99 Frognal

C1256/IDSO

Internal Daylight & Sunlight Report

24 November 2023

THE CHANCERY GROUP

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Introduction

Introduction

1.1 The Chancery Group have been instructed by Hayhurst and Co. on behalf of the applicant to undertake an internal daylight and sunlight assessment for the proposed development located at 99 Frognal, London, NW3 6XR ("proposed development").

1.2 This report has considered the potential daylight (Illuminance) and sunlight availability within the proposed habitable accommodation.

1.3 To undertake the daylight and sunlight assessments, we have used the 3D computer models and 2D drawings supplied by Hayhurst and Co Architects on the 21 August 2023 and 11 October 2023.

1.4 The methodology set out in this report is in accordance with the Building Research Establishment (BRE) Report 209: 'Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice', Third Edition, 2022 ('the BRE Guidelines'), which is accepted as good practice by planning authorities throughout the country.

1.5 Paragraph 1.6 in the Introduction of the BRE Guidelines states:

"...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)."

1.6 As such, care should be taken to apply the guidance sensibly and flexibly taking into consideration the context of the site and advantages of the proposed development.

1.7 The results of our technical assessment are provided in Appendix 01.

2

Methodology

Methodology

2.1 This assessment has been undertaken in accordance with the Building Research Establishment (BRE) Site layout planning for daylight and sunlight: a guide to good practice (BR209 2022). Referred to herein as the "BRE Guidelines".

2.2 The BRE Guidelines provide guidance on assessment methodologies for new developments. Where window and room layouts are known, the BRE Guidelines refer to BS EN 17037 Daylight in Buildings. Each methodology used in this report is described below.

Daylight

Vertical Sky Component (VSC)

2.3 The VSC test calculates the potential for daylight to a building and measures the amount of light available at the centre of the outside plane of a window.

2.4 Paragraph 2.1.21 states:

"...If the VSC is:

- *at least 27% (ϑ is greater than 65°, obstruction angle less than 25°) conventional window design will usually give reasonable results.*
- *between 15% and 27% (ϑ is between 45° and 65°, obstruction angle between 25° and 45°) special measures (larger windows, changes to room layout) are usually needed to provide adequate daylight.*
- *between 5% and 15% (ϑ is between 25° and 45°, obstruction angle between 45° and 65°) it is very difficult to provide adequate daylight unless very large windows are used.*
- *less than 5% (ϑ less than 25°, obstruction angle more than 65°) it is often impossible to achieve reasonable daylight, even if the whole window wall is glazed."*

Daylight - BS EN 17037

2.5 In accordance with newly published guidance, detailed recommendations for daylight in new buildings have been produced in line with The British Standard "Daylight in buildings" (BS EN 17037). To measure daylight in a space, you can directly predict either target illuminance levels using hourly climate data or the daylight factor. The daylight factor categorises daylight as a ratio of unobstructed external illuminance divided by overcast sky conditions (CIE standard overcast sky). Occupants of buildings typically favour natural daylight as it illuminates interiors and helps save electricity. For the purposes of this report, the assessment has been based upon target illuminance.

2.6 BS EN 17037 gives a range of recommendations for 'minimum', 'medium', and 'high' daylight provision. However, it is our interpretation that UK dwellings should follow the provisions The UK National Annexe provides, specially designed for hard-to-light dwellings. For example, basements or rooms with large external obstructions, such as an inner-city location or high density developments.

2.7 The UK National Annexe recommended that median illuminances be exceeded in more than half the assessment points (a plane at table top height - 0.85 meters from the floor level) in a room for more than

half of the daylight hours for a typical year.

Median illuminances:

- 100 lux in bedrooms
- 150 lux in living rooms
- 200 lux in kitchens/living kitchen diners

Sunlight - BS EN 17037

2.8 Sunlight is desired in most homes as it offers warmth and a glow to all rooms, making them feel welcoming and cheery. Whilst sunlight is required in conservatories and living spaces any time of day, it is less desired in bedrooms and kitchens as these spaces are preferred cooler, especially in the afternoon.

2.9 The BS EN 17037 standard recommends that a space receive a minimum of 1.5 hours of direct sunlight in cloudless conditions between the 1st February and 21st of March. The 21st of March is highly recommended as it is the vernal equinox date. Although the BS EN 17037 applies to all rooms, if a room faces north of due east or west, it is unlikely to demonstrate enough sunlight. Within homes, at least one living space should meet the minimum criteria.

