DAYLIGHT / SUNLIGHT REPORT

Proposed development at:

124a St Stephens Avenue, London W12 8JD

A-ZERO
Babel Studios,
82 Southwark Bridge road,
London
SE1 0AS

CONTENTS

1. BACKGROUND

1.1 This Daylight / Sunlight report is submitted in support of the planning application for a proposed development at 124a St Stephens Avenue, London W12 8JD.

1.2 The character of the neighbourhood is largely residential, and mostly made up of 4 - 6 storey housing.

1.3 The site contains an existing building which is to be demolished prior to the construction of a four storey residential building.

Fig. 1: Aerial view of the site and surroundings

A Application site
B 126 St Stephen's Ave
C 97 - 109 Uxbridge Road
D 121 Godolphin Road
E 108 - 124 St Stephen's Ave
F 105 St Stephen's Ave
G 85 - 95 Uxbridge Road

Fig. 2: Site Plan (Not to scale)

2. INTRODUCTION

2.1 This Report is an assessment of the impact of the proposed development on relevant buildings and open areas around the application site with regards to daylight levels and sunlight availability. The figures below show the existing and proposed conditions.

2.2 The results obtained from the analysis of the proposed development were compared against current best practice guidelines as found in the BRE's Site Layout Planning for Daylight and Sunlight- *A Guide to Good Practice* (hereafter referred to as 'the BRE Guide').

2.3 The assessments will also review the internal daylight levels within the proposed development with respect to best practice guidelines.

Fig. 3a: Existing condition

Fig. 3b: Proposed condition

3. PLANNING POLICY

3.1 There is no specific policy guidance or Government legislation stipulating the methods for assessing the impact of new developments on the daylight, sunlight and overshadowing levels available to sensitive receptors.

3.2 This report however adopts the methodology developed by the Building Research Establishment (BRE) guidelines (i.e. Site Layout Planning for Daylight and Sunlight: a guide to good practice). The BRE Guide covers amenity requirements for sunlight and daylight to buildings around any development site.

4. OBJECTIVES

4.1 The purpose of the daylight /sunlight study is to address the following:

- To determine if loss of light to habitable spaces of adjoining developments is likely as a result of the construction of the proposed development. The proposed development is identified as the potential source of impact.
- To assess the impact of the proposed development on sunlight availability to the adjoining buildings and open spaces.
- To assess the levels of daylight within the proposed development.

4.2 The sensitive receptors identified for the daylight/sunlight study are windows of habitable rooms and amenity spaces where the occupants / users have a reasonable requirement for daylight/ sunlight. The study quantifies the likely availability of daylight/sunlight to the receptors identified and checks compliance with the BRE Guide.

5. ASSESSMENT METHODOLOGY

A. BRE GUIDELINES

5.1 The BRE Guide gives requirements and methods for calculating daylight / sunlight availability.

5.2 The following explanatory notes focus on the relevant issues of the guidelines which would apply to locations such as the one in question. A direct quote from the introduction to the BRE guide reads:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and 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 many factors in site layout design. In special circumstances the developer or Planning Authority may wish to use different target values. For example, in an historic city centre a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings".

5.3 The above statements indicate that the criteria outlined in the BRE guide are suggestive and hence should not be seen as absolute targets to attain. Whilst this approach has been proven to be technically robust, flexibility can and should be applied when required.

5.4 The BRE Guide outlines certain parameters to quantify the availability of daylight / sunlight. For daylight studies, Vertical Sky Component (VSC) is used, while for sunlight studies, Probable Sunlight Hours (PSH) on windows / open spaces is used. These terms are described in more detail later in the report.

B. DAYLIGHT

5.6 The analyses and calculations were carried out using digital 3D models in Autodesk Ecotect and Radiance. Existing conditions were determined via CAD drawings provided by the client, as well as a desktop study.

VERTICAL SKY COMPONENT (VSC)

5.7 The VSC is calculated as a ratio of the direct sky illuminance falling on the outside of a window, to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE Overcast Sky is used for this purpose, and the ratio is expressed as a percentage. Typically, the maximum VSC value obtainable is about 40% for a completely unobstructed vertical window.

5.8 The BRE Guide stipulates that if after the proposed development is built, the VSC at the centre of a given window on an adjoining building exceeds 27%, then adequate daylight levels will be maintained in that space. It states further that if the VSC falls below 27%, the occupants of the rooms in question will only notice the difference if the new value is less than 80% of the initial value.

