Daylight and Sunlight Assessment (Proposed Scheme)

6 Firs Walk

For Gavacan Homes

March 2024

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Contents

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1. Executive Summary

Daylight and Sunlight analysis was carried out for the proposed development 6 Fir Walk, Northwood, within the London Borough of Hillingdon. The planning application is for the demolition of the existing house and the erection of two-family sized homes at 6 Firs Walk.

This report outlines the results of the analysis, evaluating daylight and sunlight access within the development.

The methodology set out is in accordance with BRE's "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" by PJ Littlefair (2022) which is accepted as good practice by Planning Authorities. The numerical criteria suggested within the BRE guidelines has been applied to the assessment. It is important to note that these guidelines are not a rigid set of rules but are advisory and often need to be applied flexibly according to the specific context of a site.

A 3D computer model was prepared of the proposed scheme and the key surrounding buildings from design team drawings. Using this model and specialist technical software, daylight and sunlight levels were calculated. All main habitable rooms of the development were evaluated in detail.

The results indicated that all habitable rooms of the assessed homes exceed BRE's recommendations for daylight, using the illuminance method and climate-based modelling. Further to this, all habitable rooms in both dwellings with windows or rooflights within 90 degrees due south meet the sunlight criteria set out by the BRE.

In conclusion, the proposed conversion scheme is designed to meet relevant industry standards and will provide good quality of accommodation to the future residents from a daylight and sunlight perspective.

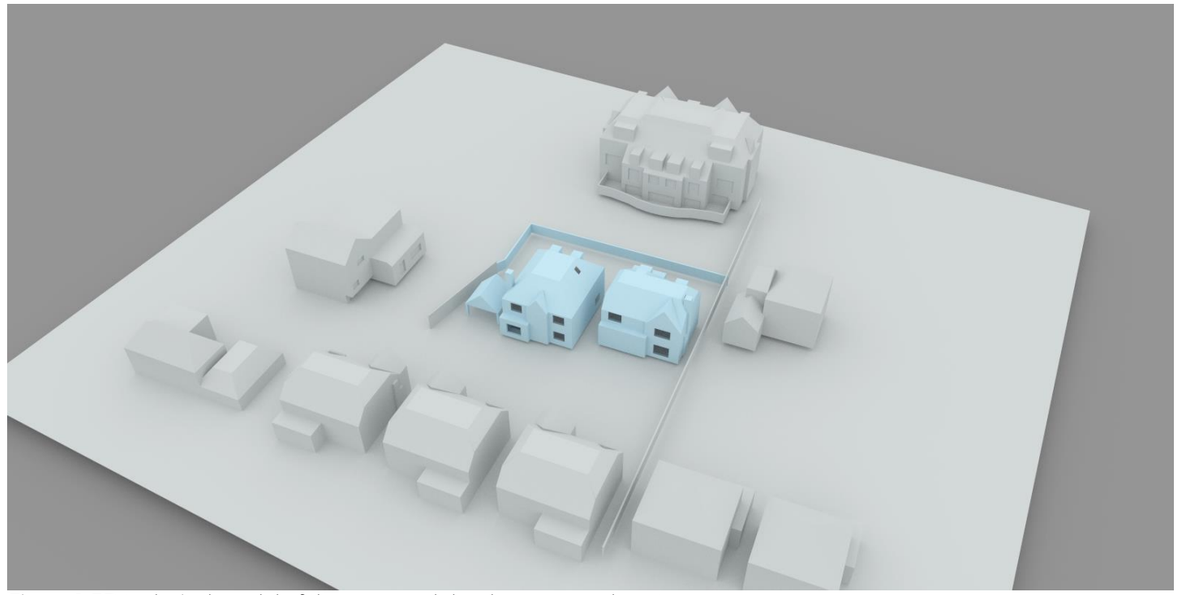


Figure 1: 3D technical model of the proposed development and context.