2.10 The BS EN 17037 criteria apply to a minimum (1.5 hours), medium (3 hours), and high level (4 hours) of sunlight in various situations. However, a designer or local planning authority can choose a different target value of sunlight hours in certain circumstances, though the risk of overheating needs to be considered.

2.11 Living rooms are the primary consideration for sunlight requirements in housing, specifically in the afternoon. If a room has more than one window and achieves sunlight at different times of the day, the amount of sunlight should be added together.

Daylight Simulation Assumptions

2.12 Glazing specification - Glass - 0.68 transmittance value
Maintenance factor (allowing for the effect of dirt) - 0.92 and 0.76
Framing factor - 0.70

Reflectance values (allowing for a light coloured room):
Internal walls - Typical Cream- 0.70
Internal ceiling - Typical White - 0.80
Internal floor - Typical Wood - 0.40
Exterior walls and obstructions - 0.20

3

Internal Assessment Results

Internal Assessment Results

3.1 The proposed development has been designed to optimise the daylight and sunlight potential within the proposed habitable rooms. Due to the open plan nature of the floor layouts, we have adopted the higher lux value of 200 lux for the rooms (equivalent to an LKD).

House A and House B

Daylight - BS EN 17037

3.2 The results of the illuminance assessment show that both rooms assessed would be fully compliant with BRE Guidelines/target values. The medium lux values in House A would be 489 lux and House B would be 501 lux. This is very good.

Fig 01 - Ground Floor Lux Values

Sunlight - BS EN 17037:2018

3.3 The results of the sunlight assessment show that both rooms would be fully compliant with the recommended BRE Guidelines and BS EN 17037 sunlight targets.

House C

Daylight - BS EN 17037

3.4 The results of the illuminance assessment show that all three rooms assessed would be fully compliant with BRE Guidelines/target values.

