Daylight and Sunlight Assessment (Proposed Scheme)

Mead House, Mead House Lane, Hayes End, Hayes, UB4 8EW

For Reliant Care Ltd

March 2025

ecolytik

This page has been left intentionally blank

Contents

Project number	997
Report status	Draft
Revision number	2
Prepared by	Sherleen Pang
Checked by	Kostas Mastronikolaou

1 Executive Summary

Daylight and Sunlight analysis was carried out for the proposed development at Mead House in Hayes, located within the London Borough of Hillingdon.

The proposed development includes the alterations and refurbishment of the existing building to create a specialist living hub for people with learning disabilities and mental health issues, including 23 co-living units across ground, first and second floors. Communal kitchen, dining and living rooms, alongside other support functions, are proposed at ground floor level.

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

The methodology set out in this report 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 and 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 habitable rooms of the development were evaluated in detail.

The results indicated that all habitable spaces exceed BRE recommendations for daylight, using the illuminance method and climate-based modelling. All assessed spaces with windows within 90 degrees due south exceeded BRE's recommendations for sunlight.

The proposed development complies with BRE's guidelines for daylight and sunlight access to the proposed co-living units within the conversion. It can therefore be concluded that the scheme meets relevant policies and will provide good quality of accommodation to the future residents from a daylight and sunlight perspective.

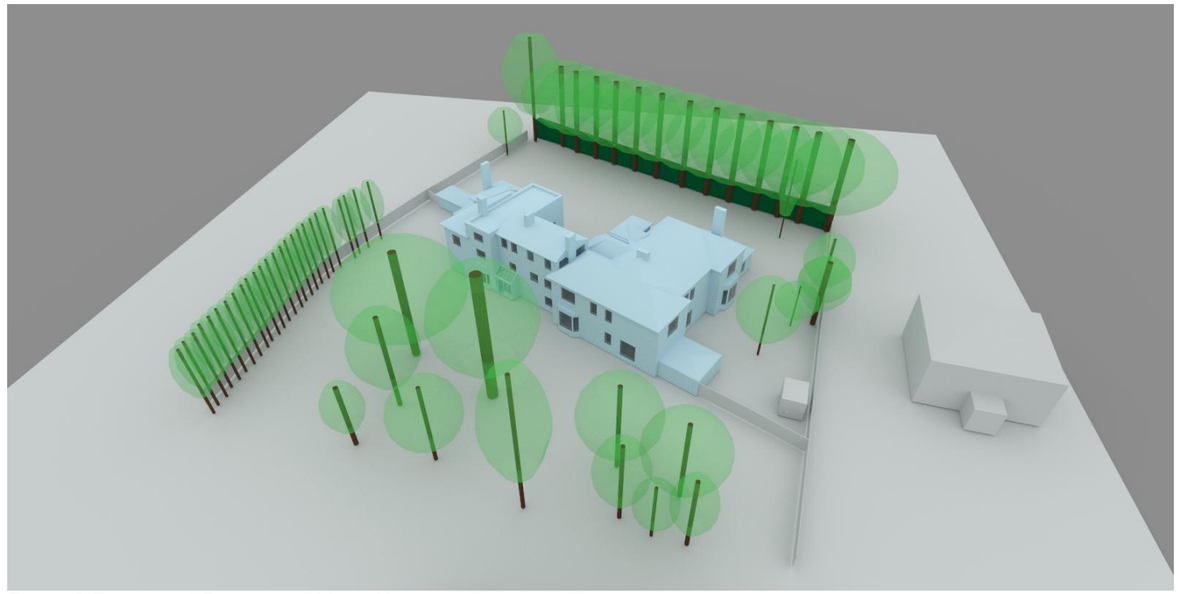


Figure 1: Technical 3D model of Mead House and surrounding context.

2 Introduction

2.1 Site

The proposed development at Mead House is located to the north of the junction between Mead House Lane and Hayes End Road, in Hayes, within the London Borough of Hillingdon.

The site currently comprises a 3-storey building which has had multiple uses, most recent was a day centre (ran by the council) and prior to that it was a GP surgery (NHS).

The proposed development includes the alterations and refurbishment of the existing building to create a specialist living hub for people with learning disabilities and mental health issues, including 23 co-living units across ground, first and second floors. Communal kitchen, dining and living rooms, alongside other support functions, are proposed at ground floor level.

