

Daylight and Sunlight Assessment (Proposed Scheme)

50 Station Road, Barnes

For Angela McDonald

November 2024

ecolytik

This page has been left intentionally blank

Contents

1	Executive Summary	4
2	Introduction	5
2.1	Site	5
2.2	Planning policies	5
2.3	Application of BRE's guidance	5
3	Technical model	6
3.1	Sources of information and assumptions	6
3.2	Scope of Assessment	6
3.3	Trees	6
4	Assessment results	7
4.1	Daylight	7
4.2	Sunlight	8
5	Conclusions	9
	Appendix A – Detailed results	A
	Appendix B – Planning Policies	B
	Appendix C – BRE Guidance	C

Project number	985
Report status	For submission
Revision number	2
Prepared by	Kostas Mastronikolaou
Checked by	Sherleen Pang

1 Executive Summary

Daylight and Sunlight analysis was carried out for the proposed development at 50 Station Road in Barnes, located within the London Borough of Richmond upon Thames. This report presents the daylight/sunlight results within this single dwelling development to support the planning application.

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 was 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 rear garden was also found to achieve BRE's recommended sunlight hours on 21 of March.

The proposed development complies with BRE's guidelines for daylight and sunlight access into the habitable spaces and open spaces. 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.

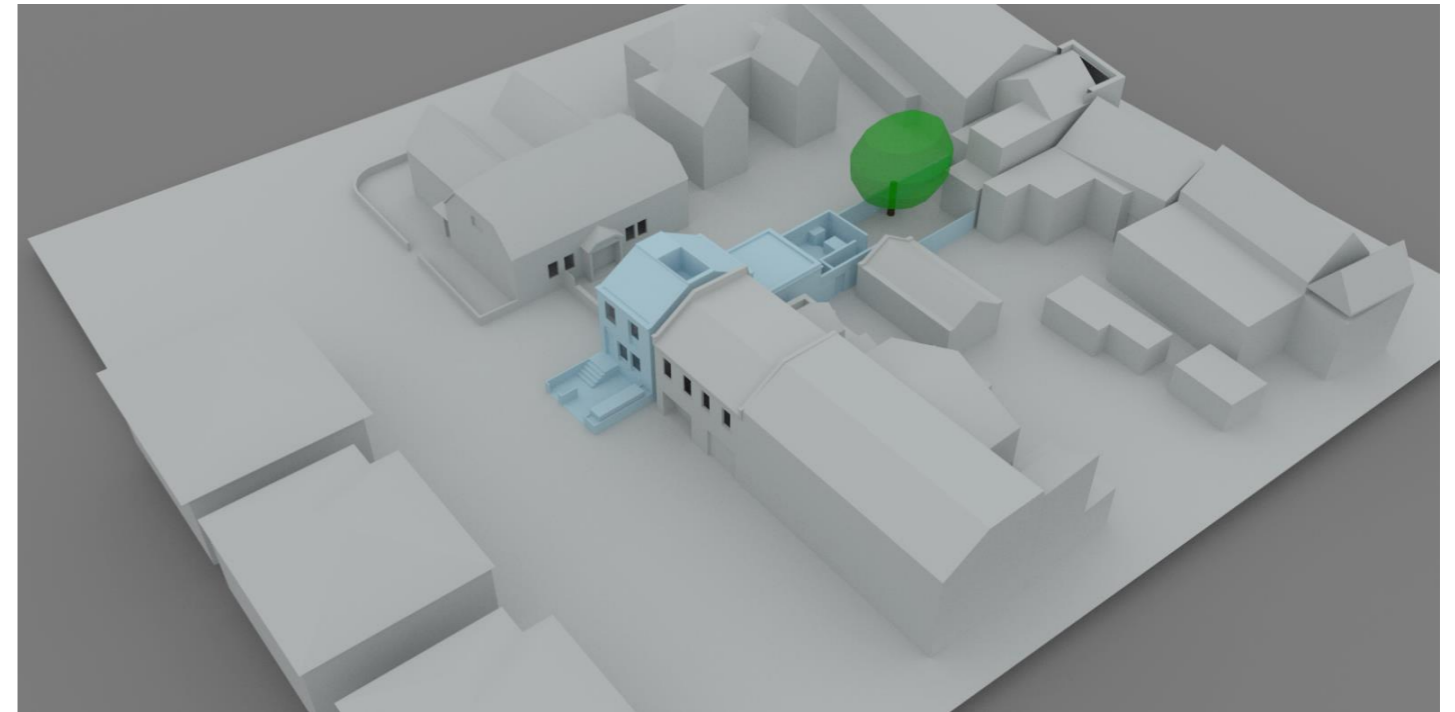


Figure 1: Technical 3D model of 50 Station Road and surrounding context.

2 Introduction

2.1 Site

The proposed development at 50 Station Road is located between Station Road and Ellison Road, in Barnes, within the London Borough of Richmond upon Thames.

The site currently comprises a single dwelling to the eastern end, with an elongated garden to the rear and a single storey garage to the western end. The proposed works include demolition of the existing garage and provision of single dwelling development.

The approximate site location is presented in Figure 2.

2.2 Planning policies