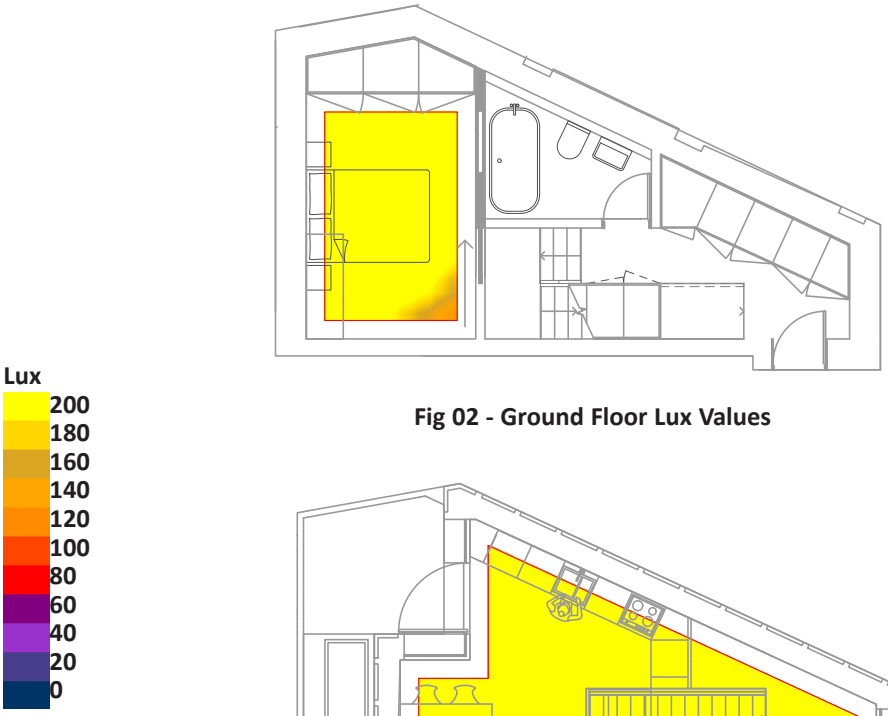

Fig 02 - Ground Floor Lux Values

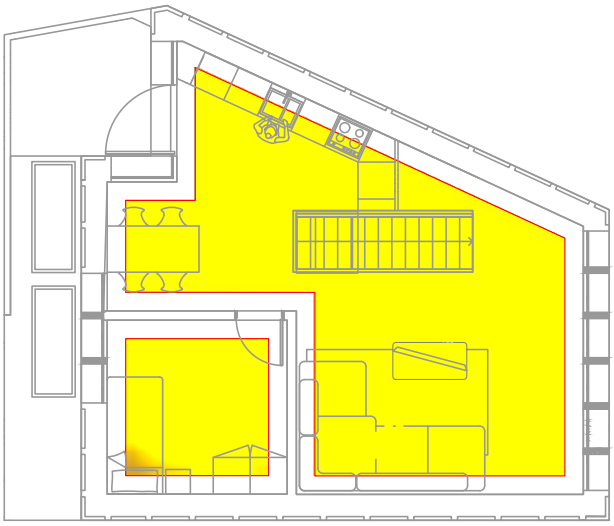

Fig 03 - First Floor Lux Values

Sunlight - BS EN 17037:2018

3.5 The results of the sunlight assessment show that all three rooms would be fully compliant with the recommended BRE Guidelines and BS EN 17037 sunlight targets.

4

Conclusion

Conclusion

4.1 The Chancery Group have been instructed by Hayhurst and Co. to undertake an internal daylight and sunlight assessment for the proposed development at 99 Frognal, London, NW3 ("proposed development").

4.2 The proposed development has been designed to optimise the daylight and sunlight potential within the proposed habitable rooms.

4.3 The results of the daylight quality within the proposed accommodation demonstrate that all rooms assessed would be fully compliant with the BRE Guidelines/target lux values. The proposed development would therefore achieve very good levels of daylight.

4.4 The results of the sunlight potential within the proposed accommodation demonstrate that all rooms assessed would be fully compliant with the BRE Guidelines.

4.5 In summary, the results of the internal daylight and sunlight assessment demonstrate that there would be sufficient daylight for the future occupants and the overall amenity of the proposed development would be excellent. Overall, the proposed development meets all relevant planning policies and guidance relating to internal daylight and sunlight.

Appendix 01
Technical Analysis
(Proposed Habitable Rooms)

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Project Number: C1256
Project Name: 99 Frognal
Date: 02/11/2023

				Daylight Target illuminance for 2190 hours (50% of daylight hours)			
Floor Ref	**Room Ref**	**Room Use**	**Room Area m2**	**Median Lux**	**Target Lux**	**Area Meeting Req Lux**	**% of Area Meeting Req**
House A							
Ground	R1	Studio	31.42	489	200	18.91	86%
House B							
Ground	R1	Studio	28.80	501	200	18.20	91%
House C							
Ground	R1	Bedroom	10.95	438	100	7.27	100%
First	R1	LKD	35.33	618	200	27.35	100%
First	R2	Bedroom	8.25	322	100	5.16	100%

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Project Number: C1256
Project Name: 99 Frognal
Date: 02/11/2023

				Sunlight Target 1.5 hours (minimum)	
Floor Ref	**Room Ref**	**Room Use**	**Window Ref**	**Window Orienation**	**Sunlight Exposure (Hours)**
House A					
Ground	R1	Studio	W1	90° Hz	4.2
Ground	R1	Studio	W2	99°	0
Ground	R1	Studio	W3	9°N	0
Ground	R1	Studio	W4	279°N	0
Ground	R1	Studio	W5	90° Hz	7.9
Ground	R1	Studio	W6	189°	6.8
				Total	8.1
House B					
Ground	R1	Studio	W1	90° Hz	6.5
Ground	R1	Studio	W2	123°	0.5
Ground	R1	Studio	W3	213°	1.5
Ground	R1	Studio	W4	279°N	0
Ground	R1	Studio	W5	189°	7.4
Ground	R1	Studio	W6	90° Hz	6.4
				Total	8.9
House C					
Ground	R1	Bedroom	W1	90° Hz	1
Ground	R1	Bedroom	W2	90° Hz	1.9
				Total	2.4
First	R1	LKD	W1	270°N	2.3
First	R1	LKD	W2	270°N	0.7
First	R1	LKD	W3	270°N	0
First	R1	LKD	W4	0°N	0
First	R1	LKD	W5	270°N	1.7
First	R1	LKD	W8	90°N	1.2
First	R1	LKD	W9	90°N	1.4
First	R1	LKD	W10	90°N	1.7
First	R1	LKD	W11	90°N	1.7
First	R1	LKD	W12	90°N	1.7
First	R1	LKD	W13	90°N	1.6
First	R1	LKD	W14	90° Hz	6.5
				Total	9.5
First	R2	Bedroom	W6	270°N	1.7
First	R2	Bedroom	W7	270°N	1.7
				Total	1.7

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