The site location is presented to the right.

2.2 Planning policies

Local, regional and national planning policies relating to daylight and sunlight have been considered as part of this assessment. In general terms, planning policy advises 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. Policy requires new development to be assessed against BRE's guidelines. 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 full 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. The main habitable rooms have been tested, with non-habitable spaces such as staircases, hallways, bathrooms, toilets, stores etc omitted.

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 excerpts 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 Mead House (source: Google Maps).

3 Technical model

3.1 Sources of information and assumptions

Architectural drawings from Buckmaster Batchup Architects , topographic survey data from Topo M Surveys, and publicly available satellite images 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:

The full list of sources of information used in this assessment is as follows:

- BBA 951.P.23A Proposed Block plan
- BBA 951.P.33C Proposed ground floor plan
- BBA 951.P.34C Proposed first floor plan
- BBA 951.P.35C Proposed second floor plan
- BBA 951.P.36 Proposed roof plan
- BBA 951.P.37A Proposed ne sw elevations
- BBA 951.P.38A Proposed se nw elevations
- 10600.01 - Topographical Survey.pdf

3.2 Scope of Assessment

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

The model includes the following inputs with regards to surface reflectance in line with BRE standard recommendations, 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 rooms have been assessed against the following lux targets in accordance with BS EN17037:

- Bedrooms – 100 lux
- Communal kitchen/dining room – 200 lux
- Communal living room – 150 lux

The working plane of each habitable room was set in line with BRE's guidance. Where there is an entrance corridor of less than 1.5m wide to reach the main occupied zone of the room, this was excluded from the assessed working plane.

3.3 Trees

A number of large trees are present to the east of the building which would have an impact on daylight levels to the proposed dwellings with windows on the eastern facade. These trees have been included in the technical model.

Tree heights and spreads are based on the site topographic survey information. All trees were assumed to be deciduous in nature, aside from the hedge along the northern site boundary which was assumed to be evergreen.

As the deciduous tree species are not known, tree crown transparency of English Oak (20% under full leaf condition; 55% under bare branch condition, applicable for English Oak, Sycamore, Horse Chestnut, European Birch and Beech, see Table G1 of the BRE guide) was applied as a conservative approach. Tree references have been set in line with Table G2 of the BRE Guide.

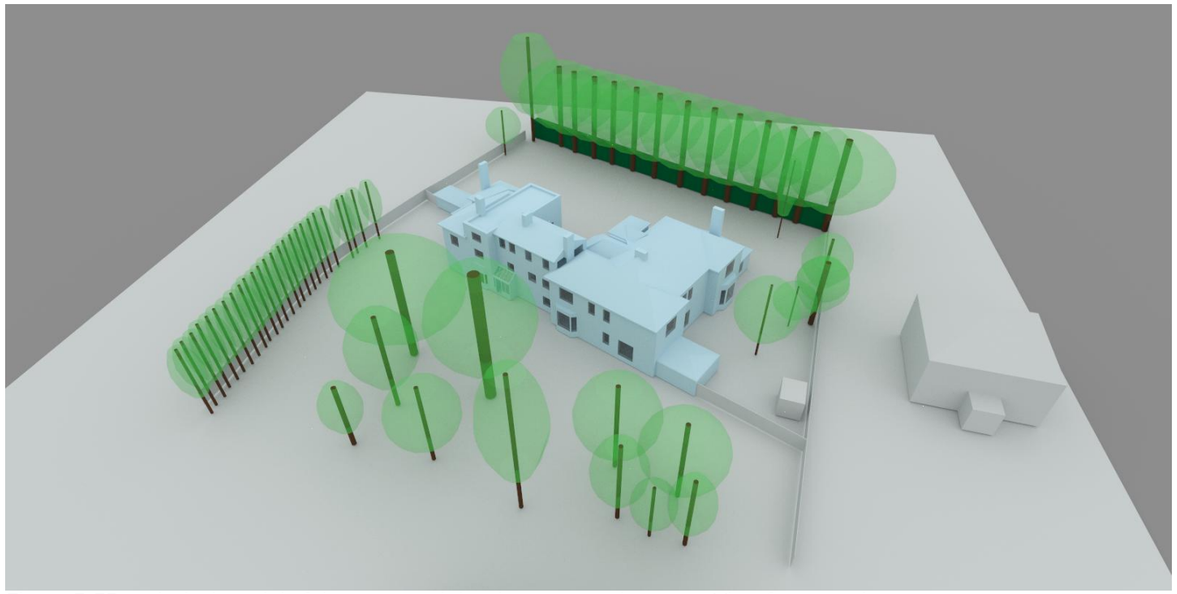


Figure 3: 3D technical model of the proposed development and context. View from southeast