2. Introduction

2.1. Site

The application site is located at the end of Firs Walk, a residential street in Northwood that is characterised by detached properties on generous plots. The site area covers approximately 0.08 hectares and currently comprises a substantially sized detached dwelling. The proposed development entails the demolition of the existing house and the erection of two-family sized homes at the site.

The approximate location of the site is shown in Figure 2.

2.2. Planning policies

Local, regional and national planning policies relating to daylight and sunlight have been considered in this assessment. In general terms, planning policies advise that new development should be making the best use of land and be designed in a way that enables appropriate levels of daylight and sunlight amenity. Provision of daylight and sunlight should be balanced against potential overheating risks. BRE's latest "Site layout planning for daylight and sunlight" document published in 2022 provides a set of recommendations for daylight and sunlight in new developments. It builds on British Standard EN 17037 (2018) and sets out criteria to evaluate both the quantity and quality of daylight and sunlight within new developments. A summary of the relevant policy landscape is presented in Appendix B.

2.3. Application of BRE's guidance

The BRE guidelines advise that the quality, quantity and distribution of daylight and sunlight within a habitable space would be notably affected if building obstructions are large in relation to their distance away. When assessing a proposed residential development, only those windows and rooms that have a reasonable expectation of daylight and sunlight need to be considered. Therefore, the main habitable rooms were tested while non-habitable spaces such as staircases, hallways, bathrooms, toilets, stores etc were omitted from the assessment.

Sunlight specifically is mainly sought in living rooms and external amenity spaces, although the BRE guide recognises that for housing specifically, at least one room of the dwelling should meet the minimum sunlight recommendation. It is therefore considered that any dwellings that have at least one habitable room receiving adequate sunlight to be performing satisfactorily.

In addition, it is worth highlighting the following excerpt from the guidance:

"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."

It is therefore important to apply the BRE guidance 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. With the above in mind, rigid adherence to the BRE in certain situations could result in an inappropriate form of development.

The specific criteria and recommendations of the BRE guidance are presented in Appendix C of this report.

Figure 2. Approximate site location of 6 Firs Walk.

3. Technical model

3.1. Sources of information and assumptions

Architectural drawings from Ascot Design (project architects) were used to create a 3D computer model of the proposed development. The full list of sources of information used in this assessment is as follows:

- Site location plan: 23-J4295-LP01 (Location Plan)
- Site plan: 23-J4295-100 (Proposed Site Information Plan)
- Floors plans and elevations for Plot 1: 23-J4295-LP01 (Location Plan)
- Floor plans and elevations for Plot 2: 23-J4295-102 (Proposed Plot 2)
- Plan and elevation for car port: 23-J4295-105 (Proposed Carport)
- Topographical survey: K 04 17 - T Site Survey
- From Hillingdon's Planning Portal:
    - Plans, elevations, sections and site plan for approved apartment block at 25 Dene Road to the north (Ref: 46479/APP/2021).
    - Plans, elevations and site plan for 3no. approved houses at 5 Firs Walk (Ref: 30837/APP/2021/2577).

3.2. Scope of Assessment

The images to the right show the technical 3D model developed for the analysis. All habitable spaces were modelled using specialist simulation software.

The consented developments that are currently under construction at 5 Firs Walk to the south and 25 Dene Road to the north have been included in the technical model.

The model includes the following standard BRE inputs with regards to surface reflectance which can influence the calculations:

- External walls 0.2
- Internal walls 0.5
- Floors 0.2
- Ceiling 0.7

A maintenance factor for dirt of 92% has been applied to all glazing, which is modelled as double-glazed units, with a light transmission of 68%. These parameters were taken from the BRE guidelines.

The working plane of each habitable room was set in line with BRE's guidance.

For lounges and office rooms, the living room daylight target of 150 lux has been applied.

London Gatwick's weather file has been used in the analysis as this is one of the closest weather stations to the application site.

