



12-14 High
Road, London,
N22 6BX

Internal Daylight, Sunlight Assessment

October 2023

Ref:23-11791-
Rev 1



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Date	20/09/2023	13/09/2023		
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1. Executive Summary

Syntegra Consulting Ltd has been appointed to prepare an Internal Daylight Assessment in order to examine the levels of daylight and sunlight received by the habitable rooms within the proposed residential units at 12-14 High Road, London, N22 6BX.

The following can be concluded based on the studies undertaken:

- Internal daylight (sDA): All habitable rooms will see levels of daylight in line with what is suggested by the BRE.
- Annual Sunlight (aSE): All south facing living areas will see more than the recommended 1.5 hours of sunlight on the 21st of March as set out by the BRE.

Therefore, it can be concluded that the proposed accommodation will provide good levels of daylight and sunlight.

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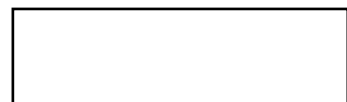
2. Introduction

This report has been prepared to support the planning application for the proposed residential units at 12-14 High Road, London, N22 6BX.

The report assesses the internal daylight levels within the proposed rooms. The assessment is undertaken in accordance with **"BRE 209 Digest: Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice"**.

The Proposed drawings (in dwg format) of the project were provided in **October 2023** and have been used in preparing this report.

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3. Assessment Methodology

This study is based on guidelines set out in the *BRE Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice, 2022*. The assessment has been conducted using Radiance software through IES VE plugin software. A 3D model has been built based on the latest architectural drawings.

The simulations assess the Annual Illuminance Target (ET), DA and sDA. Key points of the simulation include:

- Tested on a horizontal plane at 0.85 m above the floor
- Grid size of 0.25m
- Margin of 0.30m from the internal walls,
- Glass surface maintenance factor of 0.95,
- Hourly weather file for a whole year from GBR_London
- Windows frames based on drawings received

The material reflectances are stated below:

Surface	Default reflectance
Interior walls	0.5
Ceilings	0.7
Floors	0.3
Exterior walls and obstructions	0.2
Exterior ground	0.2

If a property is considered to have a reasonable expectation of daylight or sunlight the following methodology to assess the impacts has been used.

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Internal Daylight Assessment

British Standard “Daylight in buildings” (BS EN 17037)

The British Standard “Daylight in buildings” (BS EN 17037) contains advice and guidance on interior daylighting. The guidance contained in the BRE publication (BR 209, 2022) is intended to be used with BS EN 17037 and its UK National Annex.

BS EN 17037 supersedes BS 8206 Part 2 “Code of practice for daylighting”[C2], which contained a method of assessment based on Average Daylight Factor, which is now no longer recommended. For daylight provision in buildings, BS EN 17037 provides a methodology based on target illuminances from daylight to be achieved over specified fractions of the reference plane for at least half of the daylight hours in a typical year.

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BS EN 17037 gives three levels of recommendation for daylight provision in interior spaces: minimum, medium and high. For compliance with the standard, a daylit space should achieve the minimum level of recommendation.

The National Annex A of BS EN 17037 also gives minimum values for housing, in living rooms, kitchens, and bedrooms. Achieving higher daylight factor values will give improved daylight provision. This would be particularly appropriate in housing for the elderly because they require more light and are more likely to be at home during the day.

However, interiors with very high daylight levels (for example where a daylight illuminance of 500 lux is exceeded over half the room for more than half of the daylight hours) sometimes have problems with summertime overheating or excessive heat loss in winter.

Annual Daylight Metrics

The annual daylight method involves using climatic data for the location of the site (via the use of an appropriate, typical or average year, weather file) to calculate the illuminance from daylight at each point on an assessment grid on the reference plane at an at least hourly interval for a typical year.

A target illuminance (ET) is the illuminance from daylight that should be achieved for at least half of annual daylight hours across a specified fraction of the reference plane in a daylit space. Daylight Autonomy (DA) is the percentage of occupied hours that each sensor receives more than the illuminance threshold, and Spatial Daylight Autonomy (sDA) is an annual daylighting metric that quantifies the fraction of the area within a space for which the daylight autonomy exceeds a specified value.

Specific recommendations for daylight provision in UK dwellings

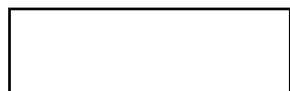
The UK National Annex gives specific minimum recommendations for habitable rooms in dwellings in the United Kingdom. These are intended for 'hard to light' dwellings, for example in basements or with significant external obstructions or with tall trees outside, or for existing buildings being refurbished or converted into dwellings. The National Annex, therefore, provides the UK guidance on minimum daylight provision in all UK dwellings.

The UK National Annex gives illuminance recommendations of:

- 100 lux in bedrooms,
- 150 lux in living rooms and
- 200 lux in kitchens
- 300 lux in commercial areas.

These are the median illuminances, to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours.