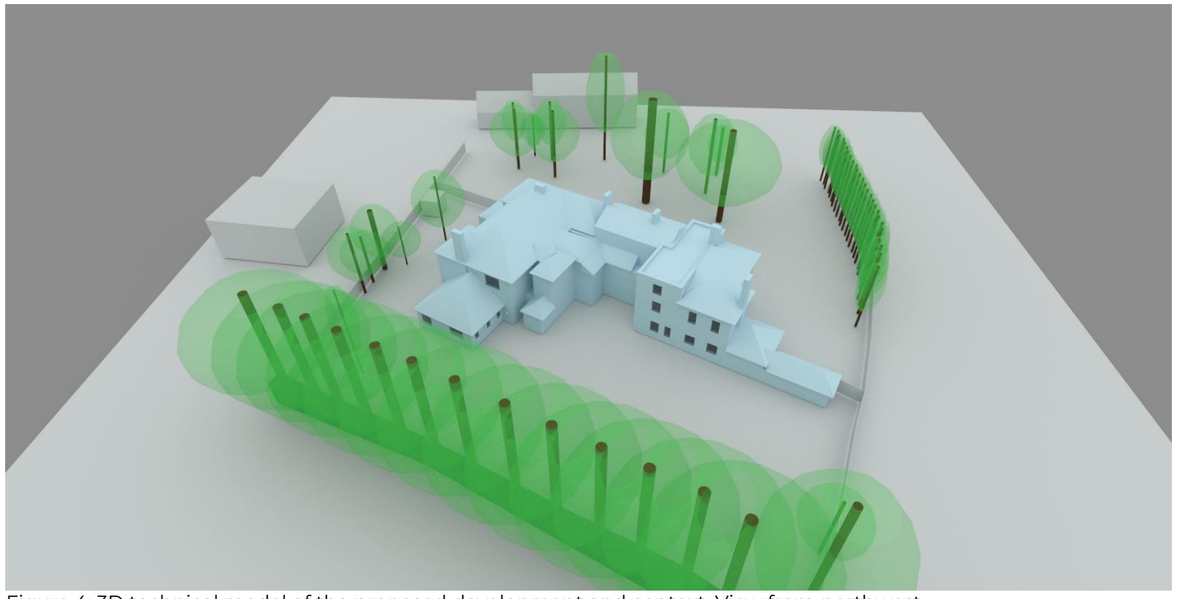


Figure 4: 3D technical model of the proposed development and context. View from northwest.

4 Assessment results

4.1 Daylight

Figures 5 to 7 on the following pages illustrate the results of the climate-based daylight analysis.

All assessed habitable spaces achieve the require daylight illuminance for over 50% of the working plane area, for over 50% of the year. It can therefore be concluded that all habitable rooms within the proposed conversion development will achieve the recommendations of the BRE guide.

The detailed numerical results are presented in Appendix A of this report.

4.2 Sunlight

The assessment results shows that all co-living units with a window within 90 degrees due south will meet BRE's target for sunlight exposure. It can therefore be concluded that the scheme is compliant with BRE's guide in terms of sunlight access to residential developments.

The detailed results are presented in Appendix A of the report.

