Aval Group.

# Sunlight & Daylight Assessment

79 Munster Road, Teddington, TW11 9LS

Mr. Tin Aung

9th April 2021

# Project Information

| | |
|---|---|
| **Date** | 9th April 2021 |
| **Job Code** | 91271 |
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| **Report** | Sunlight & Daylight Assessment |
| **Client** | Mr. Tin Aung |
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# Revision History

| Revision | Date | Author | Reviewer | Approver | Status |
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| A | 9th April 2021 | JP | AC | AC | Draft |

## Disclaimer

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party. This report may include data obtained from trusted third-party consultants/laboratories that have been supplied to us in good faith. Whilst we do everything, we can to ensure the quality of all the data we use, we cannot be held responsible for the accuracy or integrity of third party data.

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# 1 Executive Summary

## 1.1. Overview

1.1.1. Mr. Tin Aung (hereafter referred to as the 'client') is seeking outline planning consent for construction of 2 storey side extension at 79 Munster Road, Teddington, TW11 9LS (hereafter referred to as the 'proposed development'), which is within the London Borough of Richmond upon Thames.

1.1.3. AVAL Consulting Group Limited (ACGL) was instructed by the client to produce a Sunlight and Daylight Report to accompany the outline planning application to the London Borough of Richmond upon Thames for consent to undertake the proposed development work and prepare for a full planning submission.

1.1.4. The purpose of this report is to demonstrate whether the proposed development and its neighbouring properties receive satisfactory levels of daylight and sunlight to windows, habitable rooms, and amenity space.

1.1.5. The study is based on criteria set out in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a good practice guide, 2nd Edition' by P J Littlefair 2011. The tests prescribed by the BRE Guide are approved by the Department of the Environment and provide a clear methodology for comprehensive testing.

1.1.6. Appendix 1 identifies the windows analysed in this study. Detailed assessment results containing numerical values and or graphical representation is provided in appendix.

1.1.7. The proposed development performs well against the BRE recommendations. In our opinion, as the proposed development achieves an overall high level of compliance, the minor transgressions of the BRE recommendations should not warrant refusal of the application.

# 2 Information Sources

2.1.1. The baseline conditions are based on

- View of the site in 2D & 3D form from Google earth and Google maps;
- Topographical survey maps of the location and blocks; and
- Site survey and photographs in some cases.

2.1.2. The proposed conditions are based on following drawings from Architorium Developments Limited

- 02001-210308-Site Plan
- 02001-210308-Existing Plans and Elevations
- 02001-210308-Proposed Plans and Elevations
- 02001-210319-Loft plans elevations.

# 3 Relevant policies and guidelines

## 3.1. National Legislation

3.1.1. There is no current, specific national planning policy or legislation relating to developments and their potential effects on Daylight, Sunlight and Overshadowing.

## 3.2. National Planning Policy Framework NPPF (2019)

3.2.1. The BRE numerical guidelines should be considered in the context of the National Planning Policy Framework (NPPF), which stipulates that local planning authorities should take a flexible approach to daylight and sunlight to ensure the efficient use of land. The NPPF states:

"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)."

## 3.3. National Planning Practice Guidance NPPG (2014)

3.3.1. There is no specific policy and or guidance relating to developments and their potential effects on Sunlight, Daylight and Overshadowing within the Planning Practice Guidance.

## 3.4. Regional Planning Policy

3.4.1. There is no current, specific regional planning policy or legislation relating to developments and their potential effects on Daylight, Sunlight and Overshadowing.

## 3.5. Local Planning Policy

3.5.1. We understand that the Local Authority take the conventional approach of considering daylight and sunlight amenity with reference to the various numerical tests laid down in the Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a guide to good practice, 2nd Edition' by P J Littlefair 2011.

## 3.6. Other relevant Policies, Standards and Guidance

### 3.6.1. Building Research Establishment (BRE)

3.6.1.1. Detailed guidance on Daylight, Sunlight and Overshadowing was published by the BRE in 2011. The Daylight, Sunlight and Overshadowing assessments have been undertaken in accordance with the methodologies and numerical guidelines recommended in BRE Report 209 'Site layout planning for daylight and sunlight: A guide to good practice'.

3.6.1.2. The BRE document gives guidance on-site layout to retain good daylight and sunlight in existing surrounding buildings. It enables an assessment to be made as to whether the proposals will

adversely affect the daylight and sunlight reaching existing habitable rooms and relevant external amenity spaces.

3.6.1.3. Whilst the guide is intended for use by designers, consultants and planning officers and gives numerical guidelines, the advice given is not mandatory and should not be used as an instrument of planning policy, as it states:

"...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 the Site layout design. 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" (Section 1, Paragraph 6).

3.6.1.4. When considering the BRE Guide's requirements, it is important to remember that the Guide is not a set of planning rules, and used as an aid to planning officers and designers by giving objective means of making assessments. The target values in the BRE Guide may not be obtainable in dense urban areas where the grain of development is tight, while higher values might well be desirable in suburban or rural areas where the grain is contrastingly open. This is recognised by the BRE and made clear in the BRE Guide.

3.6.1.5. The need to apply daylight and sunlight advice flexibly was reinforced in the recent National Planning Policy Framework (NPPF) draft revisions (March 2018, at para 123 [c]) and reiterated in the NPPG 'Effective Use of Land' guidance (July 2019). This is particularly relevant in London, and acknowledged in the Greater London Authority's Housing Supplementary Planning Guidance (SPG), March 2016 (para 1.3.46), which states:

"The degree of harm on adjacent properties and the daylight targets within a proposed scheme should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London."

### 3.6.2. British Standards (BS)

3.6.2.1. BS are intended to set a standard of quality for goods and services. BS documents applicable to both commercial and residential development include the following:

The British Standard 8206-2:2008 'Lighting for buildings – Part 2: Code of practice for daylighting' (British Standards Institution, 2008) (Ref. 15-11) cites BRE Guidelines as being a source of "guidance regarding the loss of light to existing buildings following construction of a proposed new development".

# 4 Assessment Methodology

## 4.1. Conditions considered for assessment.

### 4.1.1. Existing or baseline condition

The existing or baseline condition includes the current condition of the site with its neighbouring buildings (receptors) and the amount of sunlight and daylight received by them.


Fig.1: Google Satellite image showing existing site along with neighbours.

### 4.1.2. Proposed development condition

The proposed condition includes the site with 2 storey side extension along with its neighbouring buildings (receptors).

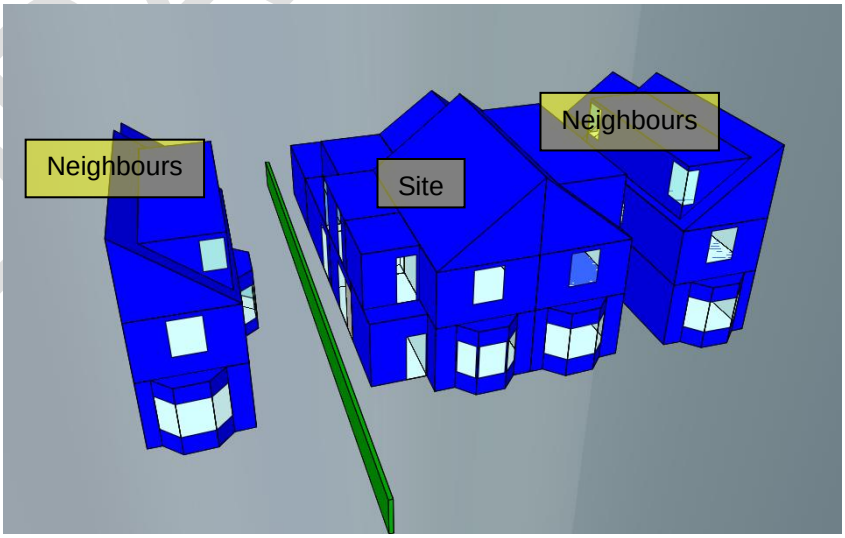



Fig.2: Computer Model showing proposed development without loft and neighbouring properties.

