

Aval Consulting Group.



# Sunlight & Daylight Assessment

12 Russell Road, Kidderminster DY10 3HT

Mr. Damon Dawson

27<sup>th</sup> March 2024

## Project Information

<b>Title</b>	Lighting Impact Assessment
<b>Job Code</b>	93198
<b>Sector</b>	Environmental
<b>Report</b>	Sunlight & Daylight
<b>Client</b>	Mr. Damon Dawson
<b>Revision</b>	A
<b>Status</b>	Final
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## Revision History

Revision	Date	Author	Reviewer	Approver	Reason	Status
A	27 <sup>th</sup> Mar 2024	JP	AC	AC	Initial report	Final

### 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. Mr. Damon Dawson (hereafter referred to as the 'client') is seeking planning consent for the rear extension to the existing dwelling at 12 Russell Road, Kidderminster DY10 3HT (hereafter referred to as the 'proposed development'), which is within the Worcestershire County Council and Wyre Forest District Council.
- 1.2. AVAL Consulting Group Limited (ACGL) was instructed by the client to produce a Sunlight and Daylight Assessment Report to accompany the planning application to the Worcestershire County Council and Wyre Forest District Council for consent to undertake the proposed development work.
- 1.3. 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.
- 1.4. The study is based on criteria set out in the Building Research Establishment (BRE) guide BR-209-2022 Site Layout Planning for Daylight and Sunlight: a good practice guide, 3<sup>rd</sup> Edition 2022. The tests prescribed by the BRE Guide are approved by the Department of the Environment and provide a clear methodology for comprehensive testing.
- 1.5. Compliance with the BRE Guide is not a planning criterion and the introduction to the Guide is careful to make this point. There are therefore no minimum mandatory requirements for Sunlight & Daylight in Building Regulations for England & Wales, but the guidance set out in BRE Guide is widely accepted as the approved methodology when calculating Sunlight & Daylight availability.
- 1.6. Appendix 1 identifies the windows analysed in this study. Detailed assessment results containing numerical values and or graphical representation are provided in the appendices.
- 1.7. The proposed development meets the BRE recommendations. In our opinion, as the proposed development in overall complies with the BRE requirements it should therefore not warrant for refusal of the application.

## 2. Information Sources

### 2.1. The existing conditions of the site are based on.

- View of the site in 2D & 3D form from Google maps and Google earth respectively.
- 4414-01.dwg
- Site survey and photographs in some cases.

### 2.2. The existing conditions of the neighbouring properties are based on.

- View of the site in 2D & 3D form from Google maps and Google earth respectively.
- 4414-01.dwg
- Site survey and photographs in some cases.

### 2.3. The proposed conditions of the site are based on.

- 4414-03B.dwg
- 4414-04C.dwg
- 4414-04D.dwg

### 3. Project Details

#### 3.1. Proposed Development

Construction of rear extension to the existing dwelling at 12 Russell Road, Kidderminster DY10 3HT with back garden and amenity space.

#### 3.2. Site Surroundings

The site currently is brownfield consists of a 2-storey residential building unit. The site is surrounded by residential buildings on all side of the site boundary.

#### 3.3. Existing site condition

The existing condition includes the current condition of the site with its neighbouring properties and the amount of sunlight and daylight received by them.



Fig.1: Satellite image showing existing site along with its neighbouring properties (Source: Google).



### 3.4. Proposed site condition

The proposed condition includes the site with the proposed development along with its neighbouring properties.