5.9 As stated earlier, the VSC calculation only measures the direct sky illuminance falling on the outside of the window under consideration and thus only measures daylight potential rather than actual daylight levels. Appendix C of the BRE guideline sets out more robust methods for assessing internal daylight levels which include average daylight factor (ADF) and no sky-line calculations. British Standard, BS 8206: Part 2 recommends the following minimum average daylight factors: 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

C. SUNLIGHT

SUNLIGHT CALCULATIONS (PSH)

5.11 Access to sunlight is measured on windows to habitable rooms, facing within 90° of due south. Both the BRE Guide and the BS8206-02 recommend that the PSH is calculated for the whole year, and for the winter months (21st September to 21st March).

5.12 The basis for evaluation is: If a reference point on the window can receive more than a quarter (25%) of annual PSH, including at least 5% of the annual PSH during winter months (21st September and 21st March), then the room should still receive enough sunlight and the impact of the new development will therefore be insignificant. It states further that if the annual PSH falls below 25% (and less than 5% for the winter months), the occupants of the rooms in question will only notice the difference if the new value is less than 80% of the initial value.

OVERSHADOWING OF OPEN AREAS

5.13 It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21st March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21st March is less than 80% of the total area, then the loss of sunlight is likely to be noticeable.

5.14 It further states that if a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21st March.

D. KEY SENSITIVE RECEPTORS

5.16 The assessment was based on the identification of Key sensitive receptors. The BRE guide describes key sensitive receptors as:

- Windows of habitable rooms in residential and non-domestic buildings facing potentially obstructing buildings where the occupants have a reasonable expectation of daylight. It states that "windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed".
- Gardens and open spaces on adjacent properties (excluding public footpaths, front gardens and car parks) are also counted as sensitive receptors.

5.17 Although the BRE Guide recommends that windows were selected as sensitive receptors on the basis of being 'windows to habitable rooms facing the proposed development', the analysis has taken ALL windows on the relevant adjoining buildings into account irrespective of the function of the room(s) they serve.

5.18 The key sensitive receptors as described above are shown in the diagrams below.

5.19 It is important to interpret the results obtained from the receptors based on the contexts in which they occur. Therefore, in the eventuality of a receptor failing to comply with the BRE guidelines, the context is taken into account before reaching a conclusion on the impact of the proposed development on that receptor.

