# 28 KING'S MEWS, LONDON

*Internal Daylight and Sunlight Report*

waldrams
daylight & sunlight

28 October 2020

waldrams
daylight & sunlight
Waldrams Ltd
Chartered Surveyors

**Daylight and Sunlight Report**

| | |
|---|---|
| *Project:* | 28 King's Mews, London |
| *Client:* | Mssrs. J, R & N MacDonagh |
| *Prepared by:* | Luke Wilson |
| *Checked By:* | James Bowman |
| *Reference:* | 1172 |
| *Date:* | 28 October 2020 |

**Document History**

| | |
|---|---|
| *First Issued:* | 12 October 2020 |

*This report is intended solely for Mssrs. J, R & N MacDonagh and may contain confidential information. The Liability of this Report extends to Mssrs. J, R & N MacDonagh and their duly appointed advisors. No part or whole of its contents may be disclosed to or relied upon by any Third Parties without the consent of this Practice. This report is accurate as at the date of publication but does not take into account anything that has happened since the date of this report.*

---

Waldrams Ltd Address: Unit 303, The Light Bulb
1 Filament Walk
London SW18 4GQ

Email: contact@waldrams.com
Telephone: 020 7183 9109
Website: www.waldrams.com

## Contents

## Executive Summary

- This is a report into the internal daylight and sunlight for the proposed conversion of the site at 28 King's Mews, London, into three residential units. This analysis is based upon scheme drawings by FT Architects, a photogrammetric survey of the site and surrounding context, and site photography.
- The analysis has been carried out in accordance with the methodologies contained in the Building Research Establishment's Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (2011) (the "BRE Guidelines"), which is used by the local authority to determine the acceptability of a proposal in terms of its effect on neighbouring daylight and sunlight amenity.
- All main habitable rooms meet their target ADF value and, in daylight distribution terms, either meet the target value or likely achieve similar results as similar rooms in other consented or constructed developments along King's Mews. In sunlight terms, all living rooms meet their target annual sunlight value and either meet their target winter sunlight or likely achieve similar winter sunlight levels to those received by the ground floor living room next door in 29-30 King's Mews.

# 1. Introduction

Waldrams have been instructed to provide internal daylight and sunlight analysis for the proposed conversion of the site at 28 King's Mews, London, into three residential units. This analysis is based upon scheme drawings by FT Architects, a photogrammetric survey of the site and surrounding context, and site photography.

The analysis has been carried out in accordance with the methodologies contained in the BRE Guidelines which is used by the local authority to determine the acceptability of a proposal in terms of its effect on neighbouring daylight and sunlight amenity.

Plots showing the proposed internal layouts in the proposed scheme can be found on drawing 1172-12-01 in Appendix 1.

# 2. Summary of how daylight and sunlight are considered for planning

## 2.1 Introduction to the BRE Guidelines

Daylight and sunlight are planning considerations. The main reference used by local planning authorities to determine the acceptability of proposals in terms of their internal daylight and sunlight and the impact on daylight and sunlight to the surrounding properties is the Building Research Establishment (BRE) Guidelines, used in conjunction with British Standard BS8206 Part 2. The BRE Guidelines provide scientific, objective methods for establishing the acceptability of daylight and sunlight internal to the scheme and the surrounding properties. In practice, it is principally the main habitable rooms internal to the scheme and within the surrounding residential properties that are sensitive in terms of daylight and sunlight. This report therefore focuses on the internal daylight and sunlight and the change in daylight and sunlight to habitable rooms in the surrounding residential property.

The BRE Guidelines specify that the daylight and sunlight results be considered flexibly and in the context of the site. Clearly, there would be a higher expectation for daylight and sunlight in a rural or suburban environment than in a dense city centre location. The important factor in all cases is that the levels of daylight and sunlight are appropriate, taking into account all the planning policy requirements of the site. The BRE Guidelines acknowledge this in the introduction where 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 thus this document 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 because natural lighting is only one of the many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values*."

