REPORT N^{O} 70017866-002

86-88 FELLOWS ROAD,

DAYLIGHT ASSESSMENT REPORT

October 2016

WSP | PARSONS BRINCKERHOFF

86-88 FELLOWS ROAD

DAYLIGHT ASSESSMENT REPORT

Urbanpeak Ltd

Daylight Assessment Report

Project No 70017866-002
Date: October 2016

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 EXECUTIVE SUMMARY

WSP | Parsons Brinckerhoff has been appointed by Urbanpeak Ltd. to provide a Daylight Assessment report to support the planning application of the proposed extension of 86-88 Fellows Road.

The purpose of this report is to assess the proposed development in terms of daylight and sunlight. The report comprises both the internal daylight assessment within the proposed development and the impact on neighbouring properties. Details of the results are provided in Appendices A and B.

The assessment has been undertaken following the guidance given in the BRE's Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice, 2011.

The massing of the proposed development was reduced compared to the previous scheme submitted in March 2016 in order not to have any impact on the daylight levels of the adjacent properties at 90 Fellows Road.

The impact assessment to existing neighbouring windows has been assessed by quantifying the daylight in the existing and proposed conditions, and by deriving the ratio of impact for comparison against the criteria.

The results of the baseline assessment indicated that the level of daylight reaching the neighbouring windows in the existing condition is restricted by the proximity of the properties, with the majority of the windows facing the site showing Vertical Sky Component (VSC) values significantly below 27%. This is due to the proximity of the neighbouring windows to the site which results in a high level of light obstruction.

The results of the impact daylight assessment showed that taking into account both the VSC values with the proposed extension in place and the reduction from the baseline condition i.e. the ratio of impact, all the windows have been identified to have a negligible level of impact on the basis that their ratio between baseline and proposed is above 0.8, in line with the BRE criteria, therefore the external impact of the proposed development is negligible.

The results of the internal daylight assessment showed that most of the rooms within the proposed development will satisfy the BRE criteria. The study found that 2 bedrooms located on the lower ground floor level are marginally below the criteria due to the reduced view of the sky caused by the adjacent buildings and the proposed building itself. However, it has to be recognized that although the 2 bedrooms falling marginally below the BRE criteria (ADFs of 0.8 and 0.9% out of a target of 1%), the façade has been designed such that it maximizes as much as possible the level of daylight within these rooms by providing a high window to floor ratio.

At the ground floor unit there is also a living area that is below the criteria by a margin of 10% with an ADF of 1.8% instead of 2%. Whilst the level of daylight of this room it is not suitable for a kitchen, it is above 1.5% which is the target recommended by the BRE for a living room.