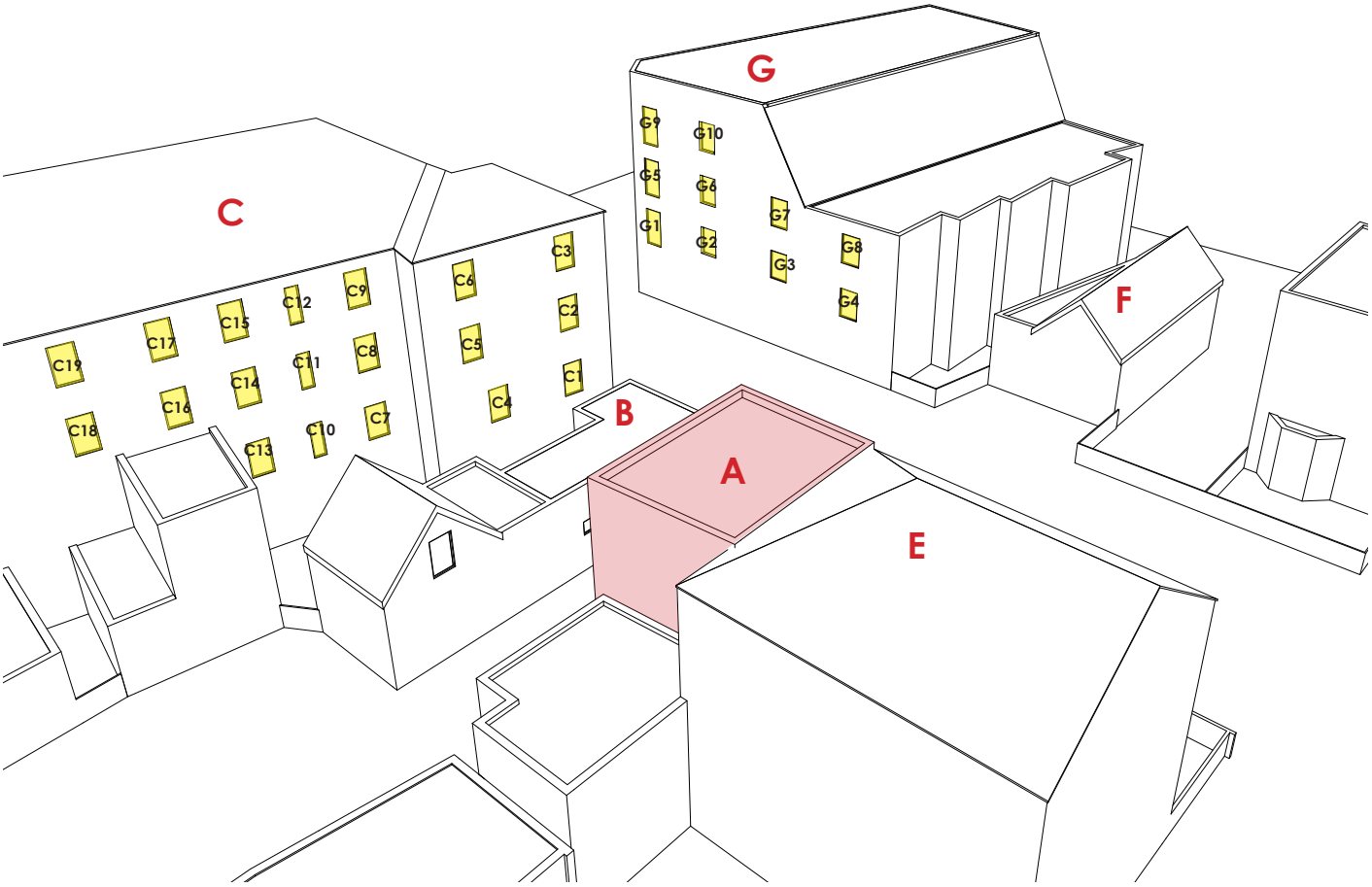


Fig. 4: Key receptors on the surrounding buildings (View 01)

Proposed development at 124a St Stephens Ave. | Key sensitive receptors (windows) | Key sensitive receptors (Gardens)

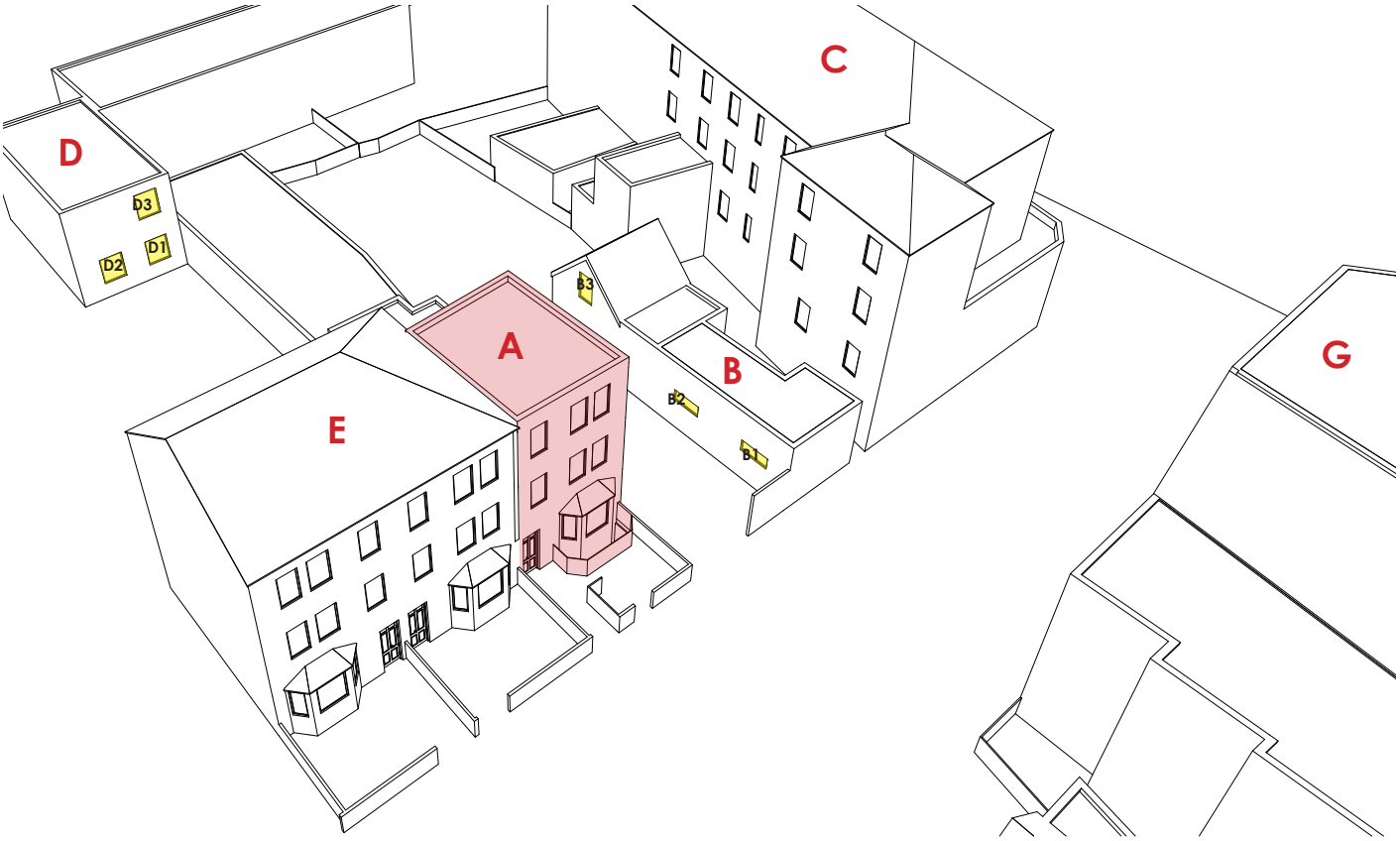


Fig. 5: Key receptors on the surrounding buildings (View 02)