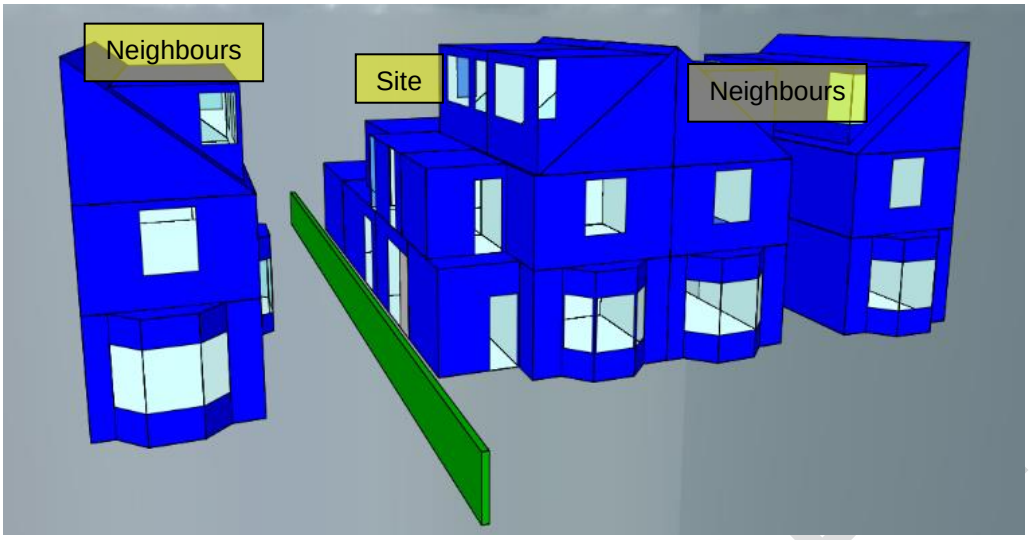



Fig.3: Computer Model showing proposed development with loft and neighbouring properties.

## 4.2. Identification of sensitive receptors

4.2.1. The buildings and open spaces surrounding the proposed development have been determined as sensitive impact receptors for assessment based on various investigations. A total of 3 properties were considered as sensitive impact receptors and are listed in the table below.

| # | Street | House # | Daylight | Sunlight | Amenity |
|---|---|---|---|---|---|
| 1 | Munster Road | 77 | ✓ | ✓ | ✓ |
| 2 | Munster Road | 81 | ✓ | ✓ | ✓ |
| 3 | Munster Road | 83 | ✓ | ✓ | ✓ |

Table.1: List of sensitive receptors (neighbouring buildings)

## 4.3. Extent of the study area

4.3.1. The BRE guidelines state at paragraph 2.2.2:

*"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops and some offices."*

4.3.2. In general, most commercial properties are not treated as having reasonable expectation of daylight or sunlight. This is because they are generally designed to rely on electric lighting to provide sufficient light by which people can work, rather than natural daylight or sunlight, and have therefore been scoped out of this assessment.

## 4.4. Study parameters

### 4.4.1. Introduction

4.4.1.1. The BRE Guide (SLPDS) describes various parameters to be assessed to measure the amount of Daylight and Sunlight availability in a building or open space. They are as follows:

| # | Study Parameter | | New Development | Existing Building | Adjoining Land | Amenity Space |
|---|---|---|---|---|---|---|
| 1. | Daylight | Vertical Sky Component | ✓ | ✓ | ✓ | × |
| 2. | | Average Daylight Factor | ✓ | × | × | × |
| 3. | | Room Depth | ✓ | × | × | × |
| 4. | | No Skyline | ✓ | ✓ | × | × |
| 5 | Sunlight | Annual Probable Sunlight Hours | ✓ | ✓ | ✓ | × |
| 6. | | Overshadowing | × | × | ✓ | ✓ |

Table.2: List of parameters to be tested.

### 4.4.2. Daylight - Vertical Sky Component (VSC)

4.4.2.1. Daylight is the light received from the sun which is diffused through the sky's clouds. Even on a cloudy day when the sun is not visible a room will continue to be lit with light from the sky. This is also known as diffuse light. Any reduction in the total amount of daylight can be calculated by finding the Vertical Sky Component.

4.4.2.2. The Vertical Sky Component (VSC) is the ratio of the direct skylight illuminance falling on a vertical face at a reference point (usually the centre of a window), to the simultaneous horizontal illuminance under an unobstructed sky.

4.4.2.3. Whilst the VSC test is a useful guide to predict the potential impact of a proposed neighbouring development; the test only measures the light falling on a single point, and therefore does not consider the size of a window or the benefit of other windows serving the same room. The test also does not consider the size of the room any window serves. Therefore, the following Daylight Distribution test is often regarded as a more relevant indication of the impact in these cases.

### 4.4.3. Daylight - Average Daylight Factor (ADF)

4.4.3.1. Average Daylight Factor (ADF) is the ratio of total daylight flux incident on the working plane to the area of the working plane expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE standard overcast sky. Thus a 1% ADF would mean that the average indoor illuminance would be one hundredth the outdoor unobstructed illuminance.

4.4.3.2. The BRE Guide states; *In assessing the loss of light to an existing building, the VSC is generally recommended as the appropriate parameter to use. This is because the VSC depends only on obstruction, and is therefore a measure of the daylit environment as a whole. The Average Daylight Factor (ADF) also depends on the room and window dimensions, the reflectances of interior surfaces and the type of glass, as well as the obstructions outside. It is an appropriate measure to use in new buildings because most of the these factors are within the developer's control. Use of the ADF for loss of light to existing building is not generally recommended.*

## 4.4.4. Daylight - Room Depth

4.4.4.1. If a daylit room is lit by windows in one wall only, the depth of the room L should not exceed the limiting value given by:

$$L/W + L/H < 2/1 - Rb$$

Where

- W is the room width
- H is the window-head height above floor level
- $R_b$ is the average reflectance of the surfaces in the rear half of the room

4.4.4.2. If L exceeds this value, the rear half of the room will tend to look gloomy and supplementary electric lighting will be required. For a typical room in a house where W=4, H=2.4 and $R_b$=0.5, the limiting depth L is just over 5m.

4.4.4.3. External obstruction do not influence this recommendation. However, there are implications for site layout because the recommendation relates to the maximum depth of a building that can be satisfactorily daylit (twice the limiting depth L, from window wall to window wall).

## 4.4.5. Daylight - Position of No Skyline

4.4.5.1. Where room layouts are known, the impact on the daylight distribution in the existing building can be found by plotting the “No Skyline” in each of the main rooms. The No Skyline divides points on the working plane which can and cannot see the sky.