2 INTRODUCTION

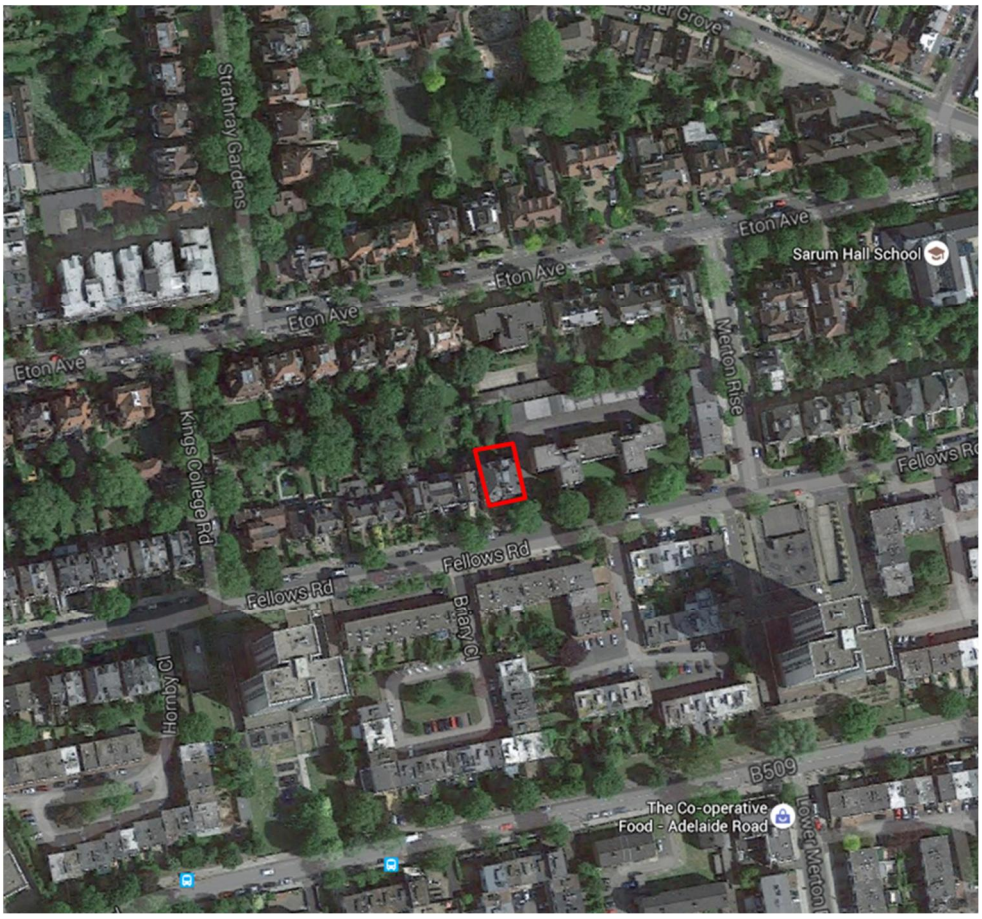
2.1.1 WSP | Parsons Brinckerhoff has been appointed by Urbanpeak Ltd. to provide a Daylight Assessment report to support the planning application of the proposed extension of 86-88 Fellows Road.

2.1.2 The purpose of this report is to assess the proposed development in terms of daylight and sunlight and how this compares with recommended standards. The report comprises both the internal daylight assessment within the proposed development and the impact on neighbouring properties. Full details of the results are provided in Appendices A and B.

2.1.3 The site is located at 86-89 Fellows Street within the Borough of Camden, see Figure 2-1. The site is in a Conservation Area and it is formed of two semi-detached houses which have been subdivided into flats. Planning permission was granted in 2007 (2007/3684/P) for a rear extension to the existing building, but has since expired. An earlier application with a greater massing was refused due to objections from the Council (2007/1958/P).

2.1.4 The proposed development comprises the demolition of internal and external wall on the lower ground floor and ground floor along with a 2 storey extension in the backyard.

Figure 2-1 Application Site location



3 PLANNING, POLICY AND GUIDANCE

3.1 LEGISLATIVE FRAMEWORK

3.1.1 There is no applicable legislation of relevance to this assessment.

NATIONAL PLANNING POLICY

3.1.2 There is no national planning policy directly related to sunlight and daylight. However, most Local Authorities recognise the guidelines set out in the BRE Guide Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice (Ref.1) as the most appropriate method for daylight, sunlight and overshadowing assessments.

REGIONAL PLANNING POLICY

THE LONDON PLAN: SPATIAL DEVELOPMENT STRATEGY FOR GREATER LONDON (2011) (REVISED MARCH 2015)

3.1.3 The London Plan: Spatial Development Strategy for Greater London (2011) (the London Plan) (Ref. 2) contains general comments about enhancing the environment, open spaces (both public and private) and impacts on the microclimate.

3.1.4 In relation to daylight and sunlight impacts, the relevant sections are given below:

- Policy 7.6 states that:

  "Buildings and structures should not cause unacceptable harm to the amenity of surrounding land and buildings, particularly residential buildings, in relation to privacy, overshadowing, wind and microclimate"
- Policy 7.7 states that:

  "Tall buildings should not affect adversely their surroundings in terms of microclimate, wind turbulence, overshadowing…. "

LOCAL PLANNING POLICY

CAMDEN DEVELOPMENT POLICIES 2010-2025 (LOCAL DEVELOPMENT FRAMEWORK)

3.1.5 Policy DP26 of the Camden Development Policies (Ref. 3) "Managing the impact of development on occupiers and neighbours" states:

".....The Council will protect the quality of life of occupiers and neighbours by only granting permission for development that does not cause harm to amenity. The factors we will consider include:

a) visual privacy and overlooking;
b) overshadowing and outlook;
c) sunlight, daylight and artificial light levels;....."