Proposed development at 124a St Stephens Ave. | Key sensitive receptors (windows) | Key sensitive receptors (Gardens)

6. IMPACT ASSESSMENT

6.1 The results of the assessment conducted on the sensitive receptors (windows) identified are summarised below.

BUILDING A (PROPOSAL) (124a St Stephen's Ave)				
Window number	**Old VSC (%)**	**New VSC (%)**	**Ratio of New VSC to Old VSC (%)**	Assessment
	Existing Condition	With proposal in place		
N/A	N/A	N/A	N/A	N/A

Fig. 6: VSC values on surrounding windows (Building A)

BUILDING B (126 St Stephen's Ave)				
Window number	**Old VSC (%)**	**New VSC (%)**	**Ratio of New VSC to Old VSC (%)**	Assessment
	Existing Condition	With proposal in place		
Window B1	22.10	19.20	86.9%	Window does not belong to a habitable space
Window B2	17.50	12.40	70.9%	Window does not belong to a habitable space
Window B3	23.30	20.30	87.1%	Window does not belong to a habitable space

Fig. 7: VSC values on surrounding windows (Building B)

BUILDING C (97 - 109 Uxbridge Road)				
Window number	**Old VSC (%)**	**New VSC (%)**	**Ratio of New VSC to Old VSC (%)**	Assessment
	Existing Condition	With proposal in place		
Window C1	24.70	23.70	96.0%	Above 80% (Satisfactory)
Window C2	27.30	26.90	98.5%	Above 80% (Satisfactory)
Window C3	28.00	28.00	100.0%	Above 80% (Satisfactory)
Window C4	24.40	23.40	95.9%	Above 80% (Satisfactory)
Window C5	27.10	26.80	98.9%	Above 80% (Satisfactory)
Window C6	28.10	28.00	99.6%	Above 80% (Satisfactory)
Window C7	20.40	19.70	96.6%	Above 80% (Satisfactory)
Window C8	24.10	23.90	99.2%	Above 80% (Satisfactory)
Window C9	26.30	26.20	99.6%	Above 80% (Satisfactory)
Window C10	19.80	19.40	98.0%	Above 80% (Satisfactory)
Window C11	23.80	23.60	99.2%	Above 80% (Satisfactory)
Window C12	24.70	24.70	100.0%	Above 80% (Satisfactory)
Window C13	19.80	19.40	98.0%	Above 80% (Satisfactory)
Window C14	27.70	27.60	99.6%	Above 80% (Satisfactory)
Window C15	28.20	28.20	100.0%	Above 80% (Satisfactory)
Window C16	27.80	27.70	99.6%	Above 80% (Satisfactory)
Window C17	28.30	28.30	100.0%	Above 80% (Satisfactory)
Window C18	27.90	27.90	100.0%	Above 80% (Satisfactory)
Window C19	28.30	28.30	100.0%	Above 80% (Satisfactory)

Fig. 8: VSC values on surrounding windows (Building C)

BUILDING D (121 Godolphin Road)				
Window number	Old VSC (%) Existing Condition	New VSC (%) With proposal in place	Ratio of New VSC to Old VSC (%)	Assessment
Window D1	20.90	20.60	98.6%	Above 80% (Satisfactory)
Window D2	23.70	23.30	98.3%	Above 80% (Satisfactory)
Window D3	25.70	25.20	98.1%	Above 80% (Satisfactory)

Fig. 9: VSC values on surrounding windows (Building D)

BUILDING E (108 - 124 St Stephen's Ave)				
Window number	Old VSC (%) Existing Condition	New VSC (%) With proposal in place	Ratio of New VSC to Old VSC (%)	Assessment
N/A	N/A	N/A	N/A	N/A

Fig. 10: VSC values on surrounding windows (Building E)

BUILDING F (105 St Stephen's Ave)				
Window number	Old VSC (%) Existing Condition	New VSC (%) With proposal in place	Ratio of New VSC to Old VSC (%)	Assessment
N/A	N/A	N/A	N/A	N/A

Fig. 11: VSC values on surrounding windows (Building F)