4.4.5.2. If a significant area of the working plane lies beyond the no skyline (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.

4.4.5.3. The no skyline assessment is not applicable where a room derives its daylight solely from a light well or atrium. In these situations, the room relies on borrowed light instead of direct skylight.

## 4.4.6. Sunlight - Annual Probable Sunlight Hours (APSH)

4.4.6.1. Annual Probable Sunlight Hours (APSH) means the total number of hours in the year that the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question. Criterion applies to all rooms of all orientations, although if a room faces significantly north of due east or west it is unlikely to be met.

4.4.6.2. In accordance with the BRE guidelines, windows which face within 90 degrees of due south need to be checked for Annual Probable Sunlight Hours (APSH). Further, it is not necessary to assess the effect of obstructions within 90 degrees of due north of the existing windows. North facing windows and/or properties to the south of the site have therefore not been tested for APSH.

### 4.4.7. Sunlight - Overshadowing in amenity space

4.4.7.1. The availability of sunlight should be checked for all open spaces where it will be required. This would normally include

- Residential gardens, usually the main back garden of a house
- Parks and playing fields
- Children's playgrounds
- Outdoor swimming pools
- Sitting out areas such as those between non-domestic buildings and in public squares
- Focal points for views such as a group of monuments or fountains

4.4.7.2. Sunlight at an altitude of 10 degrees or less does not count because it is likely to be blocked by low level planting anyway. In working out the total area to be considered, driveways and hard standings for cars should be left out. Around, housing, front gardens which are relatively small and visible from public footpaths should be omitted; only main back garden should be analysed.

## 4.5. Significance criteria

4.5.1. If the VSC is more than 27% then enough light would still reach the window of the neighbouring building. However, if the VSC is less than 27% as well as less than 0.8 times (one fifth) its former value the occupants will notice the reduction in the amount of skylight.

4.5.2. If a predominantly daylit appearance is required, then the ADF should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. There are additional recommendation for dwellings of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms. These additional recommendations are minimum values of ADF which should be attained even if a predominantly daylit appearance is not achievable.

4.5.3. The recommendations are that applicable windows should receive a minimum of 25 percent of the total annual probable sunshine hours, to include a minimum of 5 percent of that which is available during the winter months between 21st September to the 21st March (the approximate dates of the autumn and spring equinoxes).

4.5.4. The BRE guidance suggests that at least 50 percent of any garden or open space should receive no less than 2 hours of direct sun on the spring equinox (approximately March 21st).

4.5.5. The BRE Guide Appendix I states that "the assessment of the impact will depend on a combination of factors, and there is no simple rule of thumb that can be applied."

4.5.6. Based on section 4.5.1 to 4.5.5 the numerical criteria applied in this report to classify the magnitude of the daylight, sunlight and overshadowing impacts are as follows.

| Vertical Sky Component (VSC) | | | Impact Classification |
|---|---|---|---|
| **New Building** | **Existing Building** | **Adjoining Development Land** | |
| ≥27% | ≥0.8 times former value | ≥27% | **Meets BRE** |
| ≥15% | ≥0.6 times former value | ≥15% | **Minor** |
| ≥5% | ≥0.4 times former value | ≥5% | **Moderate** |
| ≤5% | ≤0.4 times former value | ≤15% | **Major** |

Table.3: Vertical Sky Component (VSC) impact classification table

| Average Daylight Factor (ADF) | | | | | | Impact Classification |
|---|---|---|---|---|---|---|
| New Buildings | | | Existing Buildings | | | |
| **Kitchen** | **Living** | **Bedroom** | **Kitchen** | **Living** | **Bedroom** | |
| ≥2% | ≥1.5% | ≥1% | ≥0.8 times former value | | | **Meets BRE** |
| ≥1.5% | ≥1% | ≥0.7% | ≥0.6 times former value | | | **Minor** |
| ≥1% | ≥0.7% | ≥5% | ≥0.4 times former value | | | **Moderate** |
| ≤1% | ≤0.7% | ≤5% | ≤0.4 times former value | | | **Major** |

Table.4: Average Daylight Factor (ADF) impact classification table

| No Skyline | | Impact Classification |
|---|---|---|
| **New Buildings** | **Existing Buildings** | |
| No Criteria set by BRE. | ≥0.8 times former value | **Meets BRE** |
| | ≥0.6 times former value | **Minor** |
| | ≥0.4 times former value | **Moderate** |
| | ≤0.4 times former value | **Major** |

Table.5: No Skyline impact classification table

| Room Depth | Impact Classification |
|---|---|
| **Is room depth L exceeding limiting value?** | |
| Yes | **Gloomy** |
| No | **Well Lit** |

Table.6: Room Depth impact classification table

| Annual Probable Sunlight Hous (APSH) | | | | | | Impact Classification |
|---|---|---|---|---|---|---|
| New Buildings | | | Existing Buildings | | | |
| Summer | Winter | Whole Year | Summer | Winter | Whole Year | |
| ≥25% | ≥5% | ≥4% | ≥0.8 times former value | | | **Meets BRE** |
| ≥18% | ≥4% | ≥3% | ≥0.6 times former value | | | **Minor** |
| ≥13% | ≥2% | ≥2% | ≥0.4 times former value | | | **Moderate** |
| ≤13% | ≤2% | ≤2% | ≤0.4 times former value | | | **Major** |

Table.7: Annual Probable Sunlight Hours (APSH) impact classification table

| Sun on Ground (Overshadowing) | | Impact Classification |
|---|---|---|
| New Open Space | Existing Open Space | |
| ≥50% receives 2 hours of sunlight | ≥0.8 times former value | **Meets BRE** |
| ≥37% receives 2 hours of sunlight | ≥0.6 times former value | **Minor** |
| ≥25% receives 2 hours of sunlight | ≥0.4 times former value | **Moderate** |
| ≤25% receives 2 hours of sunlight | ≤0.4 times former value | **Major** |

Table.8: Sun on Ground (Overshadowing) impact classification table

4.5.6. The impact assessment was undertaken using detailed computer modelling and simulation.

# 5 Assessment Results – Proposed development without loft

A drawing representing the windows analysed in this study along with their position and reference number is presented in Figure.4 in Appendix 1.

## 5.1. Vertical Sky Component (VSC)

5.1.2. The test shows that out of 9 tested windows as shown in Table.9 in Appendix 2

5.1.2.1. 8 (89%) windows meet the BRE requirement of ≥27% VSC value and therefore is considered that proposed development should allow enough or reasonable amount of skylight to reach the window.

5.1.2.2. 1 (11%) window meet the BRE requirement of ≥15% VSC value and therefore is considered that proposed development may have minor impact on the amount of skylight reaching the window. However, the room would have fairly good amount of sky view and receive ample of skylight from the 100% window in the northeast wall of the family room.

## 5.2. Average Daylight Factor (ADF)

5.2.2. The test shows that out of 7 tested rooms as in Figure.7 & 8 showing ADF contour of each room in Appendix 3.

5.2.2.1. 6 (86%) rooms meet their corresponding ADF guideline value suggested in BRE Guide and therefore is considered that proposed development should allow enough or reasonable amount of daylight distribution inside these rooms.