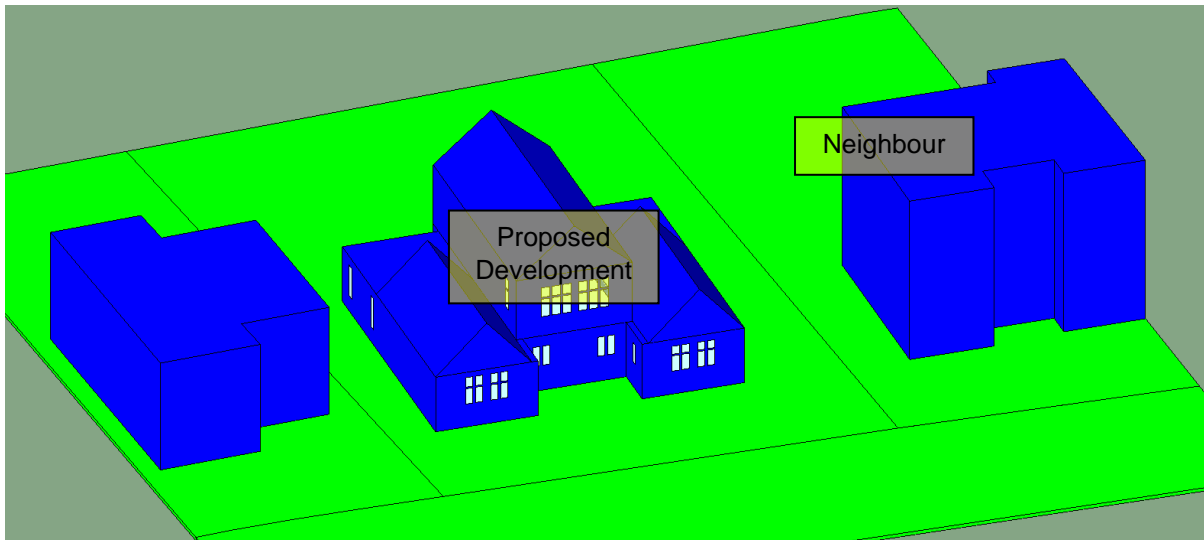


Fig.2: Computer Model showing the proposed development along with its neighbouring properties.

### 3.5. Planning comments

3.5.1. ACGL is not aware of any such planning comments.

### 3.6. Objections

3.6.1. ACGL is not aware of any such objections.

## 4. Assessment scope

### 4.1. Inclusions

- 4.1.1. 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.
- 4.1.2. The sensitive receptors may include domestic and non-domestic buildings where daylight is required.
- The domestic building includes living rooms, kitchens, and bedrooms as sensitive receptors.
  - The 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.
- 4.1.3. To assess the existing baseline conditions of the site.
- 4.1.4. To model the proposed development design scheme in computer software and demonstrate the magnitude of effects through simulations.
- 4.1.5. To propose mitigation measures to reduce the effects observed in the simulation.

### 4.2. Exclusions

- 4.2.1. In general, most commercial properties are not treated as having a 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.
- 4.2.2. The impact on windows to bathrooms, toilets, storerooms, circulation areas, and garages need is excluded from this assessment.
- 4.2.3. This study does not calculate the effects of trees and hedges on daylight, sunlight, and the overshadowing of 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 cut down if they block too much skylight or sunlight. We are not aware of any such circumstances, in this instance.

## 5. Relevant policies and guidelines

### 5.1. National Legislation

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

### 5.2. National Planning Policy Framework NPPF (September 2023)

- 5.2.1. The Building Research Establishment (BRE) guide BR-209-2022 Site Layout Planning for Daylight and Sunlight: a good practice guide, 3rd Edition 2022 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:

125. “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).”

### 5.3. National Planning Practice Guidance NPPG (2019)

- 5.3.1. 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.

### 5.4. Regional Planning Policy

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

### 5.5. Local Planning Policy

- 5.5.1. 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 BR-209-2022 Site Layout Planning for Daylight and Sunlight: a good practice guide, 3rd Edition 2022.

## 5.6. Other relevant Policies, Standards and Guidance

### 5.6.1. Building Research Establishment (BRE) BR-209-2022

5.6.1.1. Detailed guidance on Daylight, Sunlight, and Overshadowing was published by the BRE in 2022. 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'.

5.6.1.2. 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.

5.6.1.3. 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).

5.6.1.4. 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.

5.6.1.5. 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.”

### 5.6.2. Other standards

5.6.2.1. The British Standard publication BS EN 17037:2018+A1:2021 Daylight in buildings.

5.6.2.2. The CIBSE publication Lighting Guide LG 10: Daylighting – a guide for designers.

## 6. Assessment Parameters

### 6.1. Introduction

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.	Sunlight	Direct Sunlight Hours	✓	✗	✗	✗
3.		Annual Probable Sunlight Hours	✗	✓	✓	✗
4.		Sun on Ground	✗	✗	✓	✓

Table.1: List of parameters to be tested.

### 6.2. Daylight Parameters

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.

#### 6.2.1. Vertical Sky Component (VSC)

6.2.1.1. 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.