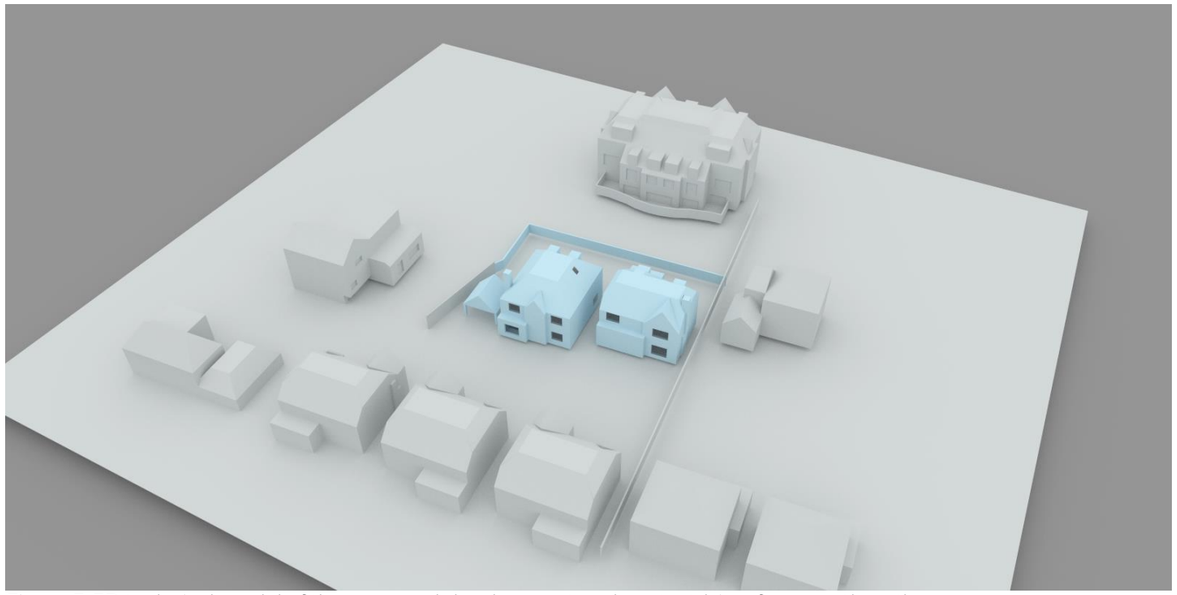


Figure 3: 3D technical model of the proposed development and context (view from southeast).