5.2.2.2. 1 (14%) room would receive daylight of ≥60% ADF value and therefore is considered that proposed development may have minor impact on the amount of daylight distribution inside these rooms. However, the room would receive good amount of daylight from the 100% window in the northeast wall of the family room.

## 5.3. No Skyline Contour

5.3.2. The BRE guide does not state a fixed numerical criterion for the No Skyline test when applied to new dwellings. However, for completeness, we have illustrated the No Skyline contours in Appendix 4.

5.3.3. The test shows that out of 7 tested rooms as in Figure.10 & 11 showing No Skyline contour of each room in Appendix 4

5.3.3.1. All 7 (100%) rooms have only ≤5% of the room wherein the Skyline is not visible and therefore is considered that proposed development should allow enough amount of daylight distribution inside these rooms.

## 5.4. Room Depth

5.4.2. Although the external obstruction does not influence this parameter, for completeness, we have conducted the test.

5.4.3. The test shows that out of 7 tested rooms as shown in Table.9 in Appendix 2

All 7 (100%) rooms have depth lesser than the limiting value and therefore is considered that proposed development should allow enough amount of daylight distribution inside these rooms.

## 5.5. Annual Probable Sunlight Hours (APSH)

5.5.2. The test shows that out of 9 tested windows as shown in Table.9 in Appendix 2

5.5.2.1. 8 (89%) windows meet the BRE requirement of ≥25% APSH value in Summertime between 21st March to 21st September and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

5.5.2.2. 1 (11%) window would receive sunlight ≥13% APSH value in Summertime between 21st March to 21st September and therefore is considered that proposed development may have moderate impact on the amount of skylight reaching the window.

5.5.2.3. All 9 (100%) windows meet the BRE requirement of ≥5% APSH value in Wintertime between 21st September to 21st March and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

5.5.2.4. All 9 (100%) windows meet the BRE requirement of ≥4% APSH value in whole year between 1st January to 1st December and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

## 5.6. Overshadowing

5.6.2. The test shows that out of 1 tested amenity space

5.6.2.1. 1 (100%) of amenity spaces meet BRE requirement of receiving sunlight in ≥50% of their space and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the amenity space.

# 6 Assessment Results – Proposed development with loft

A drawing representing the windows analysed in this study along with their position and reference number is presented in Figure.5 in Appendix 1.

## 6.1. Vertical Sky Component (VSC)

6.1.1. The test shows that out of 14 tested windows as shown in Table.10 in Appendix 2

6.1.1.1. 13 (93%) windows meet the BRE requirement of ≥27% VSC value and therefore is considered that proposed development should allow enough or reasonable amount of skylight to reach the window.

6.1.1.2. 1 (7%) window meet the BRE requirement of ≥15% VSC value and therefore is considered that proposed development may have minor impact on the amount of skylight reaching the window. However, the room would have fairly good amount of sky view and receive ample of skylight from the 100% window in the northeast wall of the family room.

## 6.2. Average Daylight Factor (ADF)

6.2.2. The test shows that out of 9 tested rooms as in Figure.7, 8 & 9 showing ADF contour of each room in Appendix 3.

6.2.2.1. 8 (89%) rooms meet their corresponding ADF guideline value suggested in BRE Guide and therefore is considered that proposed development should allow enough or reasonable amount of daylight distribution inside these rooms.

6.2.2.2. 1 (11%) room would receive daylight of ≥60% ADF value and therefore is considered that proposed development may have minor impact on the amount of daylight distribution inside these rooms. However, the room would receive good amount of daylight from the 100% window in the northeast wall of the family room.

## 6.3. No Skyline Contour

6.3.2. The BRE guide does not state a fixed numerical criterion for the No Skyline test when applied to new dwellings. However, for completeness, we have illustrated the No Skyline contours in Appendix 4.

6.3.3. The test shows that out of 9 tested rooms as in Figure.10, 11 & 12 showing No Skyline contour of each room in Appendix 4

6.3.3.1. All 9 (100%) rooms have only ≤5% of the room wherein the Skyline is not visible and therefore is considered that proposed development should allow enough amount of daylight distribution inside these rooms.

## 6.4. Room Depth

6.4.2. Although the external obstruction does not influence this parameter, for completeness, we have conducted the test.

6.4.3. The test shows that out of 9 tested rooms as shown in Table.10 in Appendix 2

All 9 (100%) rooms have depth lesser than the limiting value and therefore is considered that proposed development should allow enough amount of daylight distribution inside these rooms.

## 6.5. Annual Probable Sunlight Hours (APSH)

6.5.2. The test shows that out of 14 tested windows as shown in Table.10 in Appendix 2

6.5.2.1. 13 (93%) windows meet the BRE requirement of ≥25% APSH value in Summertime between 21st March to 21st September and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

6.5.2.2. 1 (7%) window would receive sunlight ≥13% APSH value in Summertime between 21st March to 21st September and therefore is considered that proposed development may have moderate impact on the amount of skylight reaching the window.

6.5.2.3. All 14 (100%) windows meet the BRE requirement of ≥5% APSH value in Wintertime between 21st September to 21st March and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

6.5.2.4. All 14 (100%) windows meet the BRE requirement of ≥4% APSH value in whole year between 1st January to 1st December and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

## 6.6. Overshadowing

6.6.2. The test shows that out of 1 tested amenity space

6.6.2.1. 1 (100%) of amenity spaces meet BRE requirement of receiving sunlight in ≥50% of their space and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the amenity space.

# 7 Assessment Results – Neighbouring buildings without loft

A drawing representing the windows analysed in this study along with their position and reference number is presented in Figure.6 in Appendix 1.

## 7.1. Vertical Sky Component (VSC)

7.1.1. The test shows that out of 7 tested windows as shown in Table.11 in Appendix 2

7.1.1.1. All 7 (100%) windows meet the BRE requirement of ≥27% and or ≥0.8 times of its former VSC value and therefore is considered that proposed development should allow enough or reasonable amount of skylight to reach the window.

## 7.2. Annual Probable Sunlight Hours (APSH)

7.2.2. The test shows that out of 7 tested windows as shown in Table.11 in Appendix 2

7.2.2.1. All 7 (100%) windows meet the BRE requirement of ≥0.8 times of its former APSH value in Summertime between 21st March to 21st September and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

7.2.2.2. All 7 (100%) windows meet the BRE requirement of ≥5% APSH value in Wintertime between 21st September to 21st March and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

7.2.2.3. All 7 (100%) windows meet the BRE requirement of ≥4% APSH value in whole year between 1st January to 1st December and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

## 7.3. Overshadowing

7.3.2. The test shows that out of 2 tested amenity spaces

7.3.2.1. All 2 (100%) of amenity spaces meet BRE requirement of receiving sunlight in ≥50% of their space and or ≥0.8 times space from its former space value and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the amenity space.

# 8 Assessment Results – Neighbouring buildings with loft

A drawing representing the windows analysed in this study along with their position and reference number is presented in Figure.6 in Appendix 1.

## 8.1. Vertical Sky Component (VSC)

8.1.1. The test shows that out of 7 tested windows as shown in Table.12 in Appendix 2

8.1.1.1. All 7 (100%) windows meet the BRE requirement of ≥27% and or ≥0.8 times of its former VSC value and therefore is considered that proposed development should allow enough or reasonable amount of skylight to reach the window.