(Page 1, BRE Guidelines)

Thus, the numerical figures should not be rigidly applied, but instead used as part of the overall evaluation of the daylight and sunlight to the surroundings in context of the site, its existing massing, and the need for regeneration and local planning policy guidance for the site. In particular, existing local precedents or recent planning consents may provide a good indication as to appropriate levels in the vicinity.

The BRE Guidelines specifies in Paragraph H1.2:

"*Where the effect of a new building on existing buildings nearby is being analysed, it is usual to ignore the effect of trees. This is because daylight is at its scarcest and most valuable in winter months when most trees will not be in leaf*."

The summary in section 2 of this report is provided to briefly introduce some of the main methods of the BRE Guidelines; however, the BRE Guidelines should be used as the basis for assessing the daylight and sunlight results included within this report. This section is not intended to override the wording of the BRE Guidelines for Daylight and Sunlight.

## 2.2 Internal new build criteria for daylight and sunlight

The BRE Guidelines refer to BS8206 Part 2 and CIBSE Lighting Guide LG10 which set out the following criteria for assessing interior daylight:

- Average Daylight Factor
- Position of the no sky line (Daylight distribution)
- Room depth

Analysis of the first two measurements is laid out below. Due to the irregular plan dimensions of rooms within the scheme, such that they are not rectilinear, the room depth is ambiguous and so this calculation has not been carried out.

The ADF measure of daylight takes into account the main factors that affect the actual daylight appearance of a room including the area of the window.

ADF provides an absolute measure of daylight expressed as a ratio of daylight for the room in question as a proportion of the daylight outside at any moment in time. The ADF for a living room

should be above 1.5% (i.e. the room should enjoy a minimum of 1.5% of the average external daylight at any moment in time), whilst that for a bedroom and kitchen should be in excess of 1% and 2% respectively. ADF is dependent on the area of sky visibility, which is closely related to VSC, the area of the window serving the room, the glazing transmittance, the total area of the room's surfaces and the internal reflectance of the room.

In terms of ADF, while the BRE Guidelines recommend that in cases where one room serves more than one purpose the minimum ADF should be that for the room type with the higher value, for rooms designated as a 'living room/kitchen/dining room' (LKD), we would argue that the principal use of the room is as a living room. Accordingly, it would therefore be reasonable to apply the minimum ADF value for a living room (1.5%) as an alternative target value for a room designated as an LKD.

We have therefore used the threshold of 1.5% as a benchmark of acceptability for living room/kitchen/dining rooms.

In relation to the position of the no-sky line (daylight distribution), the BRE Guidelines state in paragraph C16:

> *"If a significant area of the working plane (normally more than 20%) lies beyond the no-sky line (i.e. it receives no direct skylight) then the distribution of daylight in the room will look poor and supplementary electric lighting will be required."*

We have therefore calculated the proportion of each habitable room internally to the scheme between the window and the no-sky line.

For internal sunlight, the only test put forward in the BRE Guidelines is Annual Probable Sunlight Hours (APSH). The test for sunlight is calculated for each main south facing window to habitable rooms and in particular living rooms. Bedrooms and kitchens are considered by the BRE Guidelines as less important for sunlight. The BRE Guidelines state that any south facing window may potentially receive up to 1486 hours of sunlight per year on average, representing 100% of the annual probable sunlight hours (APSH). Of this, each main window to a main habitable room may be adversely affected if it has less than 25% of the total APSH across the whole year or less that 5% APSH during the winter months (defined as the 6 months from September 21st through to March 21st).

Following the BRE Guidelines recommendations, APSH is measured from a point on the inner window wall whilst ADF is measured from the point halfway between the inner and outer window wall.

### 2.3 Method used for calculating the daylight and sunlight results

The analysis provided in this report utilizes state-of-the-art software to calculate in three dimensions the daylight and sunlight following the methods specified in the BRE Guidelines. A three dimensional accurate computer model has been created for the existing site in context of the immediate surrounding properties, based upon a photogrammetric survey of the site and surrounding properties, site photographs and Ordnance Survey information.

Drawings of the existing and proposed building in context of the surrounding properties are shown in Appendix 1.

