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DAYLIGHT & SUNLIGHT REPORT

12 Park Road
KT1 4AS

Our Ref: 5782

1 November 2022

Contents

Report details

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Prepared by:	BA
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Date of issue:	01/11/2022

1 Introduction

1.1.1 eb7 have been instructed to assess the quality of internal amenity within the proposed second floor dwelling at 12 Park Road, KT1 4AS. These assessments consider the latest Bluecrest Land scheme proposals dated October 2022.

1.1.2 The methodology and criteria used for these assessments is provided by Building Research Establishment's (BRE) guidance 'Site layout planning for daylight and sunlight: A guide to good practice' (BRE 209 3rd edition, 2022), which in turn references the British Standard BS EN17037:2018 'Daylight in buildings'.

1.1.3 In order to carry out an assessment, we have generated a 3D computer model (Test Environment) of the proposed development and the relevant surrounding obstructions. Using this model and our specialist software, we have calculated the daylight and sunlight levels within the proposed second floor dwelling.

1.1.4 The numerical criteria suggested within the BRE guidelines has been applied to each of the assessments mentioned above. It is important to note that these guidelines are not a rigid set of rules but are advisory and need to be applied flexibly according to the specific context of a site.

2 Guidance

2.1 Daylight & sunlight for planning

'Site layout planning for daylight and sunlight: A guide to good practice', BRE 2022

2.1.1 The Building Research Establishment (BRE) Report 209, *'Site layout planning for daylight and sunlight: A guide to good practice'*, is the reference document used by most local authorities for assessing daylight and sunlight in relation to new developments. Commonly referred to as 'the BRE guidelines', it provides various testing methodologies to calculate the potential light levels received by neighbours of a development site and provided within proposed new development.

2.1.2 The guidance given within the BRE document makes direct reference to the British Standard BS EN17037 (2018) and the CIBSE (Chartered Institute of Building Services Engineers) guide LG10: Daylighting – a guide for designers (2014). It is intended to be used in conjunction with these documents, which provide guidance on the assessment of daylight and sunlight within new buildings.

2.1.3 The 2022 update to the BRE guidance was published on 9th June 2022. The assessment methodologies and target metrics in respect of the impacts to neighbouring properties remain broadly unchanged from the earlier guidance save for some areas of clarification. The primary change relates to the assessment of internal daylight and sunlight amenity within proposed habitable accommodation. The new guidance reflects the British Standard BS EN17037, published in 2018, which was based on the relevant European Standard but, included a 'National Annex' clarifying the proposed application of the new internal guidance within the UK.

Daylight to new buildings or consented developments

2.1.4 The 2022 update to the BRE 209 document was published on 9th June 2022. The new guidance reflects the UK National Annex of the British Standard: BS EN17037 (2018) and provides new methodologies for assessing the internal daylight amenity to residential properties. This includes the 'Daylight Illuminance' assessment described in more detail below: -

Daylight Illuminance Assessment

2.1.5 The Daylight Illuminance method utilises climactic data for the location of the site, based on a weather file for a typical or average year, to calculate the illuminance at points within a room on at least hourly intervals across a year. The illuminance is calculated across an assessment grid sat at the reference plane (usually desk height).

2.1.6 The guidance provides target illuminance levels that should be achieved across at

least half of the reference plane for half of the daylight hours within a year.1 The targets set out within the national annex are as follows:

- Bedrooms – 100 Lux
- Living Rooms – 150 Lux
- Kitchens – 200 Lux

2.1.7 For spaces with a shared use the higher target would generally apply such that it would be appropriate to adopt a target of 150 Lux for a student bed sitting room if students would often spend time in their room during the day. The guidance notes that discretion should be used and, for example, a target of 150 Lux may be appropriate in a Living / Kitchen / Dining Room within a modern flatted development where the kitchens are not 'habitable' space and small separate kitchens are to be avoided.

Sunlight to new buildings or consented developments

2.1.8 In respect of direct sunlight, the 2022 BRE guidance reflects the BS EN17037 recommendation that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1st February and 21st March with cloudless conditions. It is suggested that 21st March (equinox) be used for the assessment.

2.1.9 The BS EN17037 criterion can be applied to all rooms of a unit but it is preferable for the target to be achieved within a main living room. Rooms in all orientations may be assessed and the sunlight received by different windows may be added together providing there is no 'double-counting'.

2.1.10 Where a group of dwellings are planned the site layout and design should maximise the number of dwellings with main living rooms meeting these targets. It is also advised that a dwelling has at least one window wall facing within 90 degrees of due south.

[1] The European Standard also includes a minimum illuminance target to be achieved over 95% of the reference plane however this need not apply to dwellings in the UK.