## 8.2. Annual Probable Sunlight Hours (APSH)

8.2.2. The test shows that out of 7 tested windows as shown in Table.12 in Appendix 2

8.2.2.1. All 7 (100%) windows meet the BRE requirement of ≥0.8 times of its former APSH value in Summertime between 21st March to 21st September and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

8.2.2.2. All 7 (100%) windows meet the BRE requirement of ≥5% APSH value in Wintertime between 21st September to 21st March and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

8.2.2.3. All 7 (100%) windows meet the BRE requirement of ≥4% APSH value in whole year between 1st January to 1st December and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the window.

## 8.3. Overshadowing

8.3.2. The test shows that out of 2 tested amenity spaces

8.3.2.1. All 2 (100%) of amenity spaces meet BRE requirement of receiving sunlight in ≥50% of their space and or ≥0.8 times space from its former space value and therefore is considered that proposed development should allow enough or reasonable amount of sunlight to reach the amenity space.

# 9 Conclusion

## 9.1. Proposed development without loft

9.1.1. This report provides an outline assessment for the daylight and sunlight analysis that should be carried out as part of the detailed planning submission.

9.1.2. In our opinion, the proposed development, achieves an overall high level of compliance with the BRE requirements. Therefore, it should not warrant for refusal of the application.

9.1.3. Therefore, it can be considered that the development will not conflict with any national, regional, or local planning policy in relation to loss of daylight and sunlight because of the proposed development.

## 9.2. Proposed development with loft

9.2.1. This report provides an outline assessment for the daylight and sunlight analysis that should be carried out as part of the detailed planning submission.

9.2.2. In our opinion, the proposed development, achieves an overall high level of compliance with the BRE requirements. Therefore, it should not warrant for refusal of the application.

9.2.3. Therefore, it can be considered that the development will not conflict with any national, regional, or local planning policy in relation to loss of daylight and sunlight because of the proposed development.

## 9.3. Neighbouring buildings without loft

9.3.1. This report provides an outline assessment for the daylight and sunlight analysis that should be carried out as part of the detailed planning submission.

9.3.2. In our opinion, the proposed development, achieves an overall high level of compliance with the BRE requirements. Therefore, it should not warrant for refusal of the application.

9.3.3. Therefore, it can be considered that the development will not conflict with any national, regional, or local planning policy in relation to loss of daylight and sunlight because of the proposed development.

## 9.4. Neighbouring buildings with loft

9.4.1. This report provides an outline assessment for the daylight and sunlight analysis that should be carried out as part of the detailed planning submission.

9.4.2. In our opinion, the proposed development, achieves an overall high level of compliance with the BRE requirements. Therefore, it should not warrant for refusal of the application.

9.4.3. Therefore, it can be considered that the development will not conflict with any national, regional, or local planning policy in relation to loss of daylight and sunlight because of the proposed development.

# 10 Clarifications

## 10.1. General

10.1.1. The report provided is solely for the use of the client and no liability to anyone else is accepted.

10.1.2. The study is limited to assessing daylight, sunlight of the proposed development as set out in section 2.1, 3.1 and 3.3 of the BRE Guide.

10.1.3. The study has been undertaken following access to the proposed development site. We have not had access to neighbouring properties. The study is based on the information listed in section 2 of this report.

10.1.4. Where plans or access were not available, the internal layouts have been based on assumptions (where possible from external observation). Where the layouts have been estimated, this has no bearing on the sunlight analysis or the assessment of the vertical sky component daylight test, both of which are considered at the centre of the window.

10.1.5. This study does not calculate the effects of trees and hedges on daylight, sunlight and overshadowing to gardens. The BRE guide states that trees should sometimes be taken into account, e.g. where there is concern that future occupants of the dwelling may want the trees to be cutdown if they block too much skylight or sunlight. We are not aware of any such circumstances, in this instance.

10.1.6. We have undertaken the survey following the guidelines of the RICS publication “Surveying Safely”. Where limited access is available, assumptions will have been made.

10.1.7. This report is based upon and subject to the scope of work set out in AVAL Consulting Group’s quotation and standard terms and conditions.

