LOVE
DAYLIGHT
& SUNLIGHT

2 Sandy Lodge Way

By Love Design Studio
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PR0710_V3

Contents

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Executive Summary

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the Proposed Development at 2 Sandy Lodge Way. This is to assess the on-site daylight and sunlight provision to rooms deemed habitable, based on relevant industry guidance.

To ensure that this assessment has correctly considered the daylight and sunlight access experienced on-site and to neighbouring properties, it has been instigated in accordance with the Building Research Establishment's publication "Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice" (2022) (the "BRE Guidelines").

Daylight and sunlight access is typically desirable for occupants within residential 'habitable' rooms. This is acknowledged within the BRE guidelines, which place the most emphasis on these uses; mainly living rooms.

Please see below a concise summary of the study:

Proposed Daylight and Sunlight access

16 habitable rooms were identified within the Proposed Development, consisting of five living/kitchen/dining rooms (LKDs) and 11 bedrooms. The surrounding trees on-site were also included within the assessment.

Assessments were made of the Daylight Factor for measure of daylight, wherein a target daylight factor should be achieved across a minimum of 50% of the reference plane. Daylight was assessed both during winter, when the surrounding deciduous trees are bare, and in the summer, when the surrounding deciduous trees are in full leaf. Appendix G of the BRE guidelines states the following regarding daylight targets and surrounding trees:

- If daylight targets are met in both the summer and winter, daylight is considered adequate.
- If daylight targets are not met in both the summer and winter, daylight is considered inadequate.
- If daylight targets are not met in the summer but are met in the winter, daylight is considered adequate. This is because daylight is most valuable in the winter and natural lux levels are highest in the summer.

Regarding daylight, all assessed rooms meet their respective daylight targets in both the winter and summer. Therefore, as per the BRE guidelines, daylight within all habitable rooms within the Proposed Development is considered adequate.

Regarding sunlight, assessments were made using Sunlight Exposure analysis. The BRE guidelines states that a dwelling must receive a minimum of 1.5 hours of sunlight on March 21 in at least one habitable room, preferably a main living room.

All five LKDs meet the minimum requirement of 1.5 hours of sunlight on March 21; thus, the sunlight target for each dwelling has been met.

Overall, it is considered that the future occupants of the Proposed Development will receive adequate daylight and sunlight within each dwelling and the BRE guidelines have been achieved.

Introduction

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the Proposed Development at 2 Sandy Lodge Way, Northwood, HA6 2AJ. This is to assess the on-site daylight and sunlight access to rooms deemed habitable, based on relevant industry guidance.

The Proposed Development consists of the demolition of the existing buildings on-site to deliver a three-storey plus basement development comprising five no. new-build flats.

Figure 1: *Aerial view of the existing site (red)*

Methodology

Modelling Methodology

Using architectural drawings prepared by Ascot Design (received 31st October 2024), 3D models of the proposed scheme were created in industry accepted daylight and sunlight software. These included the on-site existing structures within the site boundary and the proposed development.

Using a specialist computer programme, the guidelines for modelling and testing the scheme's daylight and sunlight access were provided by the BRE's "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" by PJ Littlefair (2022); accepted as good practice by Planning Authorities when assessing the applications for new schemes. For further guidance on the methodology please see the BRE's document[1].

Proposed Development Assessment Methodology

Assessments were made using the Daylight Factor method to measure internal daylight provision. For interior daylight of new developments in the UK, the BRE guidelines are intended to be used with The British Standard "Daylight in buildings" (BS EN 17037) and its National Annex. BS EN 17037 states that a target daylight factor should be achieved across a minimum of 50% of the reference plane.

The target daylight factor is dependent on room use, in which bedrooms, living rooms, and kitchens have a target of 0.7%, 1.1%, and 1.4%, respectively. As the Proposed Development contains LKDs, a target daylight factor of 1.1% for living rooms was used, as recommended in Appendix C of the BRE guidelines.

A table of the scheme's target daylight factor values are set out below:

Table 1: *The proposed Development target daylight factor values*

Habitable Room	Daylight Factor	% Assessment Grid
Bedrooms	0.7%	50%
LKDs	1.1%	50%

Assumptions of the reflectance and other modelling variables are set out below.

[1] https://www.brebookshop.com/details.jsp?id=328056

Table 2: *Proposed Development variables*

Item	Value	Comment
Maintenance	94%	% loss of daylight based on: 'Suburban' location Vertical glazing
Frame factor	70%	BRE Default
Floor reflectance	0.3	BRE default for light wooden floors
Ceiling reflectance	0.9	BRE default for light coloured ceilings
Internal wall reflectance	0.7	BRE default light pastel-coloured walls
External wall reflectance	0.2	BRE default

With regards to sunlight, the BRE Guidelines seek for dwellings to receive a minimum of 1.5 hours of sunlight on 21 March, with greater emphasis on main living rooms.