3 Application of the guidance

3.1 Scope of assessment

3.1.1 Our daylight assessment considers all of the main habitable rooms (bedrooms, living rooms, kitchens etc.), toilets, hallways and staircases are not considered habitable use.

3.2 Application of the numerical criteria

3.2.1 The opening paragraphs of the BRE guidelines state:

> *"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 (see Section5). In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings."*

3.2.2 It is therefore very important to apply the BRE guidance sensibly and 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.

3.2.3 With the above in mind it may be appropriate to adopt lower target values more appropriate to the location concerned. This is acknowledged in the BRE guidance at paragraph 2.2.3 (page 14):

> *"Note that numerical values given here are purely advisory. Different criteria maybe used, based on the requirements for daylighting in an area viewed against other site layout constraints."*

Criteria for daylight assessment

> *"2.1.14 Living rooms and kitchens need more daylight than bedrooms, so where there is a choice it is best to site the living room or kitchen away from obstructions. Dual-storey maisonette-type apartments may be planned with the main living rooms on the upper storey and the bedrooms on the lower floor for this reason. Areas without a special requirement for daylight, like bathrooms, stairwells, garages, and storage areas, can occupy the most obstructed areas such as internal corners of buildings. In mixed use developments commercial uses may occupy the less well daylit areas, allowing residential parts to have better access to light."*

Criteria for sunlight assessment

"3.1.14 The BS EN 17037 criteria are intended to apply to minimum, medium, and high levels of sunlight in a range of situations. However, in special circumstances the designer or planning authority may wish to choose a different target value for hours of sunlight. If sunlight is particularly important in a building, a higher target value or different target date may be chosen, although the risk of overheating needs to be borne in mind. Section 4 gives guidance on passive solar design. Conversely, if in a particular development sunlight is deemed to be less important but still worth checking for, a lower target value could be used. In either case, the sunpath indicators in Appendix A will still show whether the hours of sunlight received meet the target."

4 Planning Policy

4.1.1 We have considered local, regional and national planning policy relating to daylight and sunlight. In general terms, planning policy advises that new development will only be permitted where it is shown to provide suitable amenity for occupants.

4.2 Local Authority: London Borough of Richmond

Adopted Local Plan

4.2.1 The Local Plan was adopted by the Council on 3 July 2018. The adopted Local Plan incorporates all of the Main Modifications recommended by the Inspector alongside the Additional Modifications made by the Council.

4.8 Amenity and Living Conditions

Policy LP 8

Amenity and Living Conditions

All development will be required to protect the amenity and living conditions for occupants of new, existing, adjoining and neighbouring properties. The Council will:

1. 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; where existing daylight and sunlight conditions are already substandard, they should be improved where possible;

4.3 The National Planning Policy Framework - Department for Housing, Communities and Local Government (July 2021)

4.3.1 The latest version of the National Planning Policy Framework was issued in July 2021. The document sets out planning policies for England and how these are expected to be applied. In respect of daylight and sunlight it stresses the need to make optimal use of sites and to take a flexible approach to daylight and sunlight guidance. Para 125 States: -

11. Making effective use of land

Achieving appropriate densities

"125. Area-based character assessments, design guides and codes and masterplans can be used to help ensure that land is used efficiently while also creating beautiful and sustainable places. Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances:

c) local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards).

5 Sources of Information & Assumptions

5.1.1 A measured survey and architectural drawings have been used to create a 3D computer model of the proposed development in the context of the surrounding buildings.

5.1.2 The full list of source of information used in this assessment is as follows: -

5.2 Perceptum Design

Topographical survey

PD-127-SE Kellys Dance Studio (2)
Received dated 07/10/2022

5.3 Bluecrest Land

2D AutoCAD drawing

xref
Received dated 07/10/2022

5.3.1 In order to produce the daylight and sunlight assessments in line with BRE guidance, we have applied a number of inputs to represent the physical nature of the proposed development and surrounding context. These inputs are: -

5.4 Material reflectance values

Surface	Reflectance value
Interior walls	0.8 (white paint)
Interior ceilings	0.8 (white paint)
Floors	0.4 (light coloured carpet or flooring)
Exterior walls and obstructions	0.2
Exterior ground	0.2

Table 1 - Surface reflectance of construction materials

5.5 Glazing properties

5.5.1 We have assumed that the glazing used within the development will be standard clear double glazed with a low emissivity coating with a diffuse transmittance factor of 0.68. We have also applied a window framing factor, to account for the proportion of frame to glazing. We have quantified this by measuring areas for windows across the proposed development.