3.1.6 In particular section 26.3 on visual privacy, overlooking, overshadowing, outlook, sunlight and daylight states:

"A development's impact on visual privacy, overlooking, overshadowing, outlook, access to daylight and sunlight and disturbance from artificial light can be influenced by its design and layout, the distance between properties, the vertical levels of onlookers or occupiers and the angle of views. These issues will also affect the amenity of the new occupiers. We will expect that these elements are considered at the design stage of a scheme to prevent potential negative impacts of the development on occupiers and neighbours. To assess whether acceptable levels of daylight and sunlight are available to habitable spaces, the Council will take into account the standards recommended in the British Research Establishment's Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice (1991)."

GUIDANCE

CAMDEN PLANNING GUIDANCE

3.1.7 Camden Planning Guidance (Ref. 4) covers technical advice and guidance on a number of topics around design and planning. In relation to this report in particular, the guidance focuses on Design (CPG1), Housing (CPG2), Sustainability (CPG3) and Amenity (CPG6) all of which contain dedicated sections relating to optimising daylight sunlight and overshadowing. Daylight, sunlight and privacy

3.1.8 Planning Guidance CPG2 on Housing states that:

"Residential developments should maximise sunlight and daylight, both within the new development and to neighbouring properties whilst minimising overshadowing or blocking of light to adjoining properties".

PLANNING PRACTICE GUIDANCE 6TH MARCH 2014

3.1.9 The Department for Communities and Local Government (DCLG) web based Planning Practice Guidance resource (Ref. 5) includes a section on design and sets out what makes for a well-designed place . In relation to general microclimate effects , the relevant sections are given below:

- The guidance category Design - How should buildings and the spaces between them be considered? / Consider scale, states that:

  "Account should be taken of local climatic conditions, including daylight and sunlight, wind, temperature and frost pockets."

3.1.10 The BRE Guide: Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice are recognised as the most appropriate method for daylight, sunlight and overshadowing assessments. These guidelines were first published in 1991, and superseded the 1971 Department of the Environment document Sunlight and Daylight. The latest edition was published in 2011.

3.1.11 Whilst the BRE Guide provides numerical guidelines for daylight, sunlight and overshadowing, the Guide is not an instrument of planning policy, therefore some level of flexibility should be applied where appropriate.

3.1.12 The BRE document also includes advice for interior daylight although the recommendations contained within the guide are referred from the BS 8206-2 Code of practice for daylighting (Ref. 6), and from the CIBSE publication Daylighting and window design (Ref. 7) which give guidance on the design of buildings for good interior daylighting. The advice given in the BRE Guide is intended to be used in conjunction with these two documents as these focus on interior daylighting while the BRE Guide complements them by providing advice on the planning of the external environment.

4 THE PROPOSED DEVELOPMENT

4.1.1 The proposed development is for the refurbishment of 2 floors within the existing property comprising the demolition of internal and external walls on the lower ground floor and ground floor along with a 2-storey extension in the backyard. The proposed extension is located on the north façade of the existing building.

5 METHODOLOGY & CRITERIA

5.1.1 A 3D model has been developed for the purpose of the daylight avissessment. This model has been based on drawings provided by Oxford Architects and includes the existing building on the site, the proposed scheme and the existing surrounding properties. This model has been updated after the previous submission following updated information provided by Oxford Architects.

5.1.2 The massing of the proposed development was reduced compared to the previous scheme submitted in March 2016 in order not to have any impact on the daylight levels of the adjacent properties at 90 Fellows Road. The main Changes are:

- The removal of the western wing of the rear extension and
- overall extension height reduction of 0.45m

The model of 90 Fellows Road was updated following detailed measurements provided by Oxford Architects, see appendix A for details.