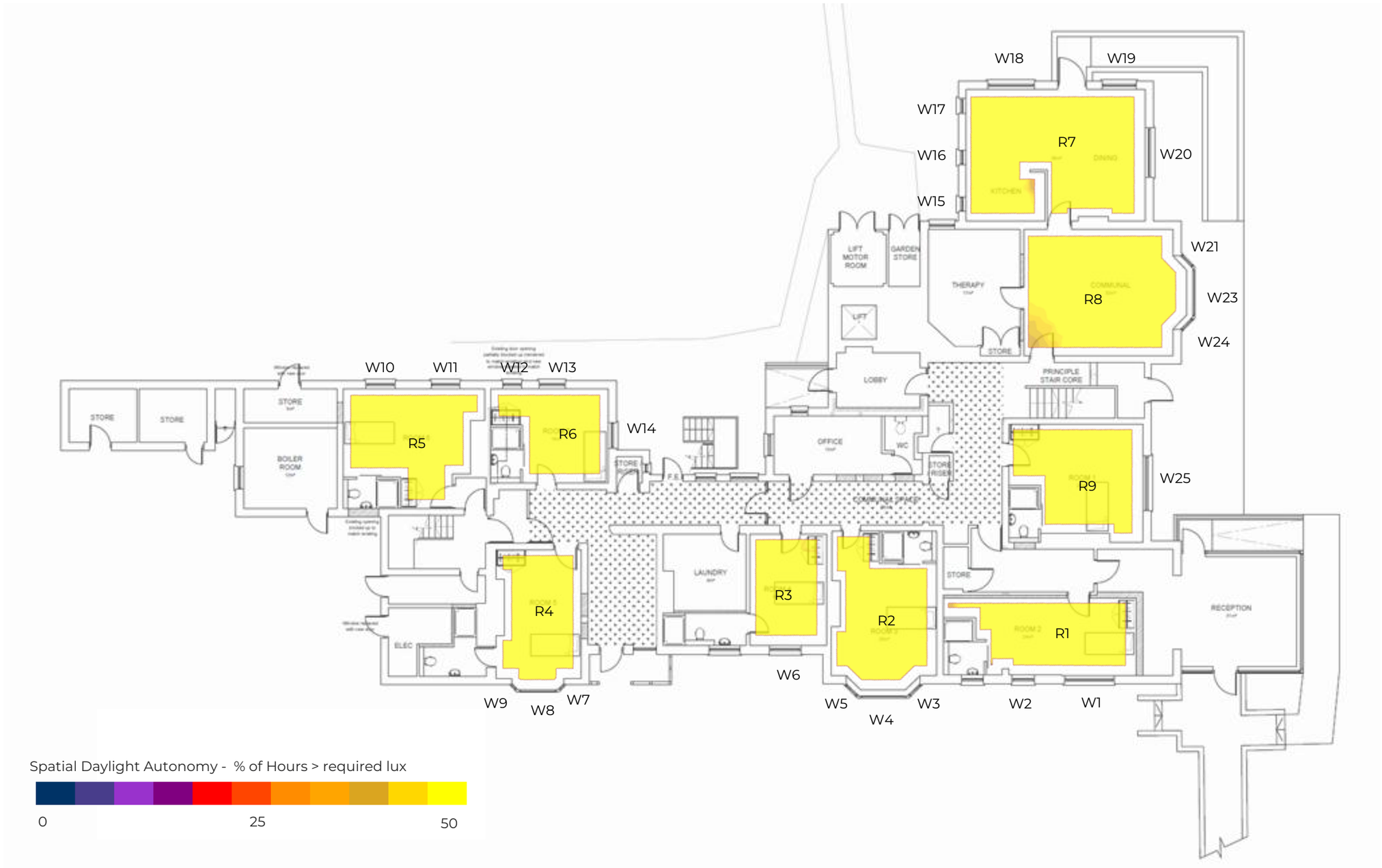


Figure 5. Spatial Daylight Autonomy (SDA) results for habitable rooms on ground floor (with window and room references).