5.5.2 We have also applied a maintenance factor to the windows to account for the build-

up of dirt. These are listed in the table below: -

Type of window	Rural / Suburban	Urban
Vertical, no overhang	0.96	0.92
Vertical, sheltered from the rain	0.88	0.76
Sloping rooflight	0.92	0.84
Horizontal rooflight	0.88	0.76

6 Assessment results

Daylight and sunlight within the proposed dwelling

6.1.1 We have undertaken an assessment of the internal amenity to the proposed second floor unit in line with the assessments set out in the 2022 BRE guideline document. The results of these assessments are attached within the appendix 2.

6.1.2 The proposed second floor dwelling comprises a combined Living Kitchen Dining space and two bedrooms. These rooms will be served by roof lights and therefore will enjoy an unobstructed open outlook, allowing for high levels of daylight and sunlight amenity.

Daylight

Assessment Method	No. of rooms assessed	Rooms meeting target
Daylight Illuminance	3	3 (100%)
Total	**3**	**3 (100%)**

Table 2 - Summary daylight results for proposed accommodation

6.1.3 The results of the daylight illuminance assessment show that the proposed second floor habitable rooms meet the BRE targets, with the LKD achieving a median lux of 155 and the two bedrooms receiving median lux levels between 113-171.

Sunlight

Room type	No. of rooms assessed	No. rooms that meet target
Living Kitchen Diner (LKD)	1	1
Total	**1**	**1 (100%)**

Table 3 - Summary sunlight results for proposed accommodation

6.1.4 In respect of direct sunlight, the target is for the proposed unit to achieve at least 1.5 hours of direct sunlight on March 21st regardless of the orientation. Ideally this is to be achieved in main living rooms.

6.1.5 Our analysis shows that the LKD will receive good levels of sunlight exposure, achieving 6.3 hours of direct sunlight on March 21st. As such, the proposed second floor dwelling will significantly exceed the 1.5 hour target and comply with the BRE criteria for sunlight exposure.

6.1.6 Overall, the daylight and sunlight levels across the proposed second floor unit are excellent for future residents and wholly in accordance with the BRE guidelines.

7 Conclusions

7.1.1 This practice has undertaken a detailed assessment of the daylight and sunlight amenity provided within the proposed second floor dwelling at 12 Park Road, KT1 4AS. These assessments have followed guidance set out within the BRE document BR209 *'Site layout planning for daylight and sunlight: A guide to good practice'* (BRE, 2022) and the British Standard BS EN17037:2018 '*Daylight in buildings*'.

7.2 Daylight within the proposed new dwelling

7.2.1 The assessment of daylight has been undertaken using the Illuminance and Daylight Factor tests as set out in the guidance. The results have shown that the three proposed habitable rooms achieve daylight illuminance levels that exceed the recommended targets and are therefore in accordance with the BRE guidelines.

7.3 Sunlight within the proposed new dwelling

7.3.1 The assessment of sunlight within the proposed new dwelling has been undertaken using the Sunlight Exposure test set out within the guidance. The results have shown that the proposed second floor dwelling will comply with the BRE criteria given that the LKD will receive sunlight exposure levels in excess of the 1.5 hours target.

7.3.2 As such, we consider the proposed second floor residential accommodation to be fully in line with the BRE guidance and provide a high-quality living environment for future occupiers.

Appendix 1

Drawings of the proposed second floor dwelling

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Sources of information

Bluecrest Land
xref.dwg
PD-127-SE Kellys Dance Studio (2)
Received 13/10/2022

EB7 Ltd
Site Photographs
Ordnance Survey

NORTH

Project	12 Park Road KT1 4AS
Title	Second Floor Room Layout
Drawn	MZ
Checked	--
Date	01/11/2022
Project	5782
Rel no.	01
Prefix	ID02
Page no.	01

Appendix 2

Results of the daylight and sunlight assessments within proposed second floor dwelling

Project Name: 12 Park Road, KT1 4AS
Project No.: 5782
Proposed Scheme - Daylight Illuminance Analysis
Date of Analysis: 01/11/2022

								Criteria		
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**
					Proposed					
Second	R1	LKD	31.74	24.42	155	13.86	57%	150	50%	50%
	R2	Bedroom	17.86	12.49	113	7.98	64%	100	50%	50%
	R3	Bedroom	15.27	10.55	171	9.70	92%	100	50%	50%

Project Name: 12 Park Road, KT1 4AS
Project No.: 5782
Proposed Scheme - Sunlight Exposure Analysis
Date: 01/11/2022

Floor Ref	Room Ref	Room Use	Window Ref	Proposed Sunlight Exposure (Hours)
		Proposed		
Second	R1	LKD	W1	6.3
				6.3
Second	R2	Bedroom	W2	0
				0
Second	R3	Bedroom	W3	7.4
				7.4