Local, regional and national planning policies relating to daylight and sunlight were 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 were 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 50 Station Road (source: Google Maps).

3 Technical model

3.1 Sources of information and assumptions

Architectural drawings from Paper Projects Architecture and Design Architects, tree survey data from Arboricultural Association, 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:

- 24.P0064.PREAPP - 50 Station Road.pdf
- 50 Station Rd_BS5837-2012
- Treesurvey_090924.pdf
- 23581_Model for DWG
- 23581_PL_010_Plan Site.pdf
- 23581_PL_011_Plan Ground.pdf
- 23581_PL_012_Plan First.pdf
- 23581_PL_013_Plan Roof.pdf
- 23581_PL_013_Section 1.pdf
- 23581_PL_020_Elev Front.pdf
- 23581_PL_021_Elev Flank North.pdf
- 23581_PL_022_Elev Rear.pdf
- 23581_PL_023_Elev Flank South.pdf
- 49076_01-02_PE_RevA.pdf
- Promap-2607931-2713408-720-0.DWG

3.2 Scope of Assessment

Figure 3 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 (in line with BRE guidelines) 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 open plan kitchen/living/dining (KLD) has the kitchen located to the rear of the room and away from the façade; therefore, the kitchen would be task lit. The area of the kitchen was included in the working plane but the target of 150 lux for living rooms was applied in the assessment as it would be more appropriate.

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

One tree is present to the northeast of the building which could have an impact on daylight levels to the proposed dwelling with windows on the northeast facade. This tree was included in the technical model.

Tree heights and spreads were based on tree survey data for the site. The tree is a Saucer Magnolia and is a deciduous species.

A tree crown transparency of 30% under full leaf condition (applicable to European Beech, see Table G1 of the BRE guide) was applied as a conservative approach. A 20% summer reflectance for deciduous trees was applied in line with Table G2 of the BRE Guide.