# Appendices

## Appendix 1: Window reference numbers

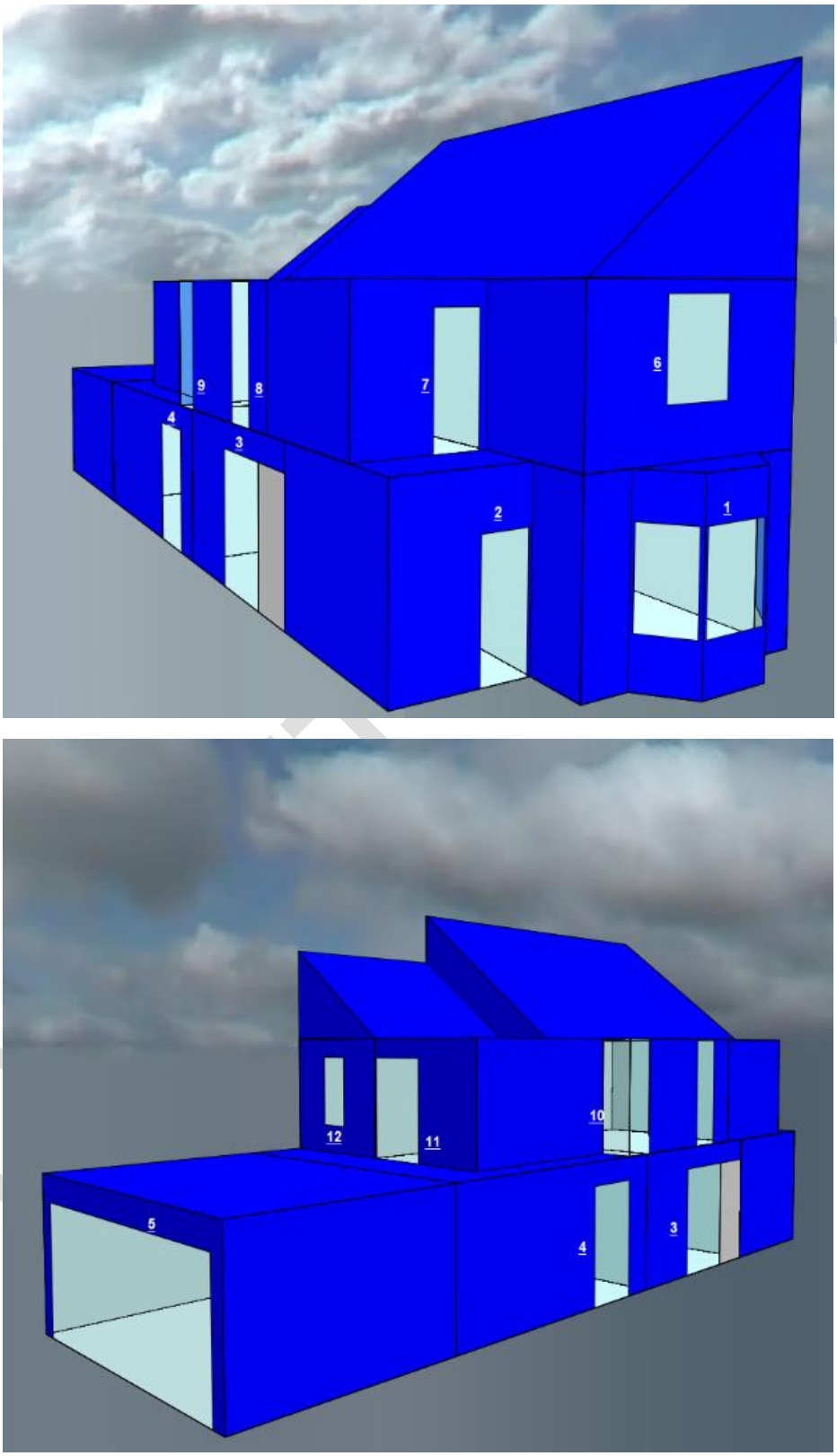



Fig.4: Windows and its numbers within proposed development without loft

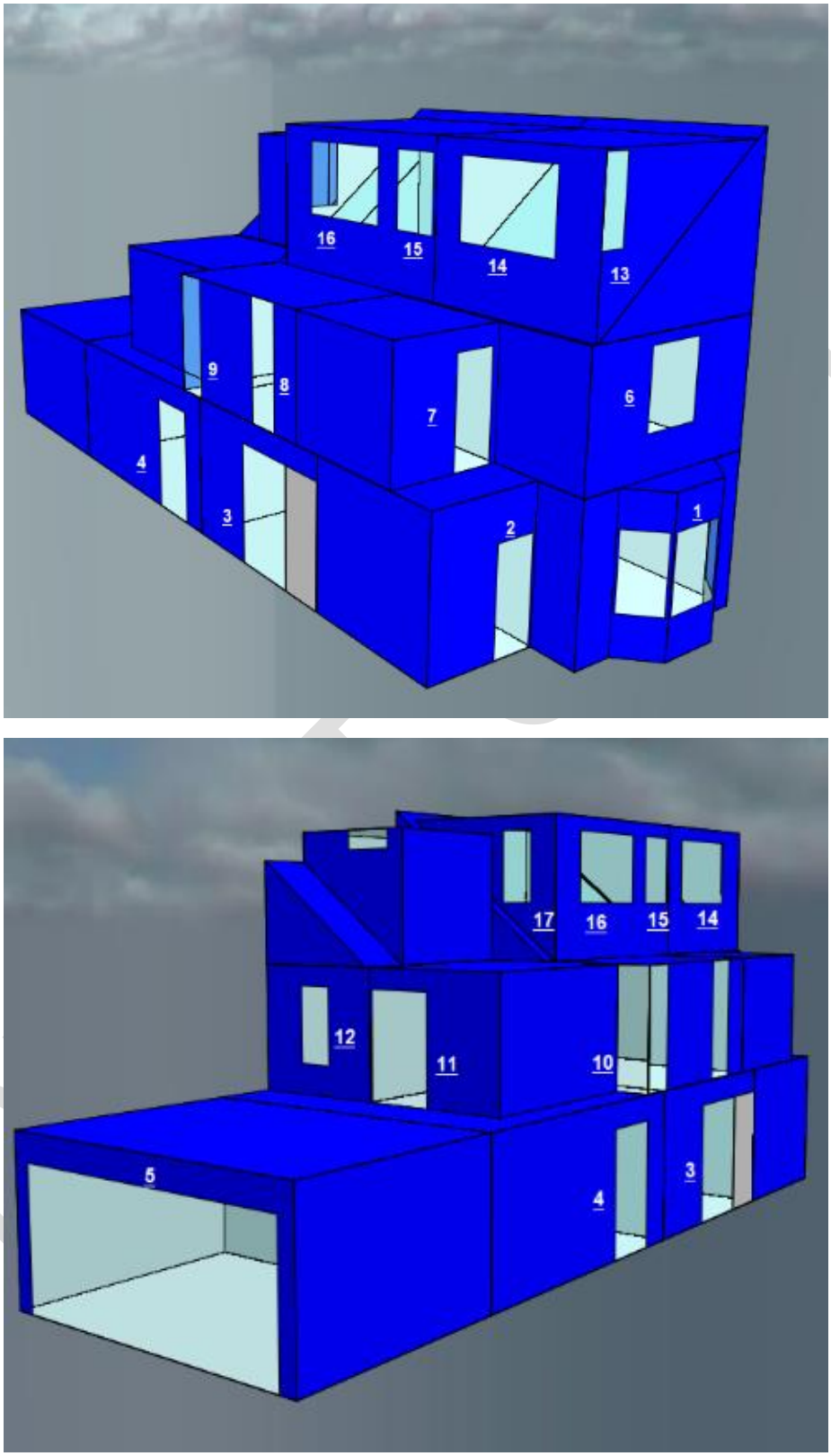
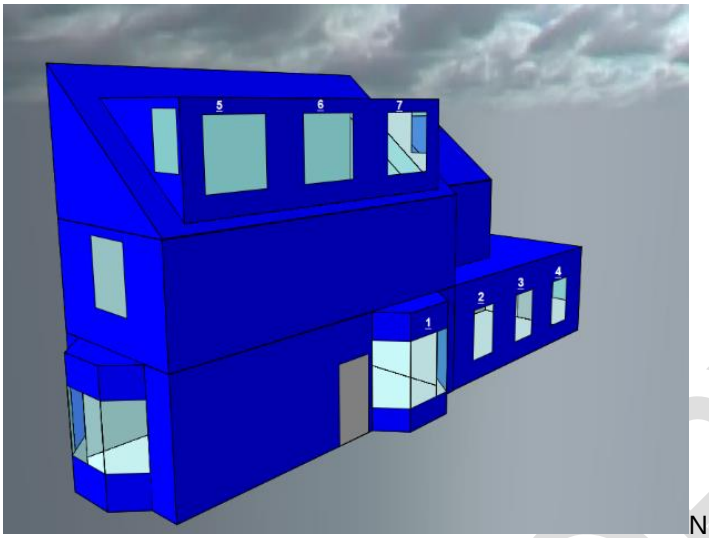
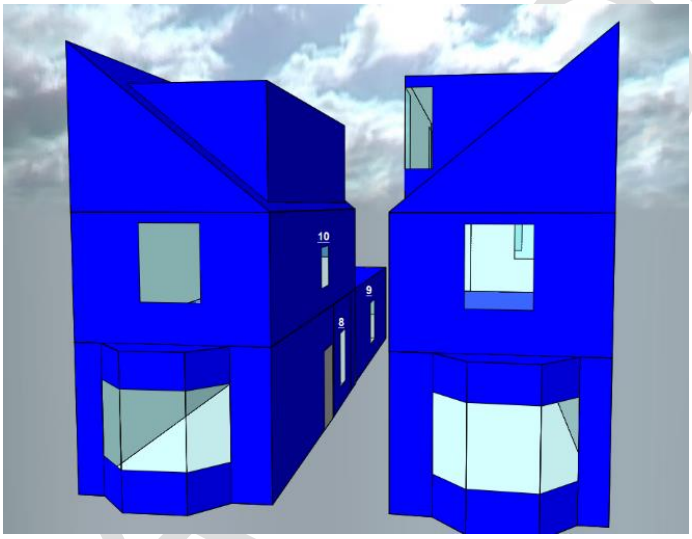