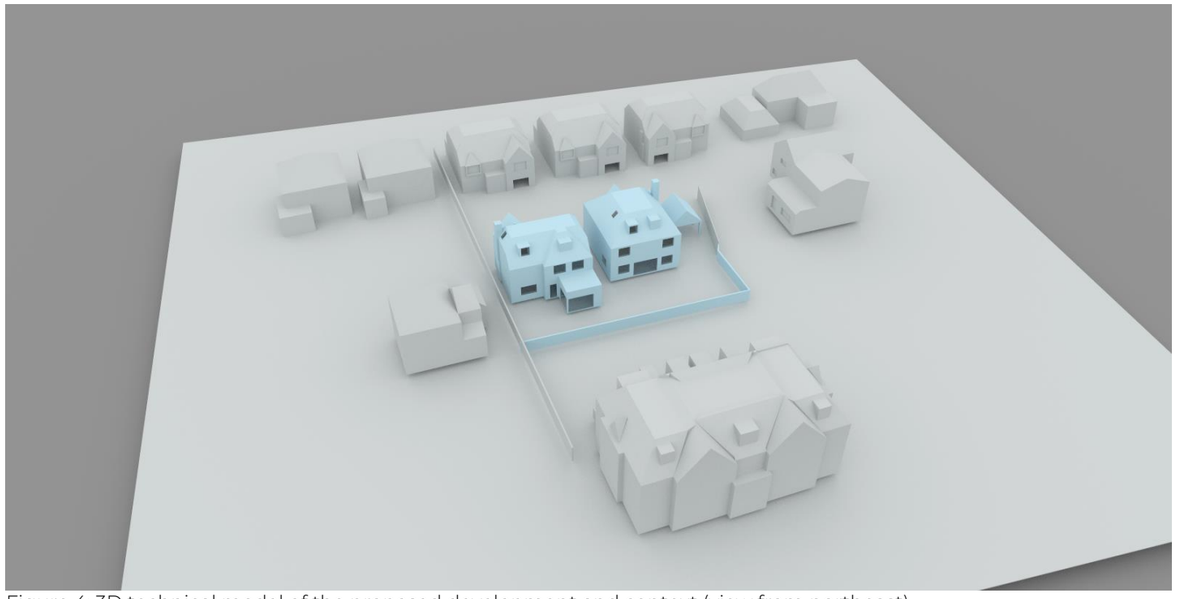


Figure 4: 3D technical model of the proposed development and context (view from northeast).

4. Assessment results

4.1. Daylight to buildings

All habitable rooms in the two dwellings were found to exceed BRE's recommendations for daylight access (Figure 5 and Figure 6). The yellow colour shows where a room achieves the required daylight illuminance for over 50% of the daylight hours of the year. If this area is more than 50% of the room's area, then the room exceeds BRE's daylight recommendations.

The detailed numerical results are presented in Appendix A (Daylight to buildings) of this report.

4.2. Sunlight to buildings

All habitable rooms with windows or rooflights within 90 degrees due south meet the sunlight criteria by the BRE. Therefore, future residents of the development will enjoy levels of sunlight consistent with industry standards.

The detailed results are presented in Appendix A (Sunlight to buildings).

4.3. Sunlight to amenity

There are 2no. private rear gardens proposed at ground level of the scheme included within the sunlight assessment.

The assessment results show that 66% of area of the garden of Plot 1 will receive over 2 hours of sunlight on 21 March, meeting the BRE criteria. The garden of Plot 2 will have 40% of its area with 2 hours of sunlight on 21 March, falling slightly short of the BRE target of 50%. This is mainly due to the northern orientation of the garden, the presence of the building of 8 Firs Walk and the boundary fence to the east. The rear part of the garden will receive good sunlight levels.

An assessment carried out for 21 June, when the future occupants will be more likely to utilise the gardens, shows that both gardens will receive good levels of sunlight in the summer.

The assessment results for 21 March and 21 June are illustrated in Figure 7 and Figure 8 on the following page respectively. Full numerical results are presented in Appendix A (Sunlight to amenity).

Figure 5. Daylight results for Plot 1 (with window and room references).

Figure 6. Daylight results for Plot 2 (with window and room references).