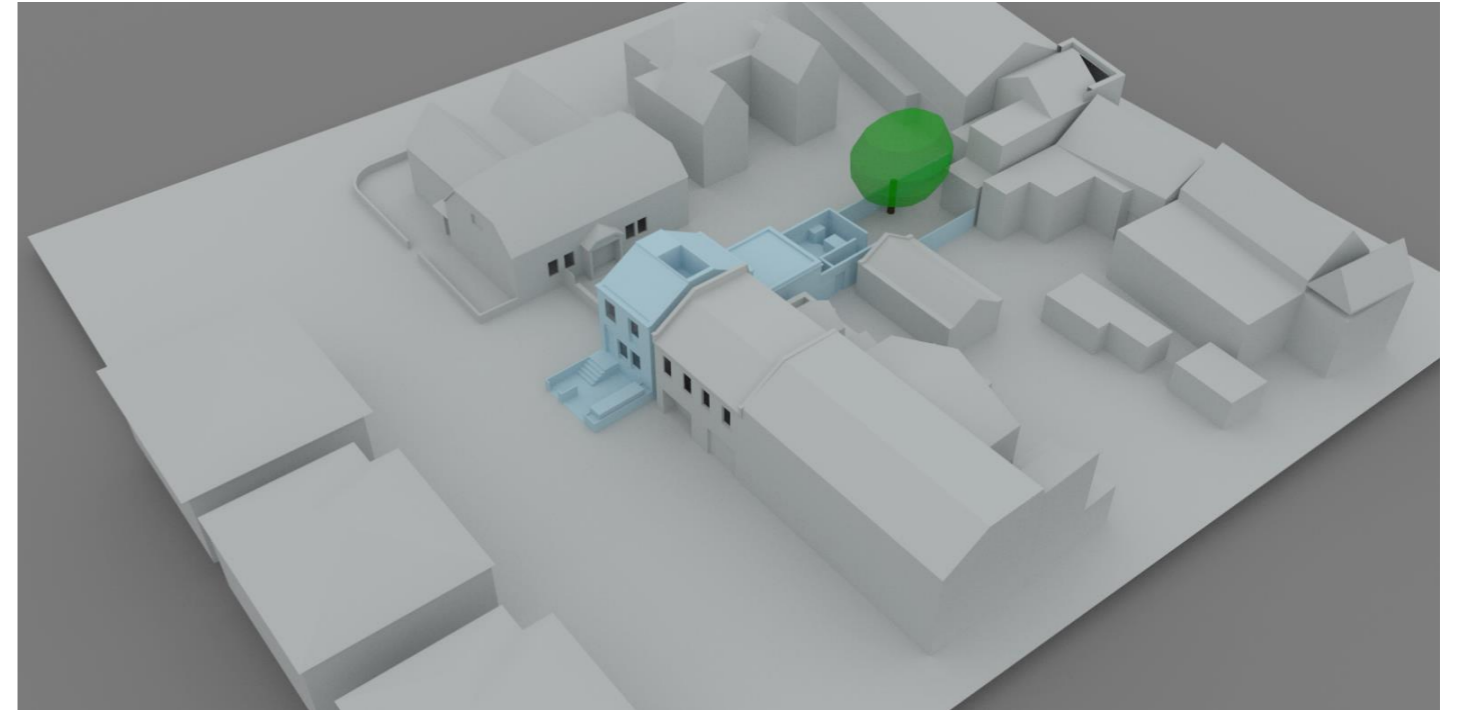


Figure 3: 3D technical model of the proposed development and context. View from south.

4 Assessment results

4.1 Daylight

Figure 4 illustrates the results of the climate-based daylight analysis.

All assessed habitable spaces achieve the required 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 development will achieve the recommendations of the BRE guide.

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



Figure 4. Spatial Daylight Autonomy (SDA) results for habitable rooms on ground floor (bottom) and first floor (top) with room and window references.

4.2 Sunlight

The assessment results show that all habitable rooms 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 dwellings.

The sunlight access results for the amenity space show that 96% of the open space will receive 2 hours of sunlight on 21 March, meeting BRE's guidelines. The illustration of the findings is shown in Figure 5.