6.2.1.2. 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.

## 6.3. Sunlight Parameters

Sunlight is the unobstructed light received on the surface from the sun. An obstructed sky with clouds impacts the sunlight reception on the surface. Reduction in amount of sunlight can be quantified by the methods outlined in following sections.

### 6.3.1. Direct Sunlight Hours

6.3.1.1. BS EN 17037[1] recommends that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1 February and 21 March with cloudless conditions. It is suggested that 21 March (equinox) be used. The medium level of recommendation is three hours and the high level of recommendation four hours. For dwellings, at least one habitable room, preferably a main living room, should meet at least the minimum criterion. One of the sun path indicators in Appendix A (Figures A5, A6, or A7) can be used to calculate hours of sunlight received.

6.3.1.2. The BS EN 17037 criterion applies to rooms of all orientations, although if a room faces significantly north of due east or west it is unlikely to be met.

### 6.3.2. Annual Probable Sunlight Hours (APSH)

6.3.2.1. 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.

6.3.2.2. In accordance with the BRE guidelines, windows that 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.

### 6.3.3. Sun on Ground

6.3.3.1. 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

6.3.3.2. 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.

## 6.4. Significance criteria of the assessment parameters

6.4.1. Based on the recommendation of the BRE Guide 209:2022 the significance criteria and the classification of the magnitude of the impact is presented in following tables for Sunlight and Daylight assessment parameters.

Vertical Sky Component (VSC)			Impact Classification
New Building	Existing Building	Adjoining Land	
≥27%	≥0.8 times former value	≥27%	<b>Meets BRE</b>
≥15%	≥0.6 times former value	≥15%	<b>Minor</b>
≥5%	≥0.4 times former value	≥5%	<b>Moderate</b>
≤5%	≤0.4 times former value	≤5%	<b>Major</b>

Table.2: Vertical Sky Component (VSC) impact classification table

Direct Sunlight Hours	Impact Classification
Hours of sunlight received in at least one habitable room	
≥4 hours (240 minutes)	<b>Highly Exceeds BRE</b>
≥3 hours (180 minutes)	<b>Mediumly Exceeds BRE</b>
≥1.5 hours (90 minutes)	<b>Meets BRE</b>
≥1.2 hours (70 minutes)	<b>Minor</b>
≥0.9 hours (50 minutes)	<b>Moderate</b>
≤0.9 hours (50 minutes)	<b>Major</b>

Table.3: Direct Sunlight Hours impact classification

Annual Probable Sunlight Hours (APSH)			Impact Classification
Summer	Winter	Whole Year	
≥25%	≥5%	≥4%	<b>Meets BRE</b>
Or ≥0.8 times of its former value			
≥18%	≥4%	≥3%	<b>Minor</b>
Or ≥0.6 times of its former value			
≥13%	≥2%	≥2%	<b>Moderate</b>
Or ≥0.4 times of its former value			
≤13%	≤2%	≤2%	<b>Major</b>
Or ≤0.4 times of its former value			

Table.4: 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	<b>Meets BRE</b>
≥37% receives 2 hours of sunlight	≥0.6 times former value	<b>Minor</b>
≥25% receives 2 hours of sunlight	≥0.4 times former value	<b>Moderate</b>
≤25% receives 2 hours of sunlight	≤0.4 times former value	<b>Major</b>

Table.5: Sun on Ground (Overshadowing) impact classification table

6.4.2. The BRE Guide Appendix H 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.

6.4.3. The impact assessment was undertaken using detailed computer modelling and simulation software IESVE.2023.3.1.0.



## 7. Assessment Results – Proposed Development

A drawing representing the windows analysed in this study along with their position and reference number is presented in Figure.3 in Appendix 1.

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

The test shows that out of 7 tested rooms as shown in Table.6 in Appendix 2

- 7.1.1. All 7 (100%) rooms meet the BRE requirement of  $\geq 27\%$  VSC value. Therefore, it is considered that the proposed development meets the minimum BRE recommendation of skylight reception in these rooms.

### 7.2. Sunlight – Direct Sunlight Hours

The test shows that out of 1 tested individual dwelling as shown in Table.6 in Appendix 2

- 7.2.1. All 1 (100%) tested dwellings meet the BRE requirement of receiving  $\geq 1.5$  hours of direct sunlight on 21<sup>st</sup> March in at least one habitable room. Therefore, it is considered that the proposed development meets the minimum BRE recommendation of sunlight reception at these dwellings.