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Sunlight

In terms of Sunlight the BRE states that it is generally more important for residential properties. Within section 3.1 of it states *“in housing, the main requirement for sunlight is in living rooms, where it is valued at any time of the day, but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens where people prefer it in the morning rather than the afternoon.”*

The guide suggests that designers minimise the number of units/dwellings with living areas windows facing solely north. This is unless there are other factors steering the design such as views and privacy.

The BRE refers to the BS EN 17037 criterion to establish sunlight targets for dwellings. It states that each dwelling should have at least one habitable room receiving 1.5 hours of exposure on the 21st of March. There are also medium and high sunlight targets (3 and 4 hours respectively). That being said it must be taken flexibly when considering the sites existing environment, as it may have constraints that determine the orientation of the proposed.

This is tested by taking the centre point of the inner surface of the window and assesses the amount of sunlight hours it would receive on the 21st of March.

Below is a summary of section 3.1 of the guidance:

“In general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit provided that:

- *At least one main window faces within 90 degrees of due south, and*
- *A habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided they occur at different times and sunlight hours are not double counted..”*

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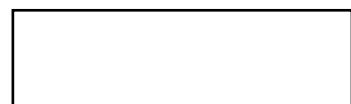
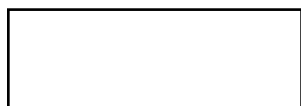




Image 1 – Site location

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Image 2 –Third and Fourth Floor Plan

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4. Results

Annual Daylight Results

The annual daylight method involves using climatic data for the location of the site (via the use of an appropriate, typical or average year, weather file) to calculate the illuminance from daylight at each point on an assessment grid on the reference plane at an at least hourly interval for a typical year.

A target illuminance (ET) is the Illuminance from daylight that should be achieved for at least half of annual daylight hours across a specified fraction of the reference plane in a daylit space. Daylight Autonomy (DA) is the percentage of occupied hours that each sensor receives more than the illuminance threshold, and Spatial Daylight Autonomy (sDA) is an annual daylighting metric that quantifies the fraction of the area within a space for which the daylight autonomy exceeds a specified value.

Internal Daylight Analysis					
Floor	Room No	Room Use	SDA Target	SDA Achieved	Compliance
Third	R1	Bedroom	100	55%	PASS
	R2	LKD	200	61%	PASS
	R3	Studio	200	50%	PASS
	R4	LKD	200	55%	PASS
	R5	Bedroom	100	100%	PASS
	R6	LKD	200	59%	PASS
	R7	LKD	200	58%	PASS
	R8	Bedroom	100	100%	PASS
	R9	Bedroom	100	100%	PASS
Fourth	R1	Bedroom	100	71%	PASS
	R2	LKD	200	61%	PASS
	R3	Studio	200	51%	PASS
	R4	LKD	200	57%	PASS
	R5	Bedroom	100	100%	PASS
	R6	LKD	200	60%	PASS
	R7	LKD	200	66%	PASS
	R8	Bedroom	100	100%	PASS
	R9	Bedroom	100	100%	PASS

Table 1 – Internal Daylight Assessment

As can be seen in the previous table all habitable rooms will see levels of daylight above what the BRE recommends. Therefore, it can be concluded that the proposed accommodation will provide very good levels of daylight.

Internal Sunlight Results

The Sunlight assessment determines the number of hours each south facing window sees the sun on the 21st of March (equinox). The target set by the BRE is at least one main window serving the living area should see 1.5 hours.

Sunlight Assessment				
Floor Ref	Room No.	Room Use	no. of Hours	Result
Third	R2	LKD	6.5	High
			6.5	
			6.5	
	R3	Studio	0.9	High
			6.5	
			1	
			6.5	
	R4	LKD	1.4	N/A
			1.4	
			1.4	
			1.4	
	R6	LKD	1.4	N/A
			1.4	
			1.4	
	R7	LKD	0	N/A
			0	
			0	
			0	
Fourth	R2	LKD	6.5	High
			6.5	
			6.5	
	R3	Studio	6.5	High
			0.9	
			1	
			6.5	
	R4	LKD	1.4	N/A
			1.4	
			1.4	
			1.4	
	R6	LKD	1.4	N/A
			1.4	
			1.4	
	R7	LKD	0	N/A
			0	
			0	
			0	

Table 3 – Internal Sunlight Assessment

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The previous table shows that all south facing living room windows will surpass the suggested 1.5 hours of sunlight on the 21st of March as set out by the BRE. There are 3 units on each floor that do not have south facing living room windows, therefore their results are not applicable. The BRE does recommend against north facing living rooms, however, where it is unavoidable it is deemed to be acceptable. This is the case here as the shape of the massing is dictated by the inherited shape of the building below. It can therefore be stated that all south facing units will provide good levels of sunlight to the future occupants of the proposed units.

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6 Conclusion

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5. Results images



Image 3 – Third Floor Plan – Results sDA

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Image 4 – Fourth Floor Plan – Results sDA

	Area seeing required LUX for 50% of the occupied time
	Area NOT seeing required LUX for 50% of the occupied time

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