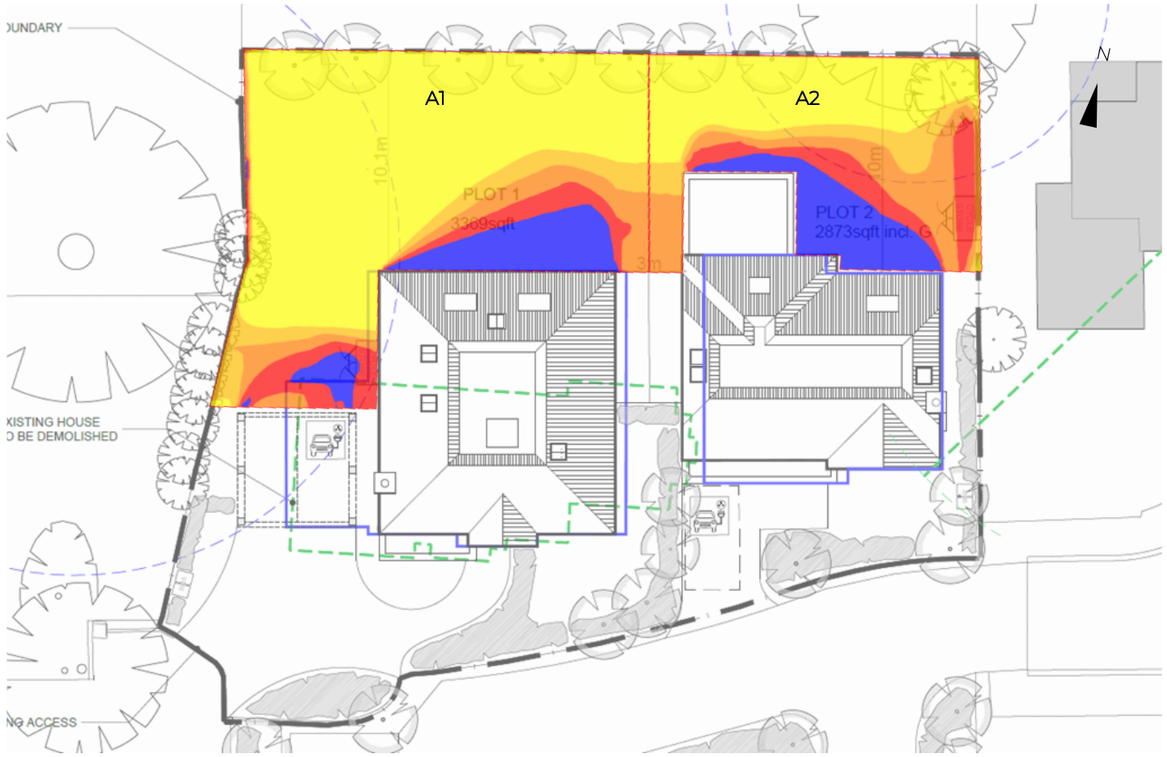


Figure 7. Sunlight results to amenity spaces on 21 March.

Figure 8. Sunlight results to amenity spaces on 21 June.

5. Conclusions

Based on the findings, it can be concluded that the proposed scheme will provide satisfactory levels of daylight and sunlight to future residents and their homes. The planning application could be supported from a daylight and sunlight perspective.

Appendix A – Detailed results

Daylight to buildings

Floor Ref	Room Ref	Room Use	Room Area m2	Effective Area	Median Lux	Area Meeting Req Lux	% of Area Meeting Req Lux	Req Lux	Req % of Effective Area	Req % of Daylight Hours	Daylight Hours	Meets BRE Criteria
					Plot 2							
Ground	R1	Lounge	21.28	15.89	321	13.71	86%	150	50%	50%	4380	Yes
	R2	LKD	46.80	35.70	345	26.04	73%	200	50%	50%	4380	Yes
First	R1	Bedroom	15.59	11.17	520	11.17	100%	100	50%	50%	4380	Yes
	R2	Bedroom	11.17	7.50	668	7.50	100%	100	50%	50%	4380	Yes
	R3	Bedroom	20.92	15.63	465	15.63	100%	100	50%	50%	4380	Yes
Second	R1	Bedroom	14.30	9.73	283	9.11	94%	100	50%	50%	4380	Yes
					Plot 1							
Ground	R1	Office	12.75	8.80	375	8.47	96%	150	50%	50%	4380	Yes
	R2	Lounge	20.44	15.05	294	10.57	70%	150	50%	50%	4380	Yes
	R3	KD	48.94	40.32	424	38.31	95%	200	50%	50%	4380	Yes
First	R1	Bedroom	11.49	7.63	518	7.63	100%	100	50%	50%	4380	Yes
	R2	Bedroom	12.36	8.50	473	8.50	100%	100	50%	50%	4380	Yes
	R3	Bedroom	14.17	9.71	250	9.71	100%	100	50%	50%	4380	Yes
	R4	Bedroom	19.45	14.50	138	9.18	63%	100	50%	50%	4380	Yes
Second	R1	Bedroom	9.69	6.09	472	6.09	100%	100	50%	50%	4380	Yes