BUILDING G (85 - 95 Uxbridge Road)				
Window number	Old VSC (%) Existing Condition	New VSC (%) With proposal in place	Ratio of New VSC to Old VSC (%)	Assessment
Window G1	20.70	20.60	99.5%	Above 80% (Satisfactory)
Window G2	16.80	16.60	98.8%	Above 80% (Satisfactory)
Window G3	22.10	21.80	98.6%	Above 80% (Satisfactory)
Window G4	23.50	22.90	97.4%	Above 80% (Satisfactory)
Window G5	23.70	23.70	100.0%	Above 80% (Satisfactory)
Window G6	19.40	19.30	99.5%	Above 80% (Satisfactory)
Window G7	25.10	24.90	99.2%	Above 80% (Satisfactory)
Window G8	26.30	25.90	98.5%	Above 80% (Satisfactory)
Window G9	26.50	26.50	100.0%	Above 80% (Satisfactory)
Window G10	22.10	22.10	100.0%	Above 80% (Satisfactory)

Fig. 12: VSC values on surrounding windows (Building G)

6.2 The calculations showed that with the proposed development in place, the percentage reduction in the VSCs of all the key receptors (windows) was negligible (i.e. less than 20%). In line with the BRE guide, it has therefore been established that there would be no loss of amenity in the form of daylight availability to any of the surrounding buildings.

6.3 A review of the site and surrounding areas does not show any open areas which would be directly impacted as a result of the next development, as the proposal site is surrounded by existing buildings on all sides.

7. DAYLIGHT LEVELS WITHIN THE PROPOSED DEVELOPMENT

Methodology

- The daylight performance of the building has been evaluated based on the criteria set out in the BRE guidance for daylight assessments (Average daylight factors and Illuminance levels). The results are presented in both visual and numeric forms.

- BRE guidelines state that the acceptable minimum ADF target value depends on the room use. The recommended minimums are: 1% for a bedroom, 1.5% for a living room and 2% for a kitchen. In cases where one room serves more than one purpose, the minimum ADF should be that for the room type with the higher value. Notwithstanding this, the independent daylight and sunlight review states that, in practice, the principal use of rooms designed as a 'living room/kitchen/dining room' is as a living room. Accordingly, it would be reasonable to apply a target of 1.5% to such rooms. For commercial spaces, including offices, the acceptable minimum ADF target value is 2.0%.

Assumptions

i. The following assumptions have been made with repect to glazing:

- Front facing windows: It is assumed that the windows to the front of the building are fitted with clear glazing (i.e. with a minimum light transmission value of 0.75),

- Side facing windows: It is assumed that these are fitted with obscure glazing (i.e. with a minimum light transmission value of 0.45).

ii. It is assumed that the grilles above the basement bedroom have a 'clear area' of 75%. It is recommended that the grilles are omitted if possible and the space is left open to the sky (with appropriate guarding) to maximise daylight access to the bedroom.

iii. It is assumed that the internal wall, floor and ceiling finishes have reflectance values above 0.50 (e.g white walls, white ceilings, and light coloured floors).

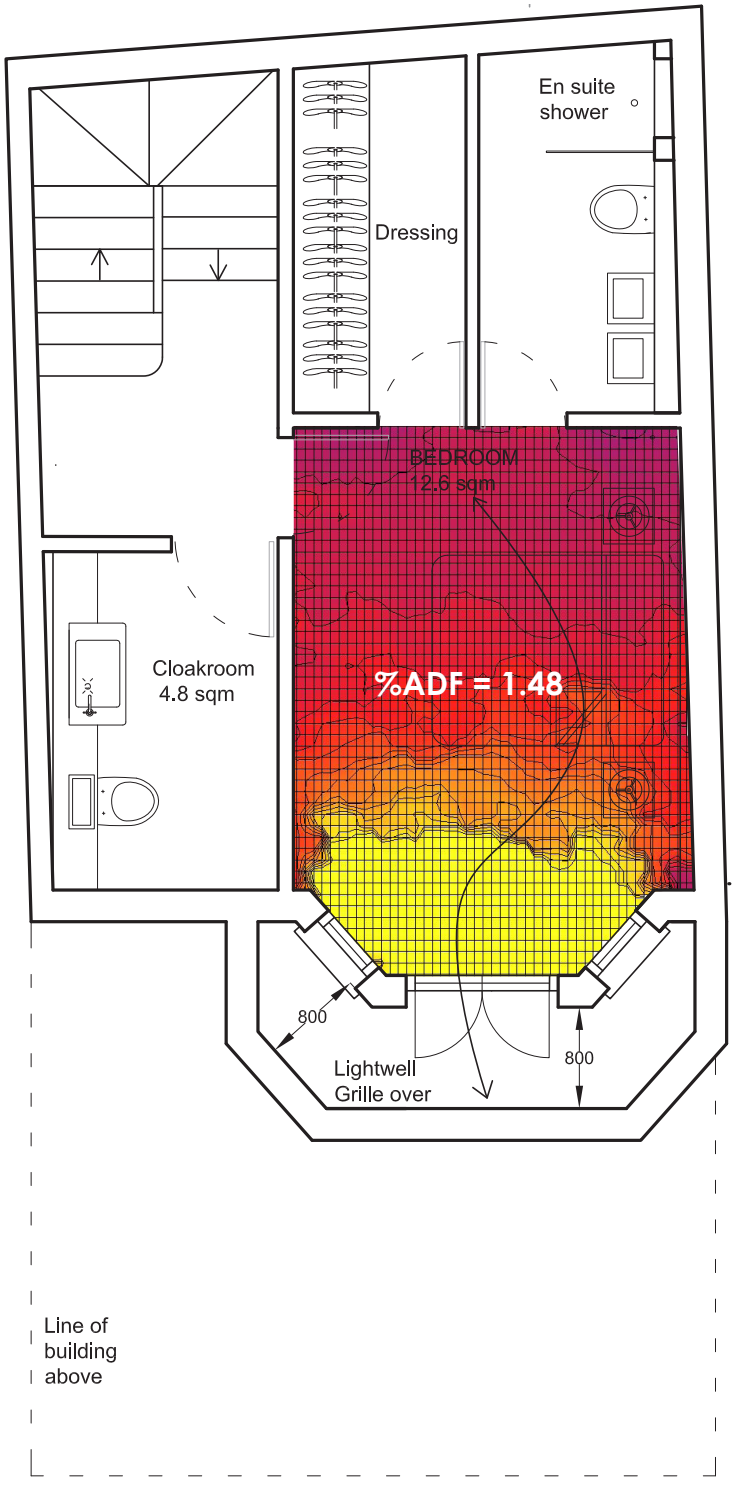
LEVEL -01 (Lower Ground Floor)