#### 2.3.1 Internal residential rooms

Daylight and sunlight levels for the proposed daylight (ADF and daylight distribution) and sunlight (APSH) internally to the scheme are then calculated. These results are provided in Appendix 3.

***References:***

*BRE Guidelines (BR 209):- Site layout planning for daylight and sunlight: a guide to good practice,* by PJ Littlefair (2011).

These Guidelines provide the basis of the analysis described in this report. Please refer to this document for a detailed description as to the approach, methodology, and implementation of the numerical analysis used in this report. A summary of the approach and methods recommended by the BRE Guidelines is included in Section 2 above of this report.

## 3. Assumptions used in the analysis

The following assumed window transmittance and internal reflectance values have been used in the ADF calculations:

- Transmittance (T): 0.68
- Reflectance (R): 0.69

Please note that we have not applied a maintenance factor in the calculation; we have assumed that the windows are cleaned regularly. The details of the proportion of frame to each window aperture have not yet been finalised and so a frame factor of 9% has been assumed and applied for the ADF calculations internally within the rooms within the scheme.

## 4. Sources of Information Used in the Report

**FT Architects**
200_03_26 rev B
**Received 27/10/20**

**Waldrams Chartered Surveyors**
Photogrammetry
Site Photographs
Ordnance Survey

## 5. Internal daylight and sunlight

The room layouts within the proposed development are shown on drawing 1172-12-01 in Appendix 1, which reference the results of the internal daylight and sunlight analysis, included in Appendix 2.

The BRE Guidelines make it clear that ADF is a primary measure for daylight for new build accommodation such as this, and APSH is the measure for sunlight. It is important to note that the BRE Guidelines recommend that a kitchen should enjoy daylight levels of 2% ADF, a living room levels of 1.5%, and bedrooms 1% ADF. Where a room is designated as a living room/kitchen/dining room (LKD), the threshold of 1.5% has been used as an alternative target value as detailed in section 2.3 above.

In daylight terms, all main habitable rooms meet their target value for ADF throughout the proposed scheme. In daylight distribution terms, four out of nine rooms meet the target value of 80%. The five remaining rooms comprise of one LKD and four bedrooms; the BRE Guidelines describes bedrooms as being of "less importance" in paragraph 2.2.8 when considering daylight distribution. The remaining LKD achieves a daylight distribution result of 67% versus the target of 80% and receives 2.1% ADF, materially above the target ADF value of 1.5%. In our opinion, therefore, this room will be well daylit.

A review of similar residential schemes has also been undertaken along Kings Mews. Of note, the consented scheme at 22 King's Mews (planning ref: 2016/6816/P) also included basement bedrooms. There was no daylight & sunlight assessment uploaded alongside the drawings, however, it in our opinion the daylight distribution to rooms within 22 King's Mews facing onto internal lightwells is likely to be similar to those levels proposed here given the similar outlook and access to daylight.

In sunlight terms, all four living rooms meet their target value for annual sunlight. Three out of four of the living rooms meet the target value for winter sunlight. The one remaining room, located on the ground floor, is likely to be similarly well sunlit to other south-facing ground floor living rooms along King's Mews, such as the consented scheme at 29-30 King's Mews as it has a similar outlook and is similarly positioned.

In summary, all main habitable rooms meet their target ADF value and, in daylight distribution terms, either meet the target value or likely achieve similar results as similar rooms in other consented or constructed developments along King's Mews. In sunlight terms, all living rooms meet their target annual sunlight value and either meet their target winter sunlight or likely

achieve similar winter sunlight levels to those received by the ground floor living room next door in 29-30 King's Mews.

## 6. Conclusions

This is a report into the internal daylight and sunlight for the proposed conversion of the site at 28 King's Mews, London, into three residential units. This analysis is based upon scheme drawings by FT Architects, a photogrammetric survey of the site and surrounding context, and site photography.

The analysis has been carried out in accordance with the methodologies contained in the Building Research Establishment's Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (2011) (the "BRE Guidelines"), which is used by the local authority to determine the acceptability of a proposal in terms of its effect on neighbouring daylight and sunlight amenity.