5.1.3 The BRE Guide gives criteria and methods for calculating daylight and sunlight both within new developments and the impact on existing surrounding windows. Based on the BRE Guide, the level impact of the proposed development on the level of daylight availability of the surrounding properties has been assessed using the parameters discussed below. Sunlight calculations have not been included in the assessment since the only sensitive receptors to sunlight (main living windows) are north facing, therefore the proposed development will have no impact on the sunlight to the adjacent properties.

5.2 ANGLE OF VISIBLE SKY (θ)

5.2.1 The visible sky angle (θ) gives the availability of daylight to a window and is measured from the top of the obstruction to the top of the window. For an unobstructed window θ is 90^{o}. If the Visible Sky Angle VSA is greater than 65^{o} conventional window design usually gives reasonable results. If the VSA is between 45 and 65^{o} then larger windows and shallow plan internal layouts would be needed to provide adequate daylight. For VSA between 25 and 45^{o} it is very difficult to provide adequate daylight unless large windows are used. In situations where the VSA is lower than 25^{o} no adequate daylight is possible even with a fully glazed wall.

5.3 VERTICAL SKY COMPONENT

5.3.1 When the obstruction is not continuous, the visible sky angle (θ) is complex to calculate and the Vertical Sky Component (VSC) may be used instead. The calculation of VSC usually requires specialist computer software. The VSC measures the amount of sky that can be viewed from the centre of a window accounting for all external obstructions, (with 40% being the maximum value for an unobstructed window). The minimum recommended figure for VSC is 27% or greater to maintain good levels of daylight. For existing surrounding windows if the 27% VSC is lower, then a comparison of existing and proposed VSC levels with the new development in place is calculated.

5.4 AVERAGE DAYLIGHT FACTOR

5.4.1 The Average Daylight Factor (ADF) is used to assess the level of daylight within new developments. Should windows fail to comply with minimum recommended VSC values, further detailed studies are performed using the ADF calculations to assess if compliance with the minimum values recommended in the BS8206 is achieved and whether mitigation measures are still required.

5.4.2 The CIBSE Guide LG10 (Ref. 9) defines the Average Daylight Factor as:

5.4.3 "…the measure of the amount of skylight in a room. If the room is not too deep or obstructed, an average daylight factor of 5% or more will ensure that an interior looks substantially daylit, except early in the morning, late in the afternoon or on exceptionally dull days. An average daylight factor below 2% generally makes a room look dull; electric lighting is likely to be in frequent use"

5.4.4 The BS8206-02 (BSI, 1992) sets out the following guidelines for the ADF:

5.4.5 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.

5.4.6 In dwellings, the following minimum ADF values should be achieved as per the BS 8206-02 (BSI, 1992):

- 1% in bedrooms,
- 1.5% in living rooms, and
- 2% in kitchens.

5.4.7 The ADF calculations have been based on room layouts derived from drawings provided by Oxford Architects and glazing characteristics from the National Calculation Methodology (NCM) modelling guide (Ref. 8). The following assumptions were taken for the calculation of the ADF calculations:

- Glass transmittance: 0.71;
- External dirt factor: 0.9;
- Internal dirt factor: 0.9;
- Frame factor: 0.85;
- Reflectance of floor: 15%;
- Reflectance of walls: 60%; and
- Reflectance of ceiling: 75%.

5.4.8 For floor to ceiling windows a factor has been applied for the portion of window below the working plane height of 850 mm, in line with the BRE guidelines.

5.5 ASSESSMENT CRITERIA

5.5.1 The BRE criteria have been used to assess the likely impacts of the proposed development on the neighbouring properties. Compliance with the BRE Guide is achieved if the levels of daylight / sunlight of the windows of the surrounding properties are equal to or over the values established by the Guide. Compliance with the BRE Guide is also achieved for the surrounding properties if the ratio of impact between the baseline and the proposed scenarios is 0.80 or higher, i.e. the reduction in daylight or sunlight hours is 20% or less. An additional criterion of overall annual loss for APSH values also needs to be satisfied to comply with the recommended BRE Guidelines.