% Daylight factors @ 750mm working plane

2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0

Summary of results:

The internal daylight level (ADF) in the bedroom is 1.48%, which exceeds the minimum recommended level of 1.0%.



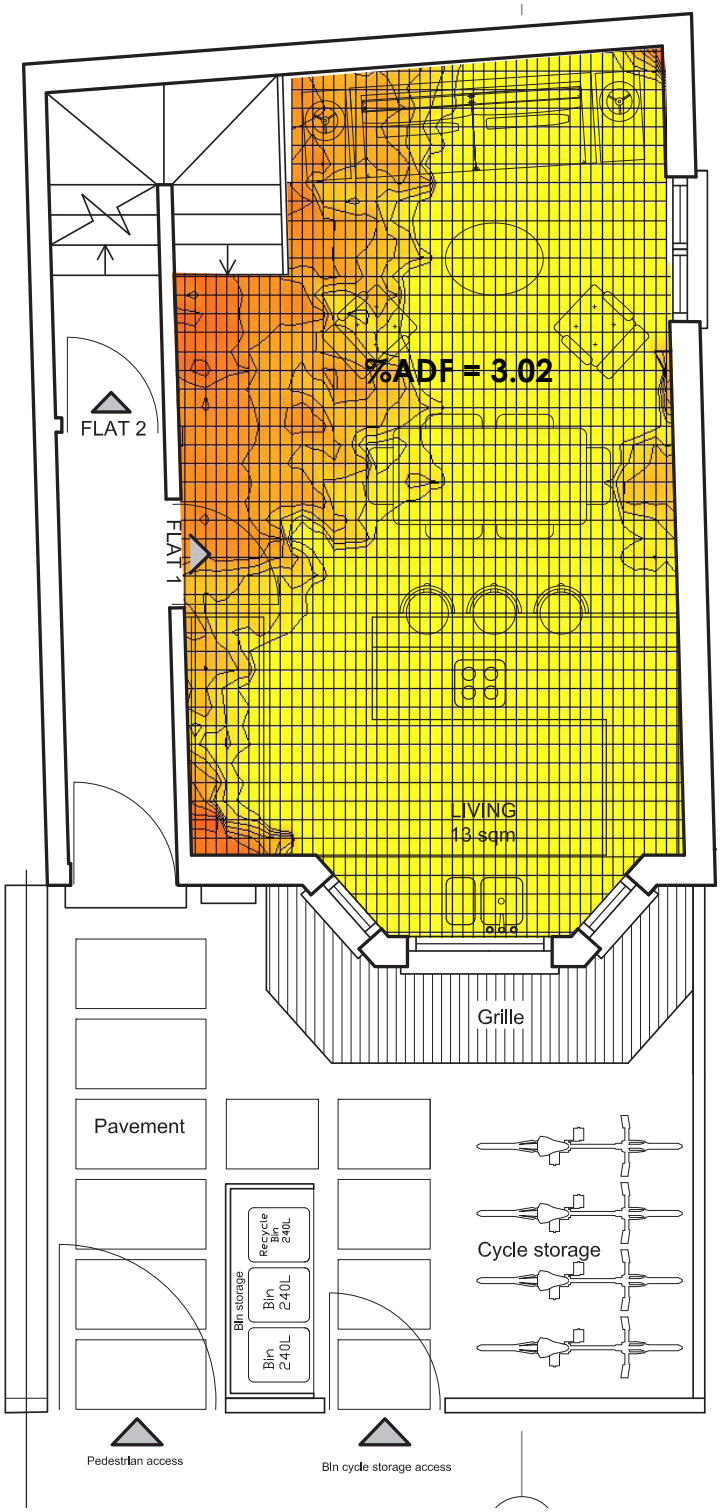
LEVEL 00 (Ground Floor)