Fig.5: Windows and its numbers within proposed development with loft




No.77




No.81


No.83

Fig.6: Windows and its numbers in surrounding neighbouring properties

## Appendix 2: Detailed numerical test results

| | | | | VSC in % | | | Room Depth | | APSH Summer in % | | | APSH Winter in % | | | APSH Whole Year in % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Floor | Room | Window Reference | Window Direction | Target | Proposed | Opinion | Depth L < Limiting Value | Opinion | Target | Proposed | Opinion | Target | Proposed | Opinion | Target | Proposed | Opinion |
| G | Lounge | 1 | SE | ≥27 | 36.38 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| G | Study | 2 | SE | ≥27 | 28.35 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| G | Kitchen | 4 | SW | ≥27 | 19.69 | Minor impact | Yes | Well Lit | ≥25 | ≥15 | Moderate impact | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| G | Family | 5 | NW | ≥27 | 39.22 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 1 | Bedroom 5 | 6 | SE | ≥27 | 39.42 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 1 | Bedroom 3 | 8 | SW | ≥27 | 24.91 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 1 | | 9 | SW | | | | | | | | | | | | | | |
| 1 | | 10 | NW | | | | | | | | | | | | | | |
| 1 | Bedroom 4 | 11 | NW | ≥27 | 39.2 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |

Table.9: Detailed numerical test results within proposed development without loft

| | | | | VSC in % | | | Room Depth | | APSH Summer in % | | | APSH Winter in % | | | APSH Whole Year in % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Floor | Room | Window Reference | Window Direction | Target | Proposed | Opinion | Depth L < Limiting Value | Opinion | Target | Proposed | Opinion | Target | Proposed | Opinion | Target | Proposed | Opinion |
| G | Lounge | 1 | SE | ≥27 | 36.38 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| G | Study | 2 | SE | ≥27 | 28.35 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| G | Kitchen | 4 | SW | ≥27 | 19.69 | Minor impact | Yes | Well Lit | ≥25 | ≥15 | Moderate impact | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| G | Family | 5 | NW | ≥27 | 39.22 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 1 | Bedroom 5 | 6 | SE | ≥27 | 39.42 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 1 | Bedroom 3 | 8 | SW | ≥27 | 24.91 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 1 | | 9 | SW | | | | | | | | | | | | | | |
| 1 | | 10 | NW | | | | | | | | | | | | | | |
| 1 | Bedroom 4 | 11 | NW | ≥27 | 39.2 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 2 | Bedroom 1 | 13 | SE | ≥27 | 38.89 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 2 | | 14 | SW | | | | | | | | | | | | | | |
| 2 | Bedroom 2 | 15 | SW | ≥27 | 34.89 | Meets BRE | Yes | Well Lit | ≥25 | ≥25 | Meets BRE | ≥5 | ≥5 | Meets BRE | ≥4 | ≥4 | Meets BRE |
| 2 | | 16 | SW | | | | | | | | | | | | | | |
| 2 | | 17 | NW | | | | | | | | | | | | | | |

Table.10: Detailed numerical test results within proposed development with loft

| | | | | VSC in % | | | | | APSH Summer in % | | | | | APSH Winter in % | | | | | APSH Whole Year in % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| House | Floor | Window Reference | Window Direction | Target | Before | After | Loss Ratio | Opinion | Target | Before | After | Loss Ratio | Opinion | Target | Before | After | Loss Ratio | Opinion | Target | Before | After | Loss Ratio | Opinion |
| 77 | G | 1 | NE | ≥27 | 24.93 | 20.76 | 0.83 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | G | 2 | NE | ≥27 | 25.71 | 22.4 | 0.87 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | G | 3 | NE | ≥27 | 25.71 | 25.21 | 0.98 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | G | 4 | NE | ≥27 | 26.29 | 26.1 | 0.99 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | 1 | 5 | NE | ≥27 | 37.73 | 37.7 | 1 | Meets BRE | ≥25 | ≥25 | ≥25 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | 1 | 6 | NE | ≥27 | 37.39 | 37.3 | 1 | Meets BRE | ≥25 | ≥25 | ≥25 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | 1 | 7 | NE | ≥27 | 37.32 | 37.2 | 1 | Meets BRE | ≥25 | ≥25 | ≥25 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |

Table.11: Detailed numerical test results for neighbouring house #77, without loft

| | | | | VSC in % | | | | | APSH Summer in % | | | | | APSH Winter in % | | | | | APSH Whole Year in % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| House | Floor | Window Reference | Window Direction | Target | Before | After | Loss Ratio | Opinion | Target | Before | After | Loss Ratio | Opinion | Target | Before | After | Loss Ratio | Opinion | Target | Before | After | Loss Ratio | Opinion |
| 77 | G | 1 | NE | ≥27 | 24.6 | 19.8 | 0.8 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | G | 2 | NE | ≥27 | 25.71 | 20.55 | 0.8 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | G | 3 | NE | ≥27 | 25.71 | 23.89 | 0.93 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | G | 4 | NE | ≥27 | 26.29 | 26.1 | 0.99 | Meets BRE | ≥25 | ≥10 | ≥10 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | 1 | 5 | NE | ≥27 | 37.73 | 36.3 | 0.96 | Meets BRE | ≥25 | ≥25 | ≥25 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | 1 | 6 | NE | ≥27 | 37.39 | 35.87 | 0.96 | Meets BRE | ≥25 | ≥25 | ≥25 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |
| | 1 | 7 | NE | ≥27 | 37.32 | 35.84 | 0.96 | Meets BRE | ≥25 | ≥25 | ≥25 | 1 | Meets BRE | ≥5 | ≥5 | ≥5 | 1 | Meets BRE | ≥4 | ≥4 | ≥4 | 1 | Meets BRE |

Table.12: Detailed numerical test results for neighbouring house #77, with loft

| | | | | VSC in % | | APSH Summer in % | | APSH Winter in % | | APSH Whole Year in % | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| House | Floor | Window Reference | Window Direction | Target | Value | Target | Value | Target | Value | Target | Before |
| 81 | G | 8 | NE | ≥27 | 5.68 | ≥25 | ≥6 | ≥5 | ≥5 | ≥4 | ≥4 |
| | G | 9 | NE | ≥27 | 15.3 | ≥25 | ≥6 | ≥5 | ≥5 | ≥4 | ≥4 |
| | 1 | 10 | NE | ≥27 | 10.59 | ≥25 | ≥8 | ≥5 | ≥5 | ≥4 | ≥4 |
| 83 | G | 11 | SW | ≥27 | 6.56 | ≥25 | ≥7 | ≥5 | ≥5 | ≥4 | ≥4 |
| | G | 12 | SW | ≥27 | 15.22 | ≥25 | ≥7 | ≥5 | ≥5 | ≥4 | ≥4 |
| | 1 | 13 | SW | ≥27 | 10.19 | ≥25 | ≥10 | ≥5 | ≥5 | ≥4 | ≥4 |
| | 2 | 14 | SW | ≥27 | 33.76 | ≥25 | ≥25 | ≥5 | ≥5 | ≥4 | ≥4 |
| | 2 | 15 | SW | ≥27 | 33.12 | ≥25 | ≥25 | ≥5 | ≥5 | ≥4 | ≥4 |