Table 5-1 Impact criteria for Vertical Sky Component (VSC) Results

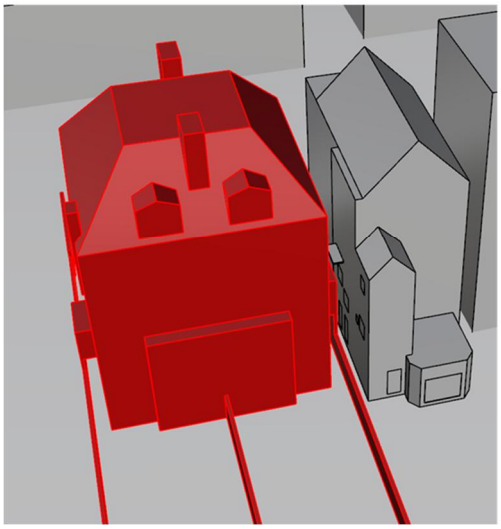
VSC Values	Ratio of Change from Baseline	Magnitude of Impact
VSC ≥ 27%	≥ 0.8	Negligible
VSC ≥ 27%	< 0.8	Negligible
VSC < 27%	> 0.8	Negligible
VSC < 27%	0.7 – 0.8	Low
VSC < 27%	0.6 – 0.7	Medium
VSC < 27%	< 0.6	High

5.6 3D MODELLING, ANALYSIS AND TOOLS

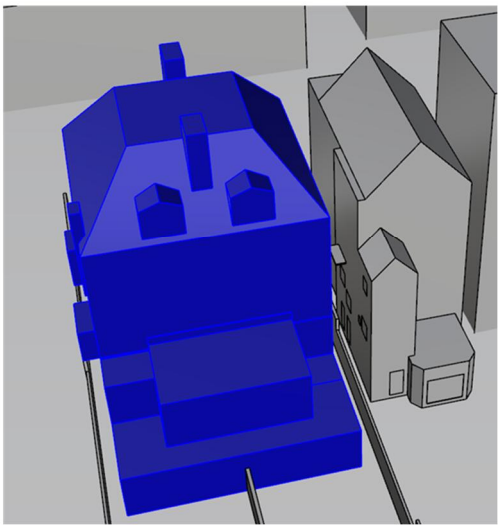
5.6.1 The daylight and sunlight impact calculations have been undertaken using the specialist software Ecotect 2011 by AutoDesk in which the 3d model was created for the studies.

Figure 5-1 Aerial view of the baseline and proposed models used for the daylight analyses

Baseline



Proposed



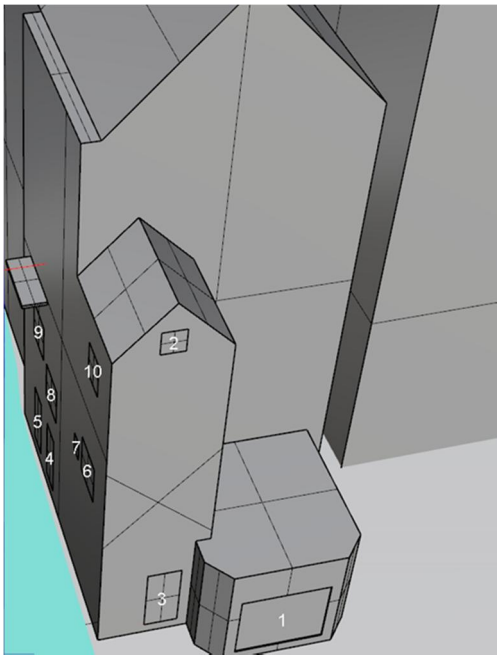
6 DAYLIGHT ASSESSMENT AND RESULTS

6.1 EXTERNAL DAYLIGHT ASSESSMENT

RESULTS OF BASELINE ASSESSMENT ADJACENT RECEPTORS

6.1.1 The receptors for the external impact assessment are the windows on for the adjacent property on No. 90 Fellow Road facing the site as these are the windows most likely to experience a light reduction. Figure 6-1 shows the model with windows reference numbers used for the assessment.