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

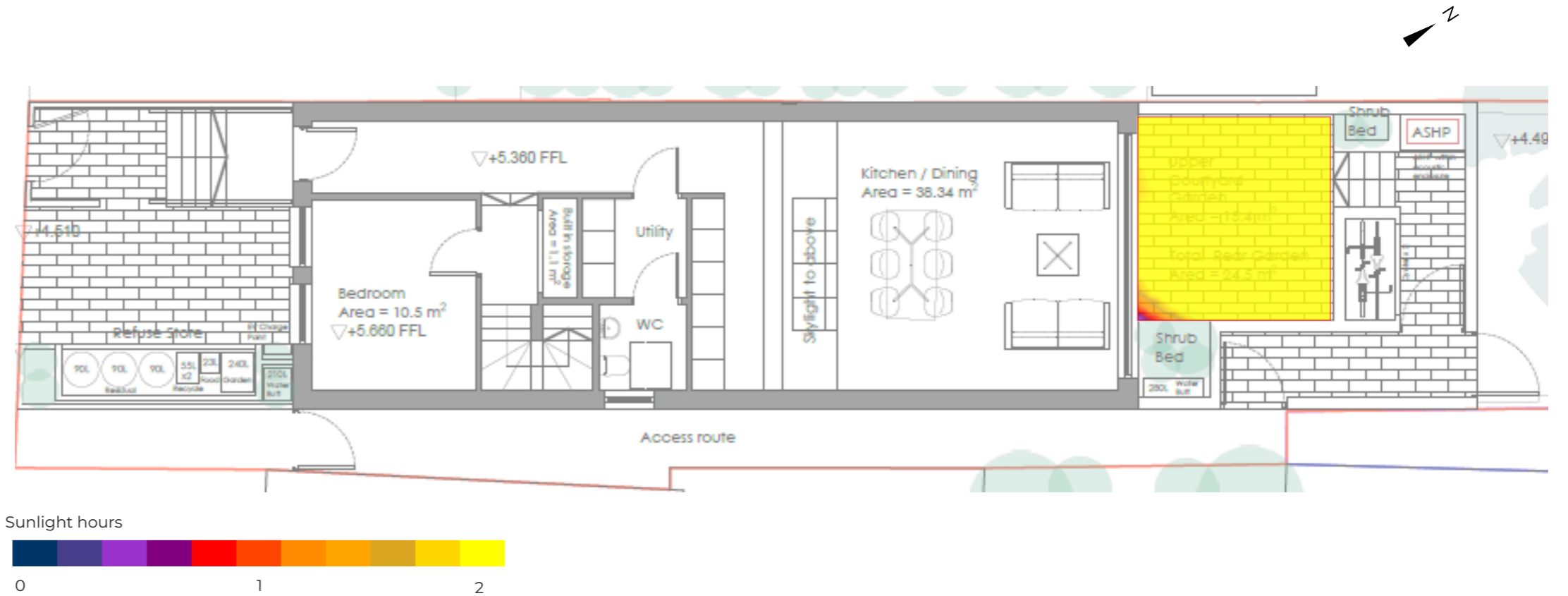


Figure 5. Sunlight hours for the proposed amenity space during 21 March (bottom) and 21 June (top)

5 Conclusions

Based on the findings, it can be concluded that the proposed scheme will provide satisfactory levels of daylight and sunlight access to future residents and their home.

Appendix A – Detailed results

Daylight to rooms

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	Living Room	37.61	30.43	301	22.40	74%	150	50%	50%	4380	Yes
	R2	Bedroom	8.19	5.05	433	5.05	100%	100	50%	50%	4380	Yes
First	R1	Bedroom	14.75	10.36	232	10.36	100%	100	50%	50%	4380	Yes
	R2	Bedroom	14.75	10.36	387	10.36	100%	100	50%	50%	4380	Yes

Sunlight to rooms

Floor Ref	Room Ref	Room Use	Window Ref	Window Orientation	Proposed Sunlight Exposure (Hours)	Meets criteria
Ground	R1	Living Room	W1	55°N	1.7	
			W2	90° Hz	1.9	
			W5	55°N	2.2	
					3.3	Yes
Ground	R2	Bedroom	W3	235°	5.3	
			W4	235°	5.2	
					5.3	Yes
First	R1	Bedroom	W1	55°N	2.9	
			W5	325°N	0	
			W6	55°N	2.6	
					2.9	Yes
First	R2	Bedroom	W2	235°	5.6	
			W3	235°	6.4	
			W4	325°N	0	
					6.4	Yes