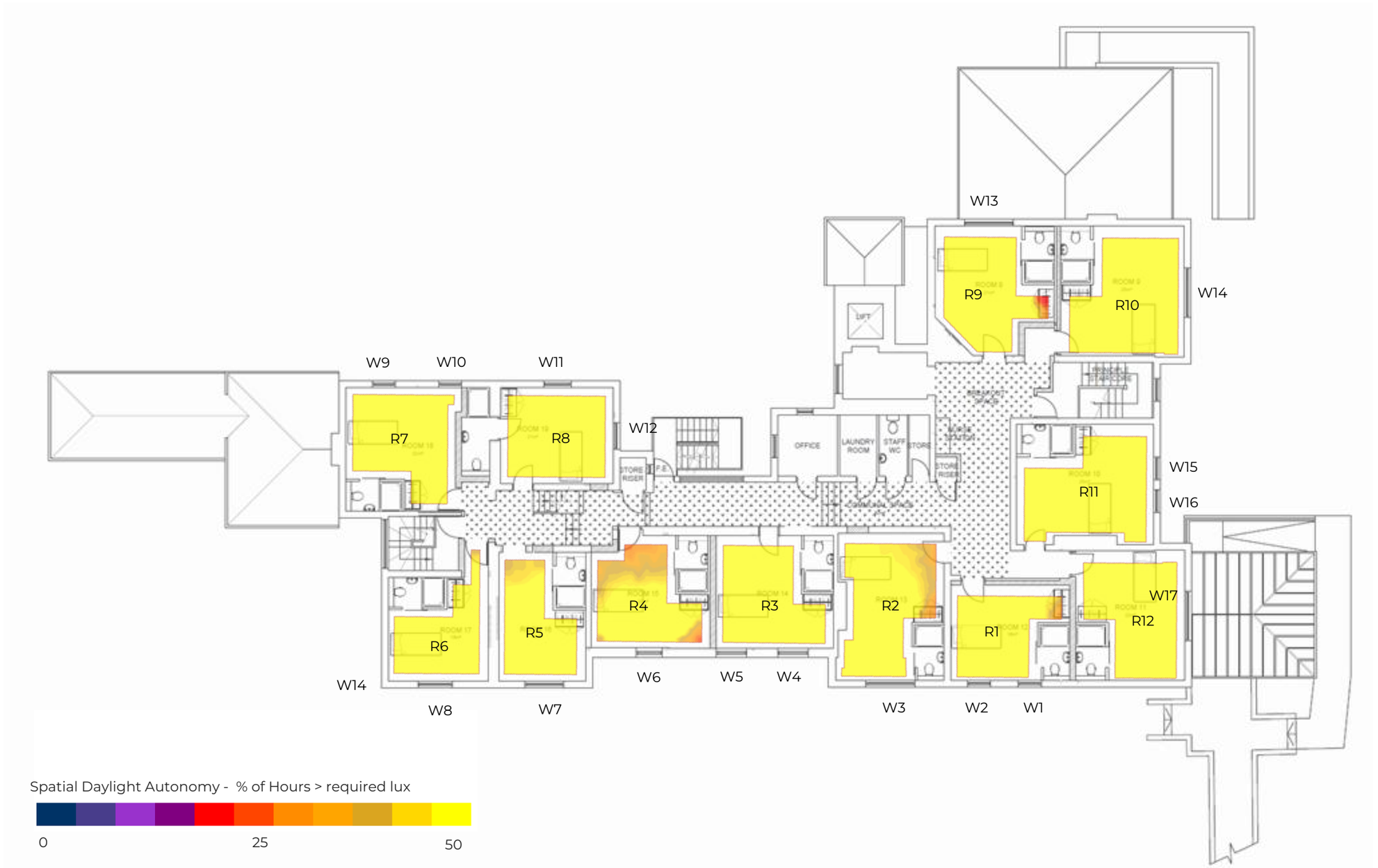


Figure 6: Spatial Daylight Autonomy (SDA) results for habitable rooms on first floor (with window and room references).

