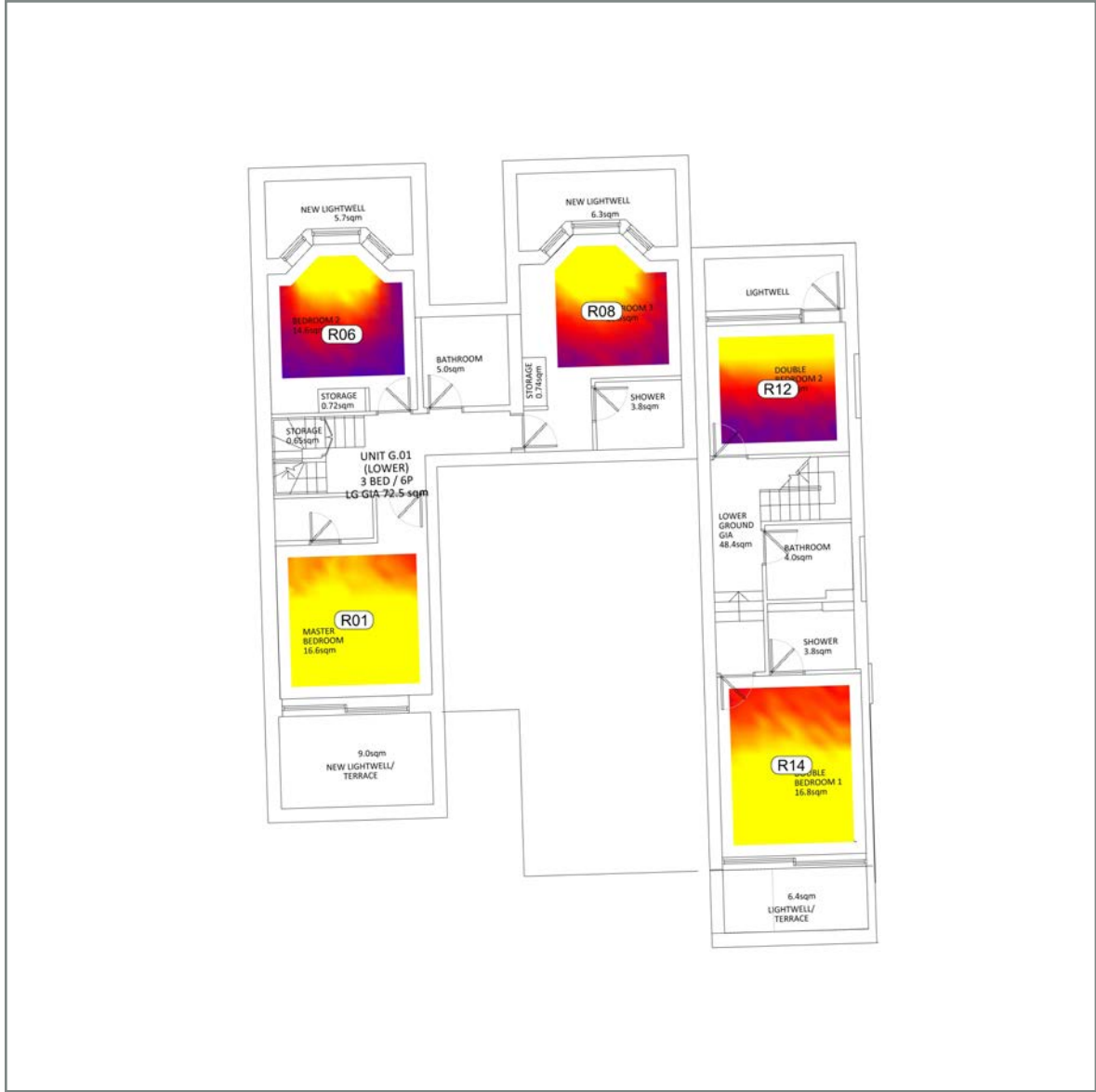


Fig. 4: Internal Daylight (LX) - Basement



Fig. 5: Internal Daylight (LX) - Ground Floor

Room	Use	Daylight DF (%)		Sunlight (hrs)	
		Value	Target	Value	South Angle*
B - Floor 1B					
R01	Bedroom	1.6	0.7	5.7	2
R06	Bedroom	0.8	0.7	0.0	133
R08	Bedroom	1.1	0.7	0.0	133
R12	Bedroom	1.1	0.7	0.0	2
R14	Bedroom	1.6	0.7	0.0	2

Table 1: Results - Basement

Room	Use	Daylight DF (%)		Sunlight (hrs)	
		Value	Target	Value	South Angle*
B - Floor 0F					
R02	Kitchen	1.6	1.4	7.8	2
R05	Living room	2.8	1.1	0.0	133
R10	Bedroom	2.3	0.7	0.0	133
R13	Living room	6.5	1.1	9.5	2
R15	Dining room	5.0	1.1	9.5	0

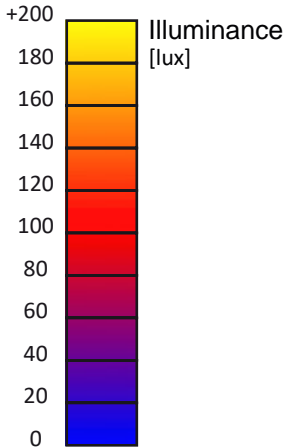
Table 2: Results - Ground Floor



Fig. 6: Internal Daylight (LX) - First Floor



Fig. 7: Internal Daylight (LX) - Second Floor



Room	Use	Daylight DF (%)		Sunlight (hrs)	
		Value	Target	Value	South Angle*
B - Floor 1F					
R03	Bedroom	3.4	0.7	7.8	2
R07	Bedroom	2.9	0.7	0.0	133
R09	Bedroom	2.8	0.7	0.0	133
R16	Bedroom	3.0	0.7	9.5	2

Table 3: Results - First Floor

		Daylight DF (%)		Sunlight (hrs)	
Room	Use	Value	Target	Value	South Angle*
B - Floor 2F					
R04	LKD	1.1	1.1	9.5	0
R11	Bedroom	1.4	0.7	9.2	0
R17	Bedroom	0.9	0.7	9.5	2

Table 4: Results - Second Floor