Table.13: Detailed numerical test results for house # 81 & 83

## Appendix 3: Average Daylight Factor (ADF) contour diagram for proposed development

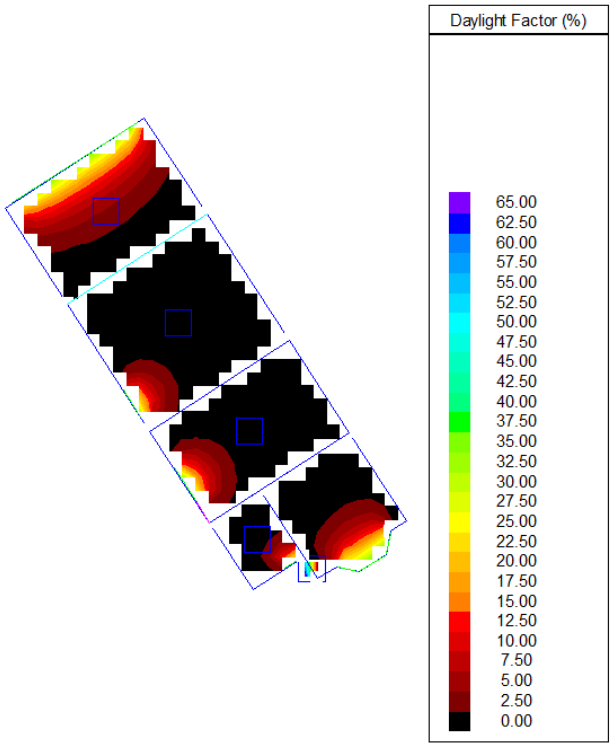



Fig.7: ADF Contour diagram within proposed development – Ground Floor

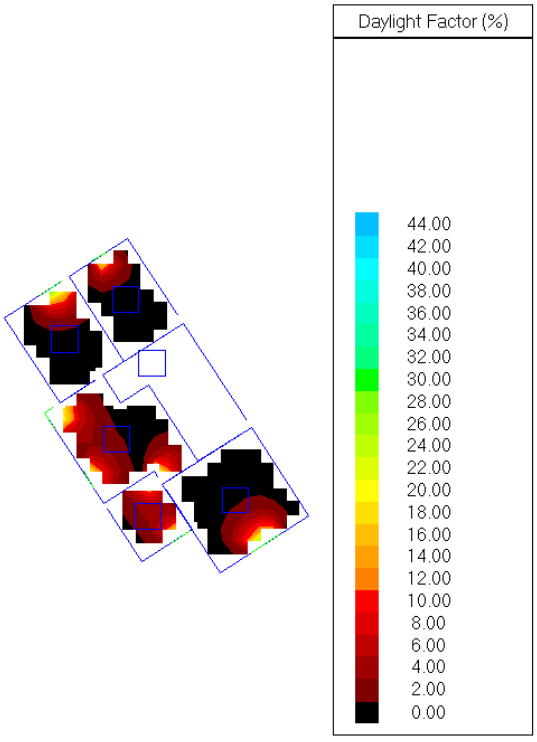



Fig.8: ADF Contour diagram within proposed development – First Floor

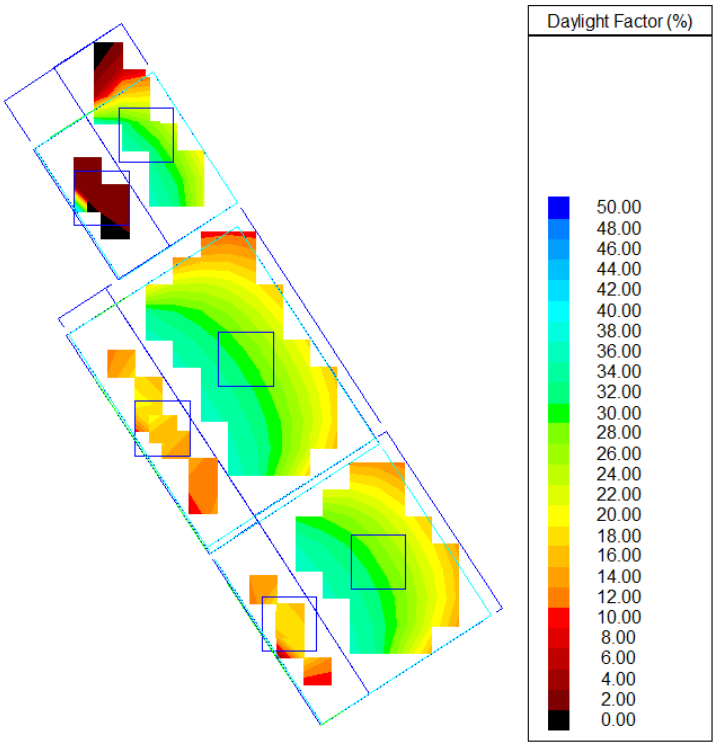



Fig.9: ADF Contour diagram within proposed development – Loft Floor

## Appendix 4: No Skyline contour diagram for proposed development

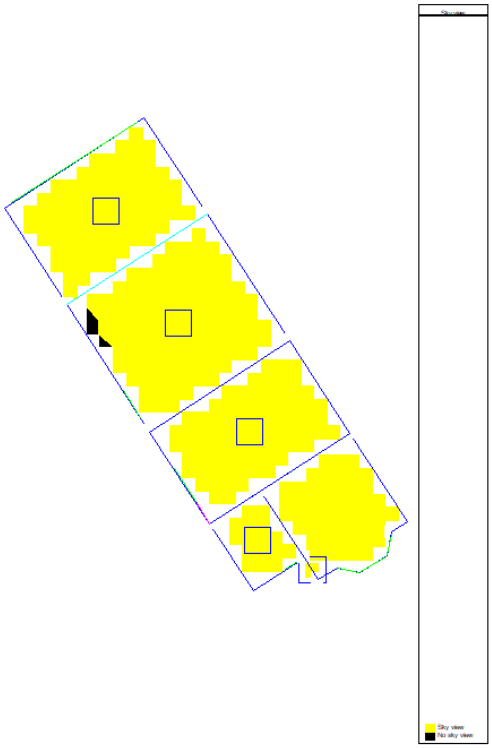


Fig.10: No Skyline Contour diagram within proposed development – Ground Floor

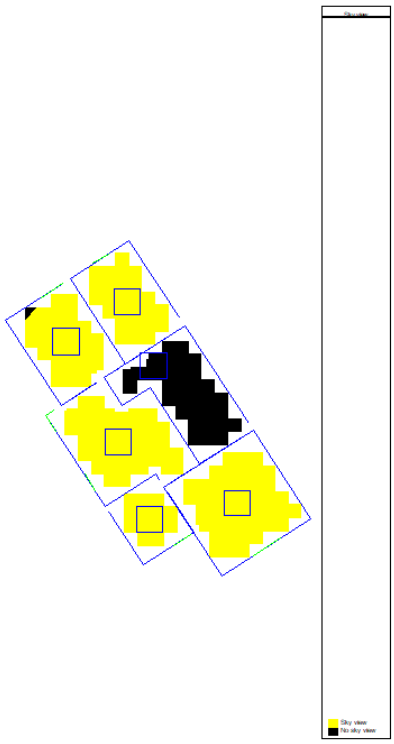


Fig.11: No Skyline Contour diagram within proposed development – First Floor


Fig.12: No Skyline Contour diagram within proposed development – Loft Floor