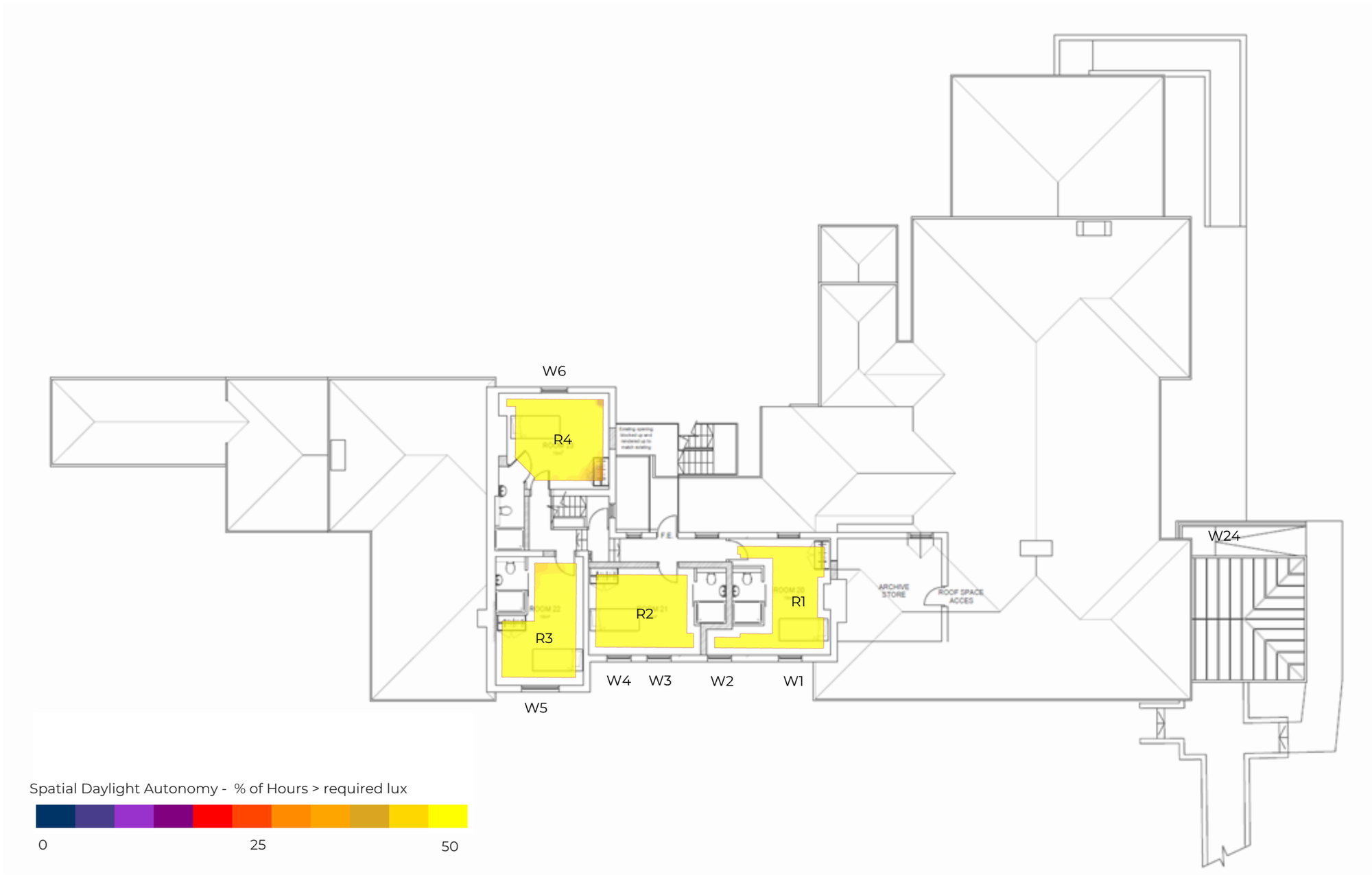


Figure 7. Spatial Daylight Autonomy (SDA) results for habitable rooms on second floor (with window and room references).

5 Conclusions

Based on the findings, it can be concluded that the proposed conversion scheme will provide satisfactory levels of daylight and sunlight to future residents of the co-living facility in line with BRE guidance.