Figure 6-1 Windows reference number for 90 Fellows Road



6.1.2 The results of the baseline assessment indicate that the windows of the property assessed have VSCs ranging between 3.6% and 36%. The property shows low levels of VSC with results showing that the majority of the windows facing the site are below the 27%. This is not surprising due to the proximity of the two properties with a high level of obstruction to skylight. Therefore the impact assessment of the proposed development on these windows has been assessed by determining the ratio of reduction from the baseline position.

IMPACT OF PROPOSED SCHEME ON ADJACENT RECEPTORS

6.1.3 Following on from the baseline assessment, VSC calculations with the proposed development in the model were conducted on the receptors identified and the ratio of impact from the 'Baseline Scenario' was derived. The results were then used for comparison against the BRE criteria and a further classification by level of magnitude of impact was carried out. In order to undertake this assessment, the model of the proposed scheme was inserted on the site replacing the existing building, as shown in Fig 5.1.

6.1.4 The results of the impact daylight assessment showed that taking into account both the VSC values with the proposed extension in place and the reduction from the baseline condition i.e. the ratio of impact, all the windows have been identified to have a negligible level of impact on the basis that their ratio between baseline and proposed is above 0.8, in line with the BRE criteria, therefore the external impact of the proposed development is negligible.

INTERNAL DAYLIGHT LEVELS

6.1.5 The results of the internal daylight assessment showed that most of the rooms within the proposed development will satisfy the BRE criteria. The study found that 2 bedrooms located on the lower ground floor level are marginally below the criteria due to the reduced view of the sky caused by the adjacent buildings and the proposed building itself.

6.1.6 However, it has to be recognized that although the 2 bedrooms falling marginally below the BRE criteria (ADFs of 0.8 and 0.9% out of a target of 1%), the façade has been designed such that it maximizes as much as possible the level of daylight within these rooms by providing a high window to floor ratio of 45%.

6.1.7 At the ground floor unit there is also a living area that is below the criteria by a margin of 10% with an ADF of 1.8% instead of 2%. Although the level of daylight of this room it is not suitable for a kitchen, it is above 1.5% which is the target recommended by the BRE for a living room.

LIMITATIONS AND ASSUMPTIONS

6.1.8 All calculations have been based on best practice guidance and on drawing or models of the proposed development provided by the architects. Where required, estimations have been made with regards to the height and massing of surrounding properties, based on available satellite photographs and mapping. This assessment is based on the standard BRE requirements and methods but do not represent a rights-of-light survey.

7 SUMMARY AND CONCLUSIONS

7.1.1 The purpose of this report is to assess the proposed development in terms of daylight and sunlight. The report comprises both the internal daylight assessment within the proposed development and the impact on neighbouring properties. Details of the results are provided in Appendices A and B.

7.1.2 The assessment has been undertaken following the guidance given in the BRE's Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice, 2011.

7.1.3 The impact assessment to existing neighbouring windows has been assessed by quantifying the daylight in the existing and proposed conditions, and by deriving the ratio of impact for comparison against the criteria.

7.1.4 The massing of the proposed development reduced compared to the previous scheme submitted in March 2016 in order not to have any impact on the daylight levels of the adjacent properties at 90 Fellows Road.

7.1.5 The results of the baseline assessment indicated that the level of daylight reaching the neighbouring windows in the existing condition is restricted by the proximity of the properties, with the majority of the windows facing the site showing Vertical Sky Component (VSC) values significantly below 27%. This is due to the proximity of the neighbouring windows to the site which results in a high level of light obstruction.

7.1.6 The results of the impact daylight assessment showed that taking into account both the VSC values with the proposed extension in place and the reduction from the baseline condition i.e. the ratio of impact, all the windows have been identified to have a negligible level of impact on the basis that their ratio between baseline and proposed is above 0.8, in line with the BRE criteria, therefore the external impact of the proposed development is negligible.

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7.1.8 At the ground floor unit there is also a living area that is below the criteria by a margin of 10% with an ADF of 1.8% instead of 2%. Although the level of daylight of this room it is not suitable for a kitchen, it is above 1.5% which is the target recommended by the BRE for a living room.