Sunlight to buildings

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Meet BRE Criteria
Plot 2						
Ground	R1	Lounge	W1	175°	8.9	
					8.9	Yes
Ground	R2	LKD	W2	355°N	0	
			W3	85°N	0	
			W4	355°N	0	
			W5	355°N	0	
					0	North Facing
First	R1	Bedroom	W1	175°	9.5	
					9.5	Yes
First	R2	Bedroom	W2	175°	8.6	
					8.6	Yes
First	R3	Bedroom	W3	355°N	0	
			W4	355°N	0	
					0	North Facing
Second	R1	Bedroom	W1	355°N	0	
			W2	85°N Inc	3.1	
					3.1	Yes
Plot 1						
Ground	R1	Office	W1	175°	8.7	
					8.7	Yes
Ground	R2	Lounge	W2	175°	4.8	
					4.8	Yes
Ground	R3	KD	W3	355°N	0	
			W4	355°N	0	
			W5	355°N	0	
			W6	85°N	1.5	
					1.5	Yes
First	R1	Bedroom	W1	175°	8.7	
					8.7	Yes
First	R2	Bedroom	W2	175°	9.5	
					9.5	Yes
First	R3	Bedroom	W3	355°N	0	
					0	North Facing
First	R4	Bedroom	W4	355°N	0	
					0	North Facing
Second	R1	Bedroom	W1	355°N	0	
			W2	85°N Inc	6.7	
					6.7	Yes

Sunlight to amenity

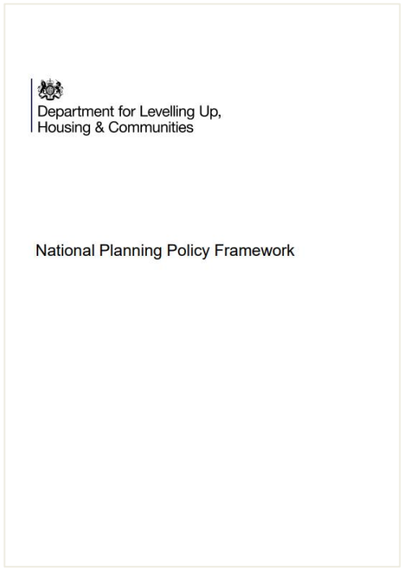
Amenity Ref		Amenity Area	Lit Area Proposed	Meets BRE Criteria
21 March				
A1	Area m2	224.11	147.51	Yes
	Percentage		66%	
A2	Area m2	121.67	48.60	No
	Percentage		40%	
21 June				
A1	Area m2	224.11	220.78	n/a
	Percentage		99%	
A2	Area m2	121.67	110.16	n/a
	Percentage		91%	

Appendix B – Planning Policies

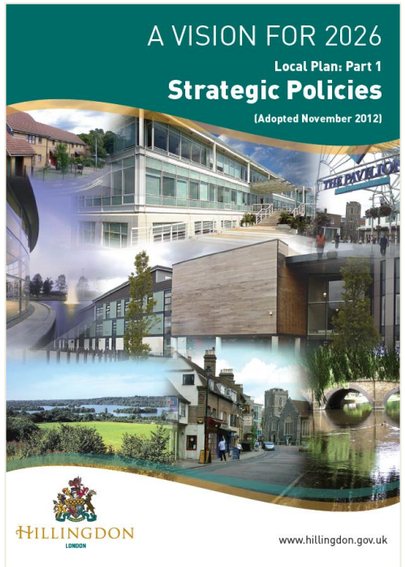
National Planning Policy Framework (2023)

This document provides a framework within which locally prepared plans for housing and other development can be produced.

For example, it sets out how the planning system could achieve sustainable development, effective use of land, well-designed places, protecting the green belt, meeting the challenge of climate change, among several other aspects which precipitate with more specificity into local planning policies.



London Borough of Hillingdon's Local Plan (2012)



The Hillingdon Local Plan: Part 1- Strategic Policies is the key strategic planning document for Hillingdon and will support the delivery of the spatial elements of the Sustainable Community Strategy. It sets out the long-term vision and objectives for the Borough.