Appendix A – Detailed results

Daylight

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 Criteria
Ground	R1	Bedroom	20.82	14.44	678	14.27	99%	100	50%	50%	4380	Yes
	R2	Bedroom	22.77	16.69	495	16.69	100%	100	50%	50%	4380	Yes
	R3	Bedroom	14.00	9.79	166	8.66	88%	100	50%	50%	4380	Yes
	R4	Bedroom	18.18	12.90	290	12.81	99%	100	50%	50%	4380	Yes
	R5	Bedroom	21.93	15.91	325	15.63	98%	100	50%	50%	4380	Yes
	R6	Bedroom	15.08	10.32	518	10.32	100%	100	50%	50%	4380	Yes
	R7	Kitchen	38.46	29.51	404	28.61	97%	200	50%	50%	4380	Yes
	R8	Living Room	32.52	26.02	319	23.47	90%	150	50%	50%	4380	Yes
	R9	Bedroom	22.25	16.44	480	16.44	100%	100	50%	50%	4380	Yes
First	R1	Bedroom	15.49	10.57	396	9.96	94%	100	50%	50%	4380	Yes
	R2	Bedroom	21.75	15.67	141	10.62	68%	100	50%	50%	4380	Yes
	R3	Bedroom	18.19	13.01	319	13.01	100%	100	50%	50%	4380	Yes
	R4	Bedroom	17.53	12.32	108	6.80	55%	100	50%	50%	4380	Yes
	R5	Bedroom	15.10	10.25	382	8.85	86%	100	50%	50%	4380	Yes
	R6	Bedroom	15.07	9.67	489	9.40	97%	100	50%	50%	4380	Yes
	R7	Bedroom	19.10	13.68	341	13.15	96%	100	50%	50%	4380	Yes
	R8	Bedroom	17.41	12.75	527	12.75	100%	100	50%	50%	4380	Yes
	R9	Bedroom	18.76	13.37	373	12.83	96%	100	50%	50%	4380	Yes
	R10	Bedroom	22.80	17.04	480	17.04	100%	100	50%	50%	4380	Yes
	R11	Bedroom	22.60	16.54	398	16.45	99%	100	50%	50%	4380	Yes
	R12	Bedroom	19.68	14.28	681	14.28	100%	100	50%	50%	4380	Yes
Second	R1	Bedroom	16.40	9.94	1561	9.94	100%	100	50%	50%	4380	Yes
	R2	Bedroom	15.39	10.91	542	10.91	100%	100	50%	50%	4380	Yes
	R3	Bedroom	15.60	10.69	302	9.37	88%	100	50%	50%	4380	Yes
	R4	Bedroom	15.83	11.30	184	9.97	88%	100	50%	50%	4380	Yes

Sunlight

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Existing Sunlight Exposure (Hours)	Proposed Sunlight Exposure (Hours)	Meet criteria?
Ground	R1	Bedroom	W1	207°	-1	4.7	
			W2	207°	-1	3.5	
					-1	5.1	Yes
Ground	R2	Bedroom	W3	163°	-1	4.5	
			W4	207°	-1	3.7	
			W5	252°	-1	1.4	
					-1	5	Yes
Ground	R3	Bedroom	W6	207°	-1	1.6	
					-1	1.6	Yes
Ground	R4	Bedroom	W7	162°	-1	2.3	
			W8	207°	-1	3.1	
			W9	253°	-1	1.7	
					-1	3.3	Yes
Ground	R5	Bedroom	W10	28°N	-1	0	
			W11	28°N	-1	0	
					-1	0	North facing
Ground	R6	Bedroom	W12	28°N	-1	0	
			W13	28°N	-1	0	
			W14	117°	-1	0	
					-1	0	North facing
Ground	R7	Kitchen	W15	297°N	-1	0	
			W16	297°N	-1	0	
			W17	297°N	-1	0	
			W18	27°N	-1	0	
			W19	27°N	-1	0	
			W20	117°	-1	2.3	
					-1	2.3	Yes
Ground	R8	Living Room	W21	73°N	-1	0.1	
			W23	117°	-1	1.7	
			W24	162°	-1	2.8	
					-1	3.3	Yes
Ground	R9	Bedroom	W25	117°	-1	3.1	
					-1	3.1	Yes
First	R1	Bedroom	W1	207°	-1	3.7	
			W2	207°	-1	3.3	
					-1	3.8	Yes
First	R2	Bedroom	W3	207°	-1	3.7	
					-1	3.7	Yes
First	R3	Bedroom	W4	207°	-1	2.1	
			W5	207°	-1	3.5	