8 GLOSSARY

VSC – Vertical Sky Component - A measure of the percentage of skylight incident at a point on a vertical plane in relation to the unobstructed skylight incident on the horizontal plane.

ADF – Average Daylight Factor – It is the ratio of the average indoor illuminance on a working plane to the outdoor illuminance.

CIE – Commission Internationale De L'Eclairage – It is an authority which has developed a number of standard sky distributions (e.g. overcast, uniform) based on very specific mathematical formula.

θ – Angle of visible sky – It is the angle subtended in the vertical plane normal to the window by sky visible from centre of the window.

REFERENCES

- 1. Littlefair, P.J. (1995) Site Layout and Planning for Daylight and Sunlight: a guide to good practice. BRE Construction Research Communications, Garston, UK. 2011 edition.
- 2. Greater London Authority (2011), London Plan: Spatial Development Strategy for Greater London (2011).
- 3. Camden Development Policies 2010-2025 (Local Development Framework).
- 4. Camden Planning Guidance
- 5. Department for Communities and Local Government (2014), *Planning Practice Guidance*
- 6. British Standards Institution (2008). British Standard 8206-02: Code of practice for daylighting. BSI, London.
- 7. The Chartered Institution of Building Services Engineers London (1999). CIBSE Guide 'A'. Yale Press ltd. London
- 8. National Calculation Methodology (NCM) modelling guide (for buildings other than dwellings in England) 2013 Edition
- 9. The CIBSE Lighting Guide LG10 Daylight and Window Design 1999

APPENDIX A DETAILED RESULTS FOR EXTERNAL DAYLIGHT ASSESSMENTS

Figure A1 88-90 Fellows Road updated model measures (m)