% Daylight factors @ 750mm working plane

2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0

Summary of results:

The internal daylight level (ADF) is 3.02%, which exceeds the minimum recommended level of 2.0%.



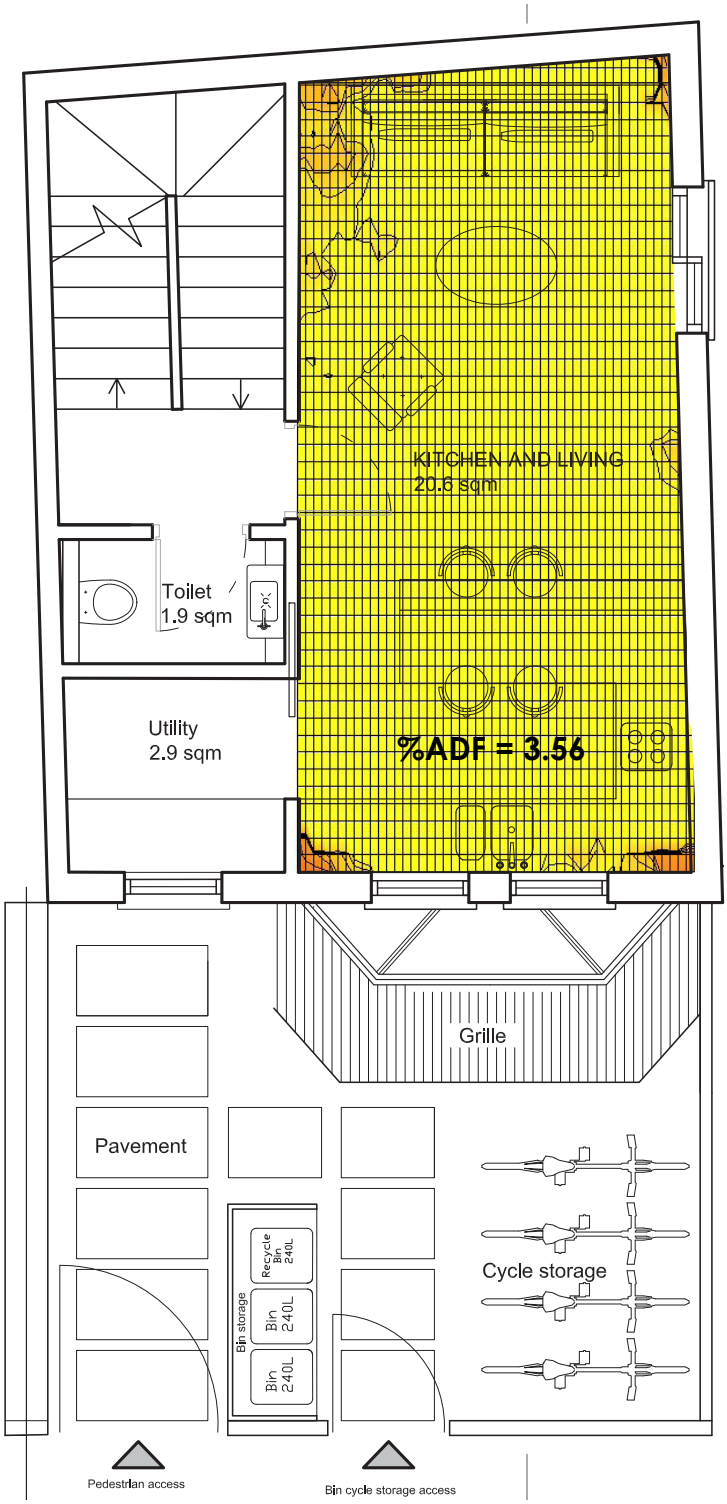
LEVEL 01 (First Floor)

% Daylight factors @ 750mm working plane

2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0

Summary of results:

The internal daylight level (ADF) is 3.56%, which exceeds the minimum recommended level of 2.0%.