### 7.3. Sunlight – Sun on Ground

The test shows that out of 1 tested amenity space

- 7.3.1. All 1 (100%) amenity spaces meet the BRE requirement of receiving two hours of sunlight in  $\geq 50\%$  of their space. Therefore, it is considered that the proposed development meets the minimum BRE recommendation of sunlight reception on these amenity space.

## 8. Assessment Results – Neighbouring Properties

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

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

The test shows that out of 1 tested window as shown in Table.7 in Appendix 2

- 8.1.1. All 1 (100%) window meet the BRE requirement of  $\geq 27\%$  and or  $\geq 0.8$  times of its former VSC value. Therefore, it is considered that the proposed development meets the minimum BRE recommendation of skylight reception at these windows.

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

The test shows that out of 1 tested window as shown in Table.7 in Appendix 2

- 8.2.1. All 1 (100%) window meet the BRE requirement of  $\geq 25\%$  and or  $\geq 0.8$  times of its former APSH value in Summertime between 21<sup>st</sup> March to 21<sup>st</sup> September. Therefore, it is considered that the proposed development meets the minimum BRE recommendation of sunlight reception at these windows.
- 8.2.2. All 1 (100%) window meet the BRE requirement of  $\geq 2\%$  and or  $\geq 0.5$  times of its former APSH value in Wintertime between 21<sup>st</sup> September to 21<sup>st</sup> March. However, the impact is not solely due to the proposed development itself but also due to north orientation of the window which naturally would receive less light due to sun travel path. The impact is not considered as significant due to following reasons.

BRE Guide states

In section 3.1.2 - In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchen, where people prefer it in the morning rather than the afternoon.

In section 3.2.3 - To assess loss of sunlight to an existing building, it is suggested that all main living rooms of dwellings, and conservatories, should be checked if they have a window facing within 90 degrees of south. Kitchen and bedrooms are less important, although care should be taken not to block too much sun.

It is to be noted that the sunlight availability during the whole year period and summertime is in line with the BRE requirements and as stated in sections 8.2.1 and 8.2.3 of this report. Therefore, it is considered that the impact on the amount of sunlight availability during wintertime alone is to be considered as not significant.

- 8.2.3. All 1 (100%) window meet the BRE requirement of  $\geq 4\%$  and or  $\geq 0.8$  times of its former APSH value in whole year between 1<sup>st</sup> January to 1<sup>st</sup> December. Therefore, it is considered that the proposed development meets the minimum BRE recommendation of sunlight reception at these windows.

### **8.3. Sunlight – Sun on Ground**

The test shows that out of 1 tested amenity space.

- 8.3.1. All 1 (100%) of amenity spaces meet the BRE requirement of receiving two hours of sunlight in  $\geq 50\%$  of their space and or  $\geq 0.8$  times space from its former space value. Therefore, it is considered that the proposed development meets the minimum BRE recommendation of sunlight reception on these amenity space.

## 9. Mitigation Measures

### 9.1. Proposed development

- 9.1.1. Mitigation measures are not necessary as the proposed development meets the BRE guideline criteria.

### 9.2. Neighbouring properties

- 9.2.1. Mitigation measures are not necessary as the neighbouring buildings meets the BRE guideline criteria.

## 10. Conclusion

### 10.1. Proposed development

- 11.1.1. This report provides an outline assessment for the daylight and sunlight analysis that should be carried out as part of the detailed planning submission.
- 11.1.2. In our opinion, the proposed development, achieves a high level of compliance with the BRE requirements. Therefore, it should not warrant for refusal of the application.
- 11.1.3. Therefore, it can be considered that the development will not conflict with any national, regional, or local planning policy in relation to the loss of daylight and sunlight because of the proposed development.