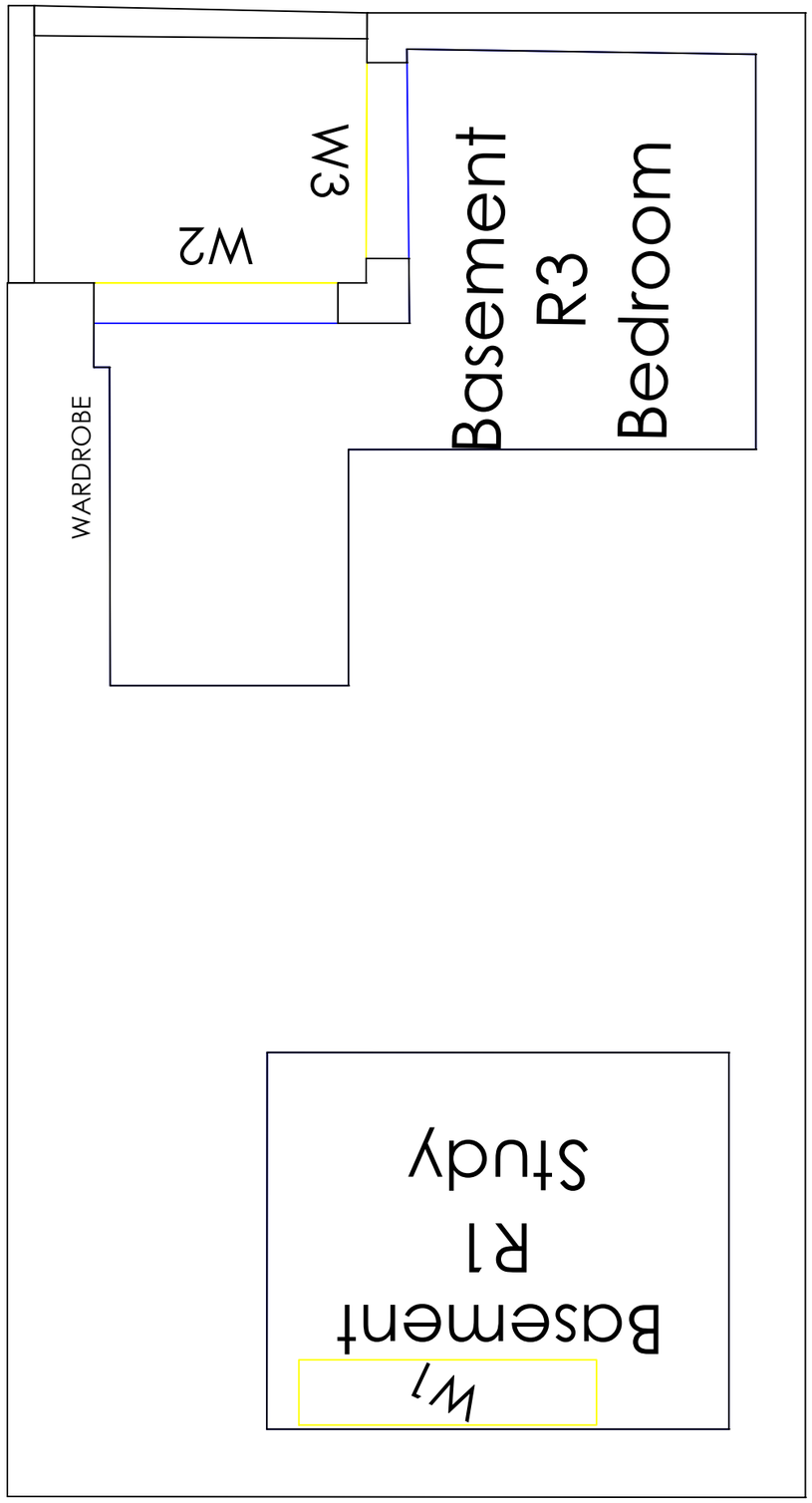
All main habitable rooms meet their target ADF value and, in daylight distribution terms, either meet the target value or likely achieve similar results as similar rooms in other consented or constructed developments along King's Mews. In sunlight terms, all living rooms meet their target annual sunlight value and either meet their target winter sunlight or likely achieve similar winter sunlight levels to those received by the ground floor living room next door in 29-30 King's Mews.