Surrounding Trees

Trees and hedges are not usually considered within daylight and sunlight assessments due to their irregular shapes making it difficult to accurately model. However, Appendix G of the BRE guidelines states that trees should be considered if large existing trees surround a proposed development.

As per Appendix G of the BRE guidelines, the surrounding trees were considered by modelling a representative shape of the trees using data collected on-site of the tree profiles.

The Arboriculture Report for the proposed site (prepared by Arbol Euro Consulting, December 2023) was used to model the relevant surrounding trees on-site.

Regarding daylight, the daylight factor assessment was undertaken twice to represent the summer, when trees are in full leaf, and in winter, when deciduous trees are bare. The amount of daylight that passes through the tree's crown during summer and winter is represented in the model by applying the relevant transparency to the crown, based on Appendix G of the BRE guidelines.

For example, the BRE guidelines state a European Ash would have a low transparency (25%) in the summer when the tree is in full leaf but would have high transparency (65%) in the winter when its branches are bare.

Evergreen trees do not have a listed transparency within the BRE guidelines, so the lowest transparency (10%) was applied to the evergreen green trees on-site.

Additionally, trees have different reflectance values throughout the seasons. Following the values set out in Appendix G of the BRE guidelines, all deciduous trees were modelled with a

reflectance of 20% and 10% in the summer and winter, respectively. All evergreen trees were modelled with a reflectance value of 10% throughout the year.

To consider the impact of surrounding trees on sunlight access, Appendix G of the BRE guidelines states that the sunlight exposure assessment should first be conducted with all surrounding trees modelled as opaque structures. Then, the assessment is run again with all deciduous trees removed; this produces a range of possible sunlight hours the room could achieve.

Assumptions and Limitations

The tree profile and placement of the surrounding trees were taken from the Arboriculture Report, prepared December 2023. It should be noted that the BRE guidelines emphasise that trees are difficult to model due to their irregular shapes, which may lead to misleading results.

The report provided is solely for the use of the client and no liability to anyone else is accepted and this report is based upon and subject to the scope of work set out in Love Design Studio's terms and conditions.

Assessment Model Images

For reference, please see below images of the constructed model from the relevant software; this is for illustrative purposes only.