### 11.2. Neighbouring properties

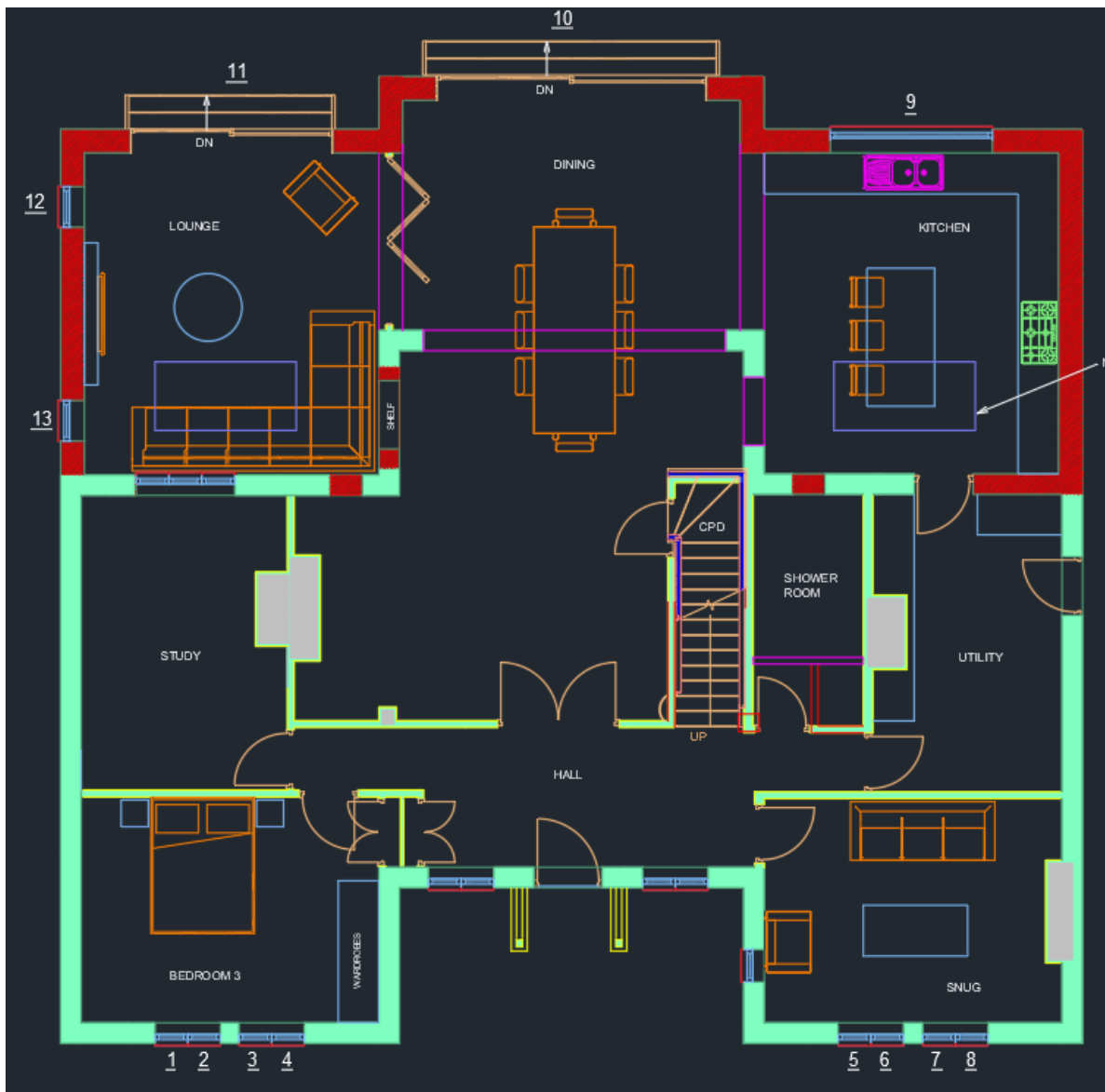
- 11.2.1. This report provides an outline assessment for the daylight and sunlight analysis that should be carried out as part of the detailed planning submission.
- 11.2.2. In our opinion, the proposed development in overall complies with the BRE requirements. Therefore, the minor transgressions should not warrant for refusal of the application.
- 11.2.3. It can, therefore, be considered that by implementing best practice design measures, the development will not conflict with any national, regional, or local planning policy in relation to the loss of daylight and sunlight because of the proposed development.