# APPENDIX 1

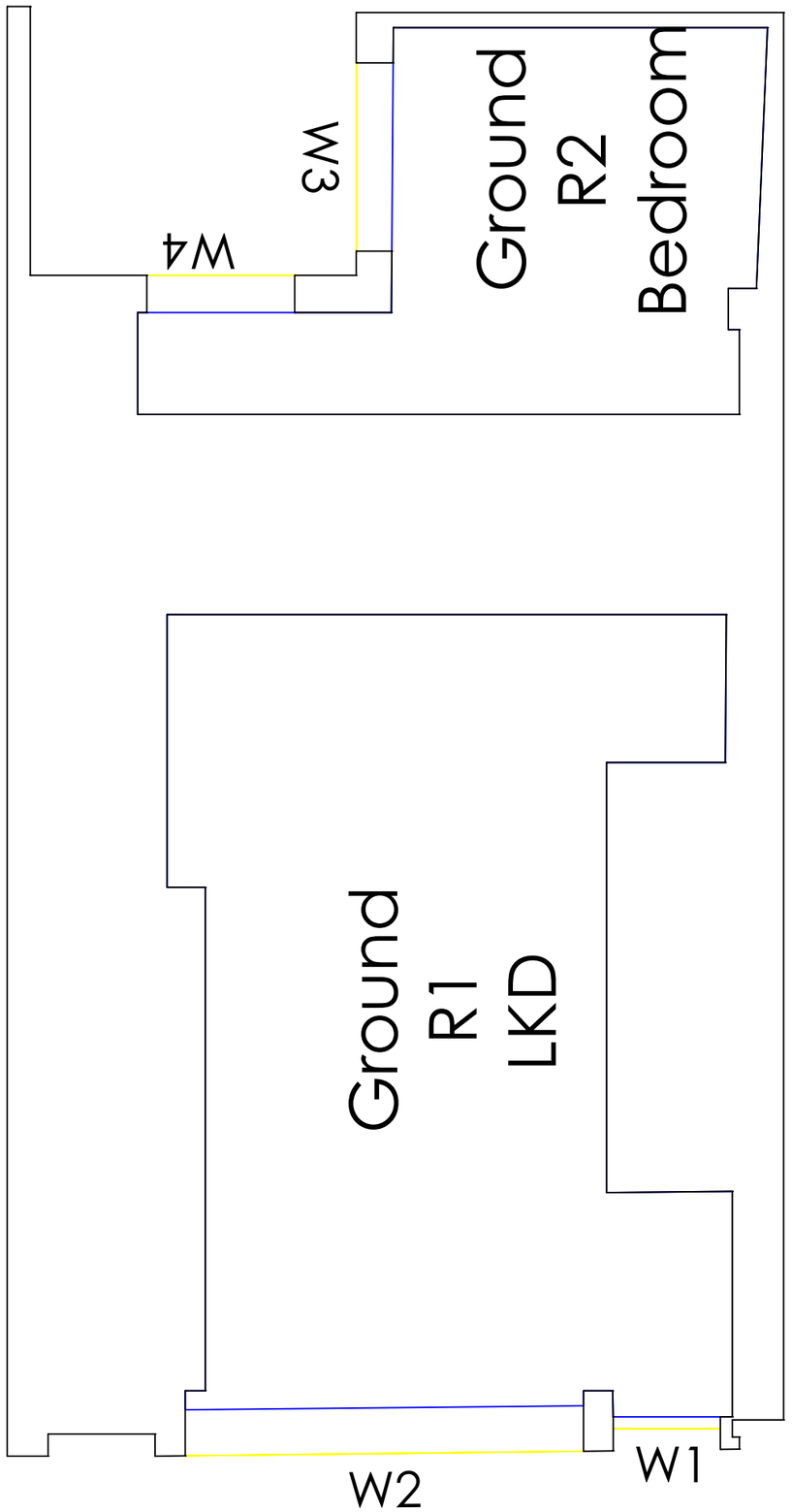
*Drawings*

waldrams
daylight & sunlight

BASEMENT FLOOR




GROUND FLOOR




waldrams

**SOURCES OF INFORMATION:**

LESLEY MACDONAGH
IR12 (RECEIVED 27.10.2020)