Page 195 in Appendix 5 of the Local Plan states:

"BE 20 daylight and sunlight considerations are retained from the Hillingdon local plan. BE19 and BE20 state the following:

Policy BE19: *'The local planning authority will seek to ensure that new developments within residential areas compliment or improve the amenity and character of the area.'*

Paragraph 5.23: *'Ensuring adequate daylight and sunlight reaches both habitable rooms (including kitchens) and external private community space as an important principal of housing design which affects the enjoyment of occupants' living conditions. Local planning authority will pay full regard to the effect of a proposal, whether it be for a new building or extensions to an existing one, on the sunlight and daylight reaching neighbouring properties, and will allow full regard to the recommendations of 'site layout planning for daylight and sunlight' (Building Research Establishment 1991). Some proposals of substantial width, height and depth, particularly when built close to a party boundary, may not cause loss of amenity by reason of daylight and sunlight but may be over-dominant in relation to the adjoining property and/or its private amenity space. This can result in a depressing outlook, detracting from residential amenity.'*

Policy BE20: *'Buildings should be laid out so that adequate daylight and sunlight can penetrate into and between them and the amenities of existing houses are safeguarded.'*

Appendix C – BRE Guidance

Daylight

The illuminance method is one of the approaches that could be adopted to determine whether a development meets daylight recommendations set out within the BRE guide (2022) and BS EN 17037 (2022). It entails the use of climatic data for the location of the site and the evaluation of the illuminance levels, measured in lux, over the working plane or assessment grid. The following should be achieved for at least 50% of the assessment grid for at least half of the daylight hours:

- Bedrooms 100 lux
- Living rooms 150 lux
- Kitchens 200 lux

Where a room has a shared use, the higher target should apply although local authorities could use discretion. The target for living room could be used for a kitchen / living / dining area for example to avoid having small separate kitchens in a design. Conversely, the higher illuminance target may be set for a room in homes for the elderly.

Sunlight to windows

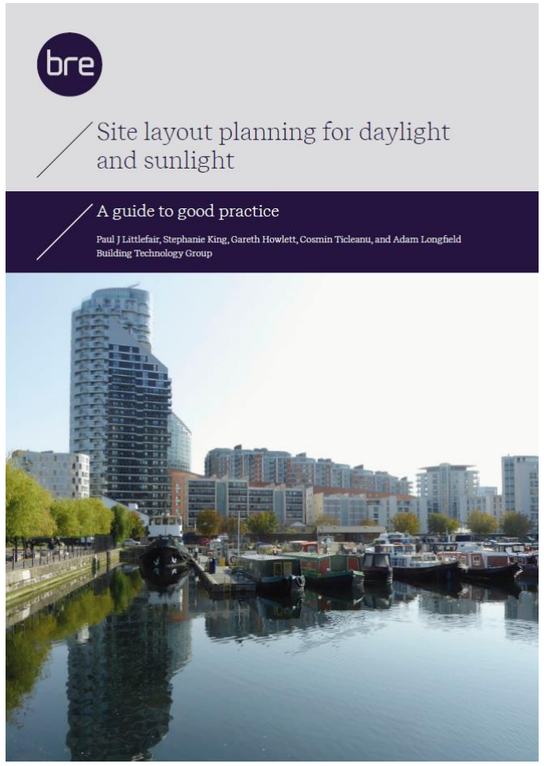
The BRE guide stipulates that in general, a dwelling or non-residential building that has a particular requirement for sunlight, will appear reasonably sunlit provided that:

- At least one window wall faces 90 degrees south.
- A habitable room, preferably a living room, can receive a total of 1.5 hours of sunlight on 21st of March. This analysis is carried out at the centre of the window(s) and sunlight received by different windows can be added provided they occur at different times and sunlight hours are not double counted.

Where groups of dwellings are planned, the design should aim to maximise the number of dwellings that have a main living room window that meets the above recommendations.

Sunlight to open spaces

For an open space to be adequately sunlit, the BRE guide recommends that at least half of the amenity area receives at least 2 hours of sunlight during the 21st of March.



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