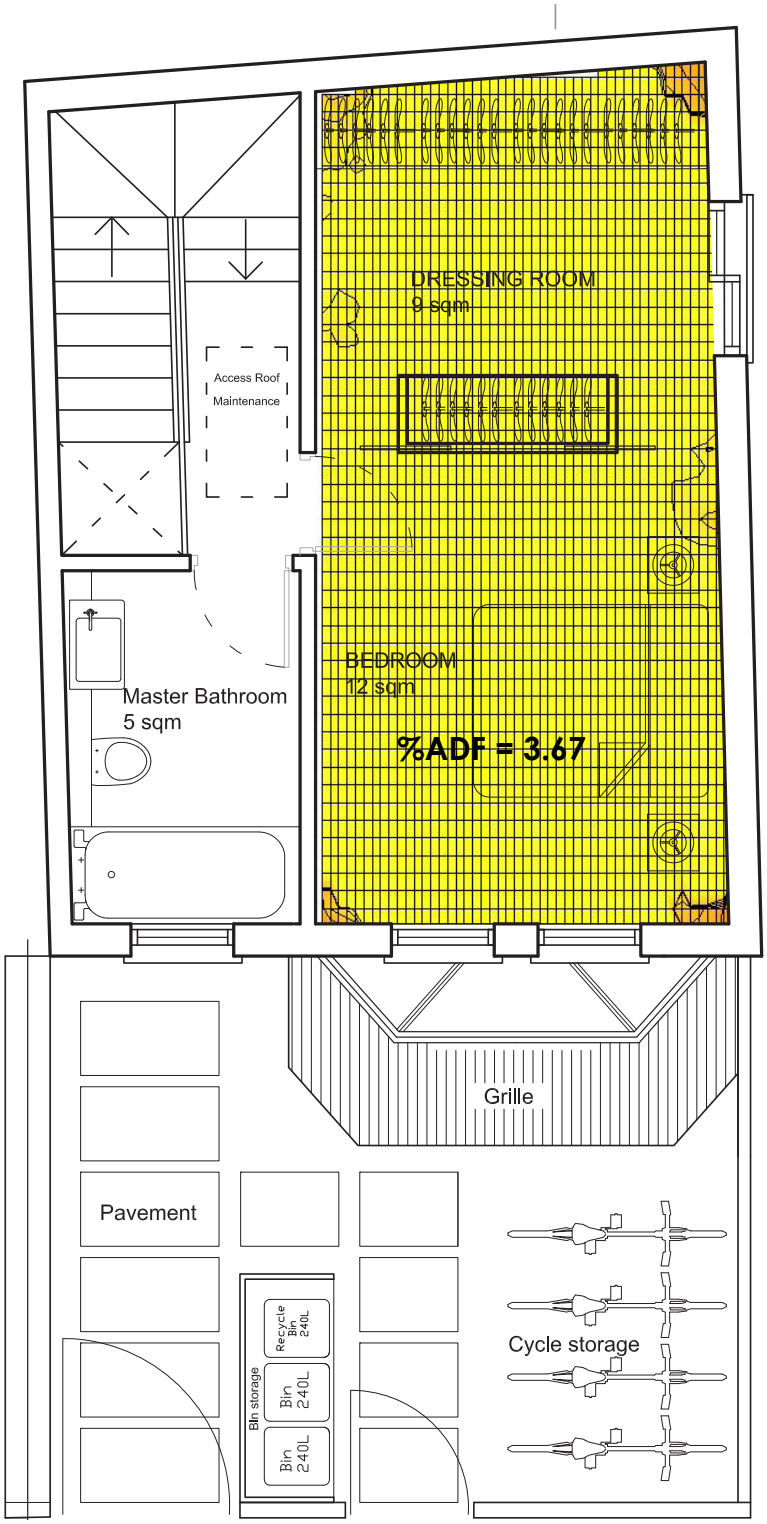
LEVEL 02 (Second Floor)

% Daylight factors @ 750mm working plane

2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2 0

Summary of results:

The internal daylight level (ADF) is 3.67%, which exceeds the minimum recommended level of 1.0%.



8. CONCLUSION

8.1 Based on the analysis results, it is our professional opinion that the impact of the proposed development on the daylight and sunlight availability on the adjoining properties assessed is only marginal, and there would therefore be no noticeable loss of daylight or sunlight to any of the adjoining buildings.

8.2 The internal daylight levels within the proposed developement are satisfactory as they exceed the recommended BRE guidelines.

9. REFERENCES

BRE (2011). Site Layout and Planning for Daylight and Sunlight: a guide to good practice. P. J. Littlefair.

10. ABBREVIATIONS

ADF: Average daylight Factor

CIE: Commission Internationale d'Éclairage – International Commission on Illumination

PSH: Probable Sunlight Hours

VSC: Vertical Sky Component