WALDRAMS LTD
1172-11

N

**PROJECT**
KINGS MEWS
LONDON WC1

**DRAWING**
INTERNAL LAYOUTS

| **SCALE @ A3** | **DATE** |
|---|---|
| 1:50 | 27.10.2020 |
| **MODELLED BY** | **DRAWN BY** |
| MZ | MZ |
| **PROJECT No.** | **REL No.- DWG No.** |
| 1172 | 12-01 |

# APPENDIX 2

*Internal Daylight & Sunlight Results*

waldrams
daylight & sunlight

| Floor Ref. | Room Ref. | Room Attribute | Room Use. | Window Ref. | Glass Transmittance | Maintenance Factor | Glazed Area | Clear Sky Angle Proposed | Room Surface Area | Average Surface Reflectance | Below Working Plane Factor | ADF Proposed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **Proposed** | | | | | | | |
| Basement | R1 | | Study | W1 | 0.68 | 1.00 | 1.18 | 22.64 | 59.31 | 0.69 | 1.00 | 0.6 |
| | | | | | | | | | | | | 0.6 |
| Basement | R3 | | Bedroom | W2-L | 0.68 | 1.00 | 1.55 | 12.55 | 79.80 | 0.69 | 0.15 | 0.0 |
| | | | | W2-U | 0.68 | 1.00 | 2.91 | 14.66 | 79.80 | 0.69 | 1.00 | 0.7 |
| | | | | W3-L | 0.68 | 1.00 | 1.24 | 5.96 | 79.80 | 0.69 | 0.15 | 0.0 |
| | | | | W3-U | 0.68 | 1.00 | 2.33 | 5.33 | 79.80 | 0.69 | 1.00 | 0.2 |
| | | | | | | | | | | | | 1.0 |
| Ground | R1 | | LKD | W1 | 0.68 | 1.00 | 0.33 | 31.33 | 119.59 | 0.50 | 1.00 | 0.1 |
| | | | | W2 | 0.68 | 1.00 | 4.57 | 57.92 | 119.59 | 0.50 | 1.00 | 2.0 |
| | | | | | | | | | | | | 2.1 |
| Ground | R2 | | Bedroom | W3-L | 0.68 | 1.00 | 1.22 | 12.43 | 68.06 | 0.69 | 0.15 | 0.0 |
| | | | | W3-U | 0.68 | 1.00 | 2.30 | 12.80 | 68.06 | 0.69 | 1.00 | 0.6 |
| | | | | W4 | 0.68 | 1.00 | 1.41 | 18.58 | 68.06 | 0.69 | 1.00 | 0.5 |
| | | | | | | | | | | | | 1.1 |
| First | R1 | | LKD | W1-L | 0.68 | 1.00 | 2.79 | 66.47 | 132.42 | 0.69 | 0.15 | 0.3 |
| | | | | W1-U | 0.68 | 1.00 | 6.11 | 66.21 | 132.42 | 0.69 | 1.00 | 4.0 |
| | | | | | | | | | | | | 4.2 |
| First | R2 | | Bedroom | W2-L | 0.68 | 1.00 | 1.23 | 16.23 | 58.77 | 0.69 | 0.15 | 0.1 |
| | | | | W2-U | 0.68 | 1.00 | 2.32 | 17.33 | 58.77 | 0.69 | 1.00 | 0.9 |
| | | | | | | | | | | | | 1.0 |
| Second | R1 | | LKD | W1-L | 0.68 | 1.00 | 2.96 | 61.92 | 119.60 | 0.69 | 0.15 | 0.3 |
| | | | | W1-U | 0.68 | 1.00 | 5.41 | 71.41 | 119.60 | 0.69 | 1.00 | 4.2 |
| | | | | | | | | | | | | 4.5 |
| Second | R2 | | Bedroom | W2-L | 0.68 | 1.00 | 1.23 | 22.65 | 55.43 | 0.69 | 0.15 | 0.1 |
| | | | | W2-U | 0.68 | 1.00 | 2.32 | 26.21 | 55.43 | 0.69 | 1.00 | 1.4 |
| | | | | | | | | | | | | 1.5 |
| Third | R1 | | Living Room | W1-L | 0.68 | 1.00 | 2.10 | 68.71 | 53.74 | 0.69 | 0.15 | 0.5 |
| | | | | W1-U | 0.68 | 1.00 | 3.58 | 72.58 | 53.74 | 0.69 | 1.00 | 6.3 |
| | | | | | | | | | | | | 6.8 |
| Third | R2 | | Bedroom | W2-L | 0.68 | 1.00 | 1.21 | 37.96 | 55.32 | 0.69 | 0.15 | 0.2 |
| | | | | W2-U | 0.68 | 1.00 | 1.99 | 48.51 | 55.32 | 0.69 | 1.00 | 2.3 |
| | | | | | | | | | | | | 2.4 |