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Existing Sunlight Exposure (Hours)	Proposed Sunlight Exposure (Hours)	Meet criteria?
					-1	4.1	Yes
First	R4	Bedroom	W6	207°	-1	4.3	
					-1	4.3	Yes
First	R5	Bedroom	W7	207°	-1	5.4	
					-1	5.4	Yes
First	R6	Bedroom	W8	207°	-1	6.7	
					-1	6.7	Yes
First	R7	Bedroom	W9	27°N	-1	0	
			W10	27°N	-1	0	
					-1	0	North facing
First	R8	Bedroom	W11	27°N	-1	0	
			W12	117°	-1	2.5	
					-1	2.5	Yes
First	R9	Bedroom	W13	27°N	-1	0	
					-1	0	North facing
First	R10	Bedroom	W14	117°	-1	4.8	
					-1	4.8	Yes
First	R11	Bedroom	W15	117°	-1	3.1	
			W16	117°	-1	2.8	
					-1	3.5	Yes
First	R12	Bedroom	W17	117°	-1	5.3	
					-1	5.3	Yes
Second	R1	Bedroom	W1	208°	-1	5.1	
			W2	208°	-1	5.3	
					-1	5.6	Yes
Second	R2	Bedroom	W3	208°	-1	6.5	
			W4	208°	-1	5.6	
					-1	6.5	Yes
Second	R3	Bedroom	W5	208°	-1	7.1	
					-1	7.1	Yes
Second	R4	Bedroom	W6	28°N	-1	0	
					-1	0	North facing

Appendix B – Planning Policies

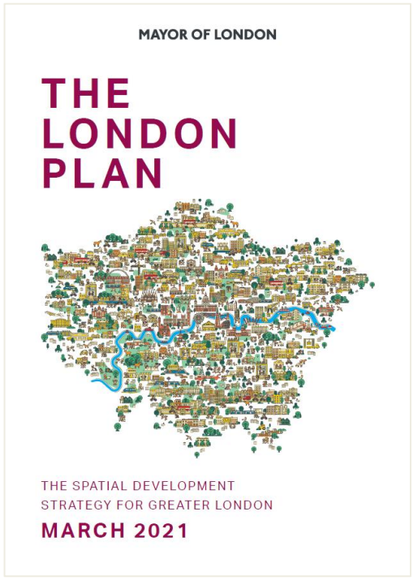
National Planning Policy Framework (2024)

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 Plan (March 2021)

The London Plan is part of the statutory development plan for London and sets out a framework for how for how the city will develop sustainably over the next 20-25 years. Policies which are directly or indirectly linked to daylight/sunlight/ amenity are summarised below.



Policy GG2 Making the best use of land

- enable the development of brownfield land, particularly in Opportunity Areas, on surplus public sector land, and sites within and on the edge of town centres, as well as utilising small sites.
- proactively explore the potential to intensify the use of land, promoting higher density development.

Housing SPG (March 2016)

The need to protect the amenity of neighbours is echoed within 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 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 carefully and in consideration of the development's context.

- 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.

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:

- 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, a higher illuminance target may be set for a room in homes for the elderly.

Sunlight to windows

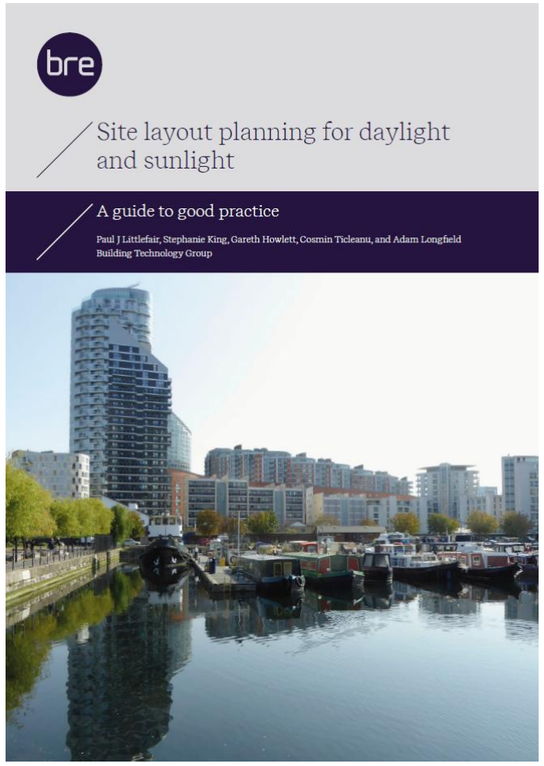
The BRE guide stipulates that in general, a dwelling or non-residential building that has a particular requirement for sunlight, will appear reasonably sunlit provided that:

- 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.



ecolytik

86-90 Paul Street
London
EC2A 4NE

+44 (0) 0203 835 4114
mail@ecolytik.com
ecolytik.com