## 11. Clarifications

- 11.1. The report provided is solely for the use of the client and no liability to anyone else is accepted.
- 11.2. The study is limited to assessing daylight, sunlight of the proposed development as set out in sections 2.1, 3.1 and 3.3 of the BRE Guide.
- 11.3. 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.
- 11.4. 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.
- 11.5. We have undertaken the survey following the guidelines of the RICS publication "Surveying Safely". Where limited access is available, assumptions will have been made.
- 11.6. 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





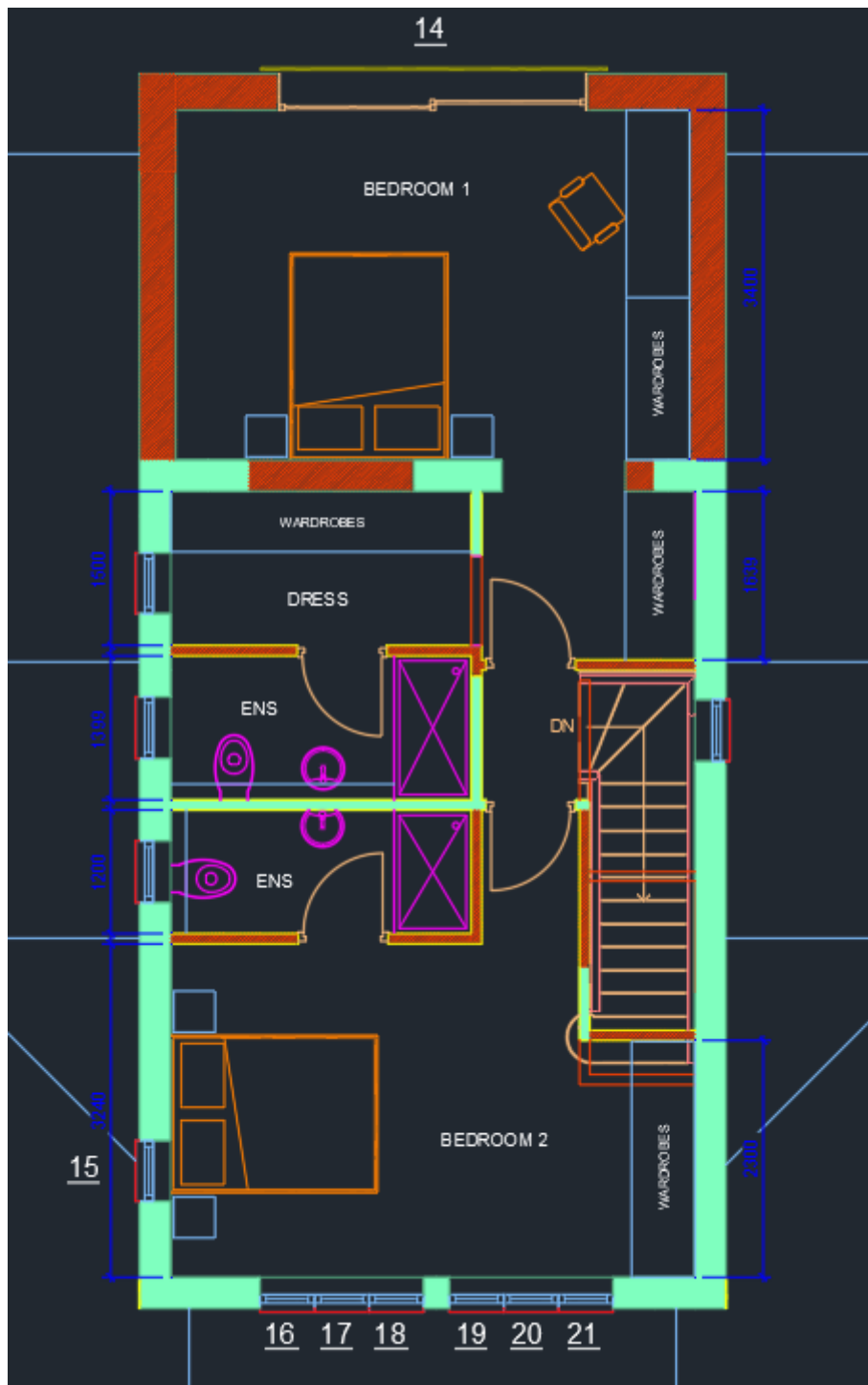


Fig.3: Windows and its numbers within proposed development

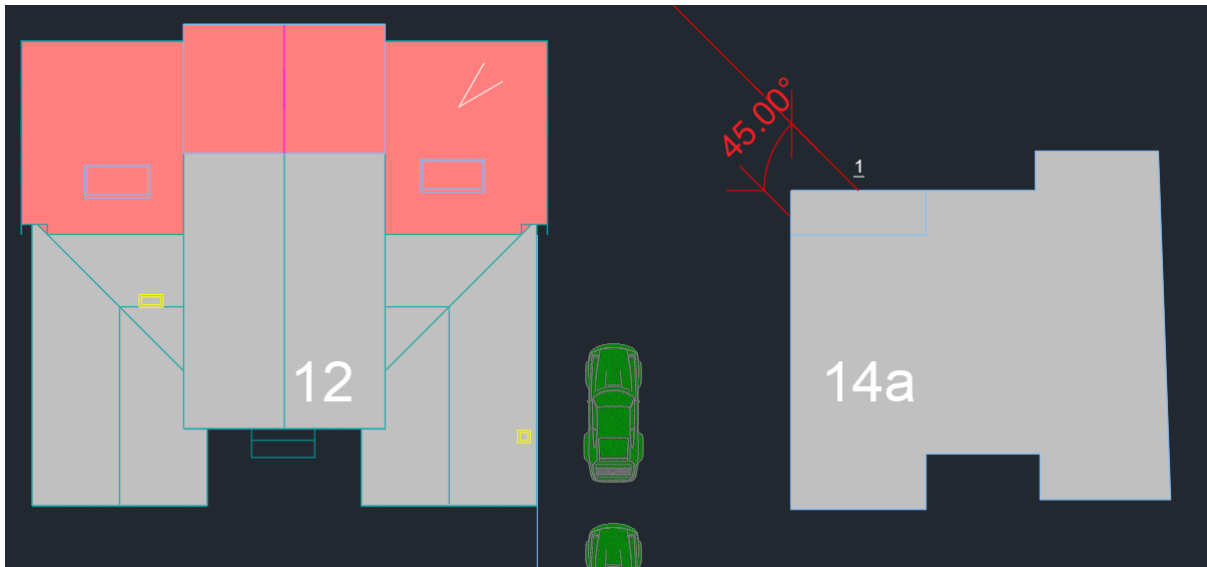


Fig.4: Windows and its numbers in neighbouring properties

93198

**Appendix 2: Detailed numerical test results**

Floor	Room Usage	Window Reference	Window Direction	VSC in %			Direct Sunlight Hours		
				Target	Proposed	Impact Descriptor	Target	Proposed	Impact Descriptor
G	Bedroom	1	NE	≥27	39.31	Meets BRE	≥1.5	≥1.5	Meets BRE