Sunlight to amenity space

Floor Ref	Amenity Ref		Amenity Area	Lit Area Proposed 21 March	Meets BRE Criteria
Ground	A1	Area m2	13.49	12.92	Yes
		Percentage		96%	

Appendix B – Planning Policies

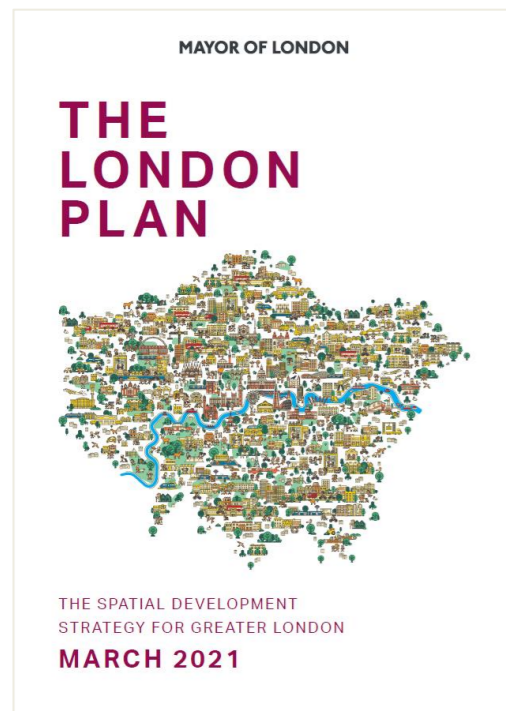
National Planning Policy Framework (2023)

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 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

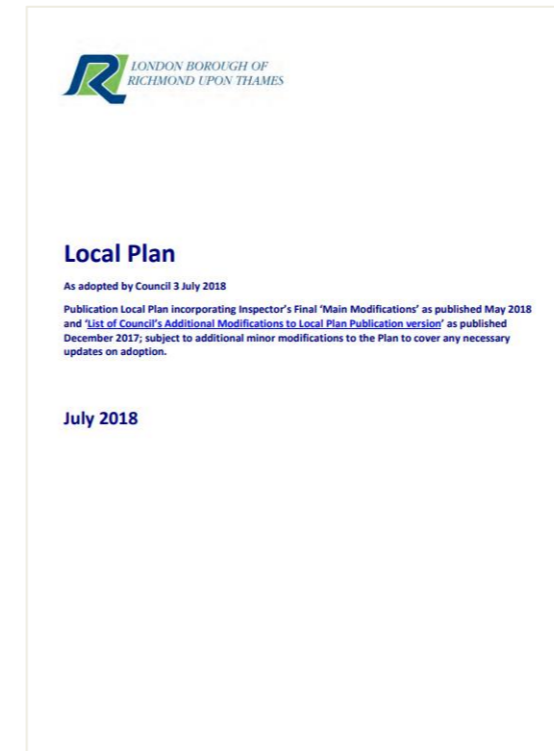
- enable the development of brownfield land, particularly in Opportunity Areas, on surplus public sector land, and sites within and on the edge of town centres, as well as utilising small sites.
- proactively explore the potential to intensify the use of land, promoting higher density development.

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.

Richmond upon Thames Local Plan (2018)



Policy LP8 Amenity and Living Conditions:

- Protect amenity and living conditions of new occupants and neighbouring properties.
- Ensure the design and layout of buildings enables good standards of daylight and sunlight to be achieved in new development and in existing properties affected by new development.
- Ensure balconies do not raise unacceptable overlooking or noise or disturbance to nearby occupiers.
- Ensure that proposals are not visually intrusive or have an overbearing impact as a result of their height, massing or siting, including through creating a sense of enclosure.
- Ensure there is no harm to the reasonable enjoyment of the use of buildings, gardens and other spaces due to increases in traffic, servicing, parking, noise, light, disturbance, air pollution, odours or vibration or local micro-climatic effects.

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