| Floor Ref. | Room Ref. | Room Attribute | Room Use. | | Room Area | Lit Area Proposed |
|---|---|---|---|---|---|---|
| **Proposed** | | | | | | |
| Basement | R1 | | Study | Area m2 | 11.64 | 2.78 |
| | | | | % of room | | 24% |
| | R3 | | Bedroom | Area m2 | 15.60 | 2.37 |
| | | | | % of room | | 15% |
| Ground | R1 | | LKD | Area m2 | 26.47 | 17.72 |
| | | | | % of room | | 67% |
| | R2 | | Bedroom | Area m2 | 11.70 | 5.51 |
| | | | | % of room | | 47% |
| First | R1 | | LKD | Area m2 | 31.86 | 31.39 |
| | | | | % of room | | 99% |
| | R2 | | Bedroom | Area m2 | 11.13 | 2.82 |
| | | | | % of room | | 25% |
| Second | R1 | | LKD | Area m2 | 27.68 | 27.44 |
| | | | | % of room | | 99% |
| | R2 | | Bedroom | Area m2 | 10.05 | 4.84 |
| | | | | % of room | | 48% |
| Third | R1 | | Living Room | Area m2 | 10.06 | 9.93 |
| | | | | % of room | | 99% |
| | R2 | | Bedroom | Area m2 | 10.57 | 9.88 |
| | | | | % of room | | 93% |

| Floor Ref. | Room Ref. | Room Use. | Window Ref. | Window Orientation | Annual | Winter | Total Suns per Room Annual | Total Suns per Room Winter |
|---|---|---|---|---|---|---|---|---|
| **Proposed** | | | | | | | | |
| Basement | R1 | Study | W1 | 90° Hz | 0.00 | 0.00 | 0.00 | 0.00 |
| | R3 | Bedroom | W2 | 65°N | 0.00 | 0.00 | | |
| | | | W3 | 335°N | 0.00 | 0.00 | 0.00 | 0.00 |
| Ground | R1 | LKD | W1 | 245° | 10.00 | 1.00 | | |
| | | | W2 | 244° | 27.00 | 1.00 | 30.00 | 2.00 |
| | R2 | Bedroom | W3 | 335°N | 0.00 | 0.00 | | |
| | | | W4 | 65°N | 0.00 | 0.00 | 0.00 | 0.00 |
| First | R1 | LKD | W1 | 244° | 38.00 | 8.00 | 38.00 | 8.00 |
| | R2 | Bedroom | W2 | 335°N | 0.00 | 0.00 | 0.00 | 0.00 |
| Second | R1 | LKD | W1 | 245° | 44.00 | 10.00 | 44.00 | 10.00 |
| | R2 | Bedroom | W2 | 335°N | 0.00 | 0.00 | 0.00 | 0.00 |
| Third | R1 | Living Room | W1 | 245° | 42.00 | 7.00 | 42.00 | 7.00 |
| | R2 | Bedroom | W2 | 335°N | 0.00 | 0.00 | 0.00 | 0.00 |