		2	NE	≥27	39.31				
		3	NE	≥27	38.93				
		4	NE	≥27	38.83				
	Snug	5	NE	≥27	38.85				
		6	NE	≥27	38.81				
		7	NE	≥27	38.86				
		8	NE	≥27	38.93				
	Kitchen	9	NE	≥27	38.12				
	Dining	10	NE	≥27	39.2				
	Lounge	11	NE	≥27	38.27				
		12	NE	≥27	27.15				
		13	NE	≥27	22.34				
1	Bedroom	14	NE	≥27	39.14				
	Bedroom	15	NE	≥27	33.53				
		16	NE	≥27	38.77				
		17	NE	≥27	38.72				
		18	NE	≥27	38.89				
		19	NE	≥27	39.06				
		20	NE	≥27	39.04				
21	NE	≥27	38.85						

Table.6: Detailed numerical test results within proposed development

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House	Floor	Window Reference	Window Direction	VSC in %					APSH Summer in %					APSH Winter in %					APSH Whole Year in %				
				Target	Existing	Proposed	Loss Ratio	Impact Descriptor	Target	Existing	Proposed	Loss Ratio	Impact Descriptor	Target	Existing	Proposed	Loss Ratio	Impact Descriptor	Target	Existing	Proposed	Loss Ratio	Impact Descriptor
14a	G	1	NE	≥27	39.06	38.58	0.99	Meets BRE	≥25	24	24	1.00	Meets BRE	≥5	4	2	0.50	Moderate	≥4	4	4	1	Meets BRE

Table.7: Detailed numerical test results within neighbouring properties