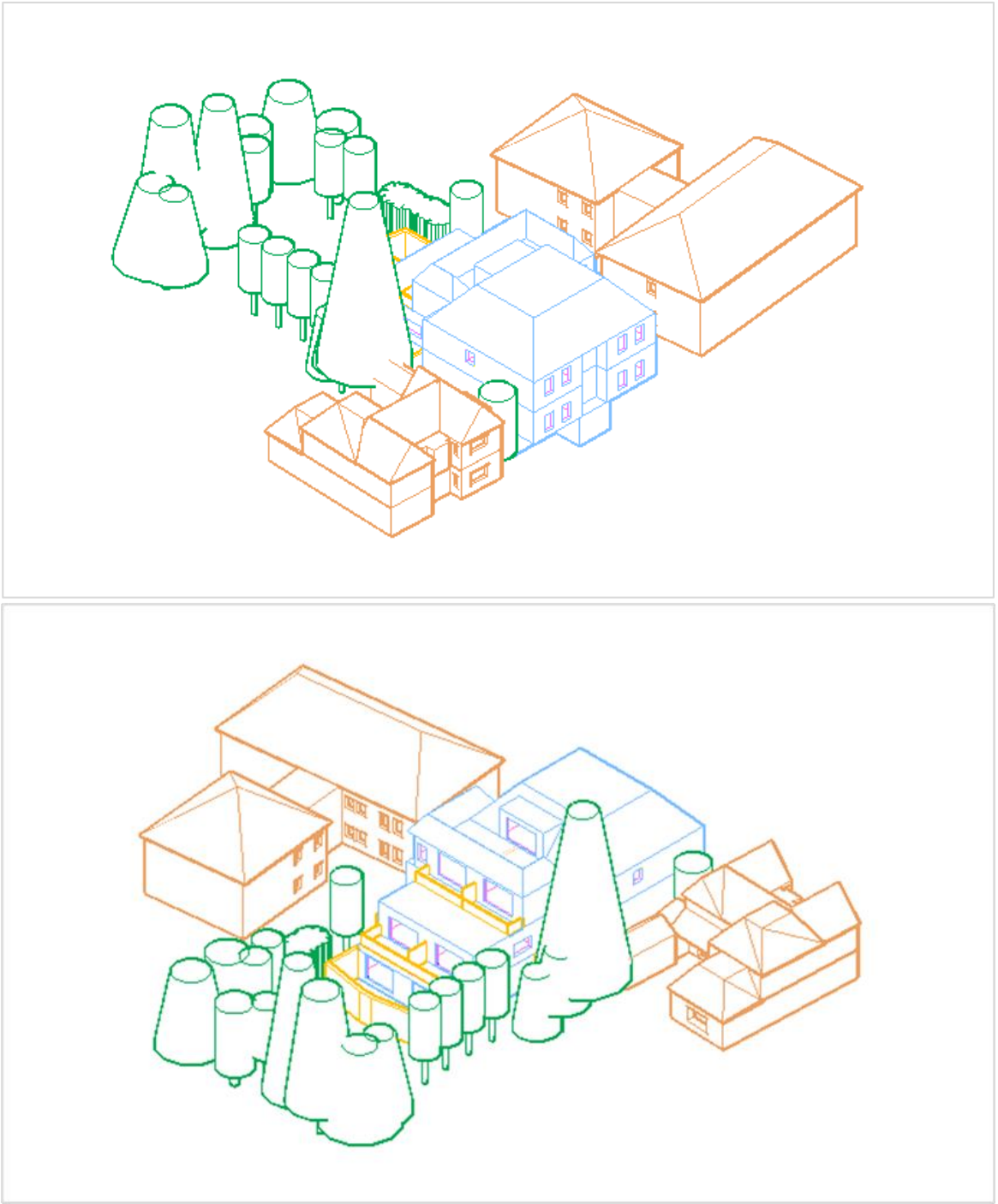

Figure 2: *Aerial image of the model illustrating 2 Sandy Lodge Way, neighbouring properties, and surrounding trees*

Proposed Development Summary

16 habitable rooms were identified in the Proposed Development, consisting of five living/kitchen/dining rooms (LKDs) and 11 bedrooms.

Assessments were made of the daylight factor for measure of daylight, wherein a target daylight factor should be achieved across a minimum of 50% of the reference plane.

The surrounding trees on-site were included within the daylight assessment. Appendix G of the BRE guidelines states the following regarding daylight targets and surrounding trees:

- If daylight targets are met in both the summer and winter, daylight is considered adequate.
- If daylight targets are not met in both the summer and winter, daylight is considered inadequate.
- If daylight targets are not met in the summer but are met in the winter, daylight is considered adequate. This is because daylight is most valuable in the winter and natural lux levels are highest in the summer.

Assessments were made of the Sunlight Exposure for measure of sunlight. The BRE guidelines states that a dwelling must receive a minimum of 1.5 hours of sunlight on March 21 in at least one habitable room, preferably a main living room.

To consider the impact of surrounding trees, Appendix G of the BRE guidelines states that the sunlight exposure assessment should first be conducted with all surrounding trees modelled as opaque structures. Then, the assessment is run again but removing all deciduous trees; this produces a range of possible sunlight hours the room could achieve.

A full set of calculations of the daylight provision and sunlight access are set out below.

Table 3: *Full daylight and sunlight test results for the proposed development*

Reference*	Target daylight factor area achieved (%) Winter	Target daylight factor area achieved (%) Summer	Range of Sunlight exposure (hours)
Unit 1/LGF/LKD	54%	52%	5.6
Unit 1/LGF/Bed1	76%	75%	2.3
Unit 1/LGF/Bed2	77%	73%	0
Unit 2/GF/LKD	85%	84%	4.0
Unit 2/GF/Bed1	100%	100%	3.1
Unit 2/GF/Bed2	100%	100%	0
Unit 3/GF/LKD	64%	61%	5.7-6.0

Unit 3/GF/Bed1	100%	100%	3.1
Unit 3/GF/Bed2	59%	59%	3.1
Unit 3/GF/Bed3	61%	54%	2.8-3.1
Unit 4/1F/LKD	100%	100%	4.1
Unit 4/1F/Bed1	100%	100%	3.1
Unit 4/1F/Bed2	100%	100%	0.2
Unit 5/1F/LKD	99%	99%	4.3
Unit 5/1F/Bed2	100%	100%	3.1
Unit 5/2F/Bed1	100%	99%	4

*XX/XX/XX/XX Flat Ref/Floor/ Room Ref

The daylight factor analysis demonstrates that all assessed rooms meet their respective target daylight factors across a minimum of 50% of the reference plane, both in the winter and the summer.

The sunlight analysis demonstrates that all five LKDs meet the minimum requirement of 1.5 hours of sunlight on March 21; thus, the sunlight target for each dwelling has been met.

Overall, the future occupiers will receive adequate daylight and sunlight and the BRE guidelines have been achieved.

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