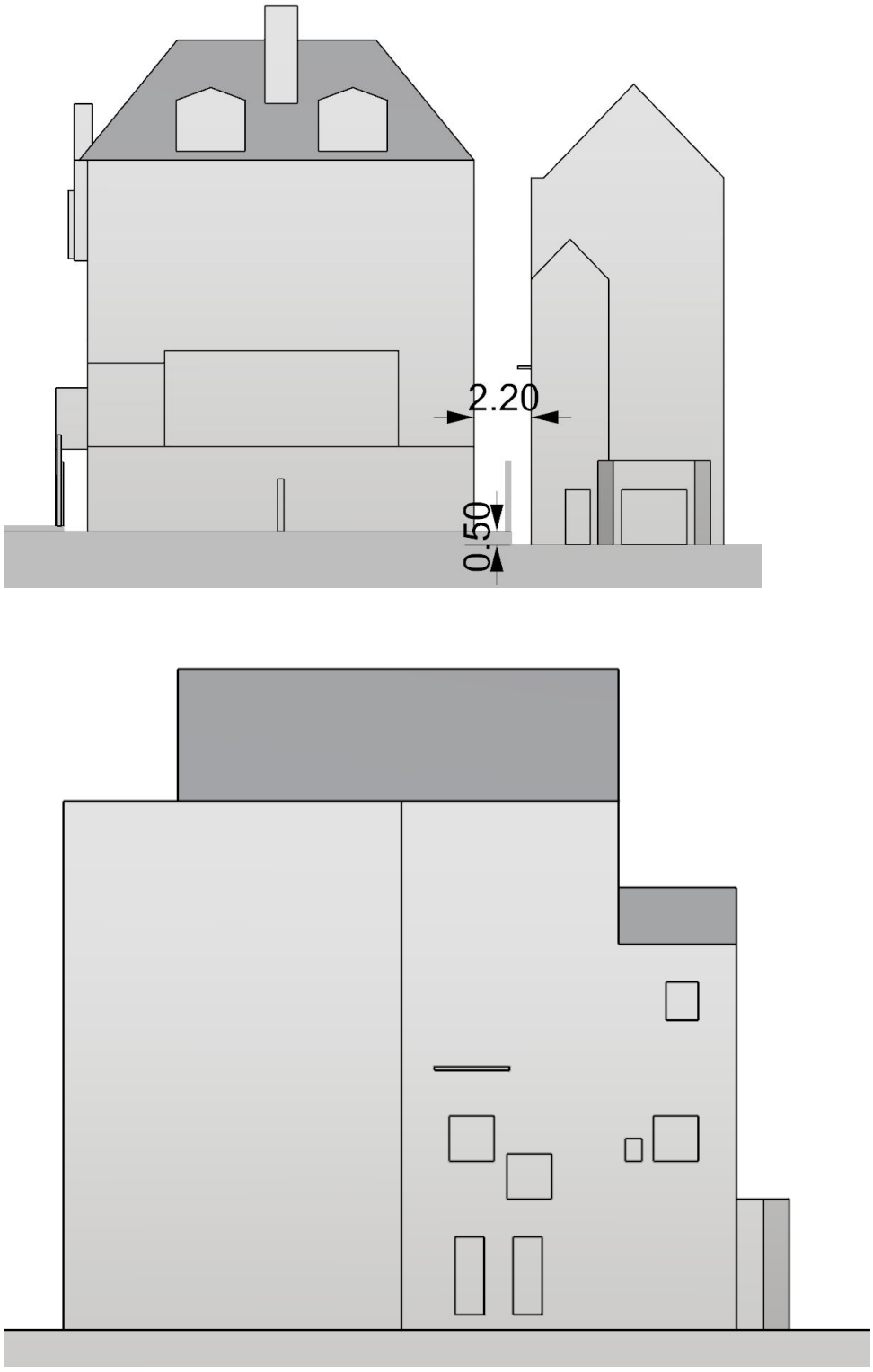
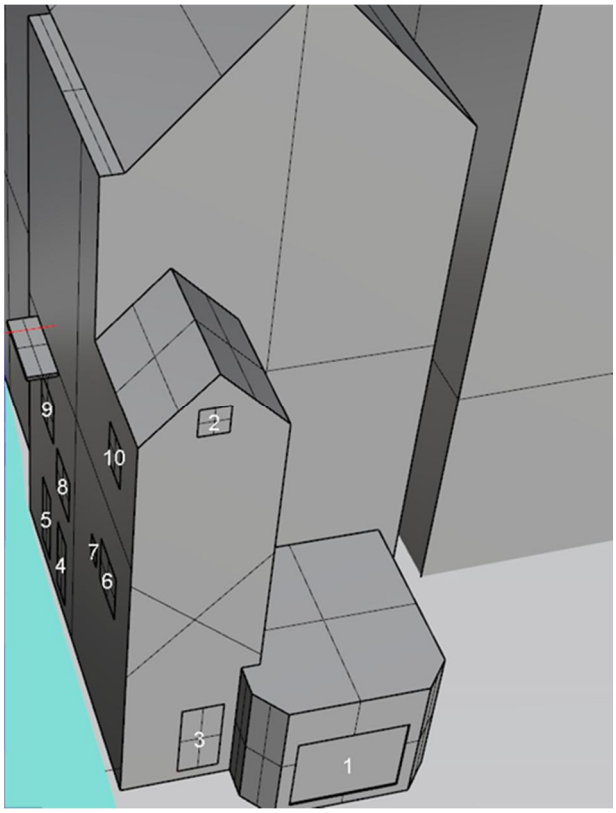


Figure A2 External Daylight Receptors- 90 Fellows Road



Receptor	Window Number	Baseline VSC (%)	Proposed VSC (%)	Ratio of Impact	BRE Compliance	Magnitude of Impact
90 Fellows Rd	1	30.4	29.9	0.98	Above	Negligible
	2	36.3	36.3	1.00	Above	Negligible
	3	24.2	22.7	0.94	Above	Negligible
	4	2.0	2.1	1.03	Above	Negligible
	5	1.4	1.7	1.17	Above	Negligible
	6	14.3	11.6	0.82	Above	Negligible
	7	7.6	6.8	0.90	Above	Negligible
	8	2.5	2.5	1.00	Above	Negligible
	9	1.5	1.7	1.12	Above	Negligible
	10	17.8	17.8	1.00	Above	Negligible

APPENDIX B DETAILED DAYLIGHT INTERNAL RESULTS

Figure B1 Lower Ground Floor

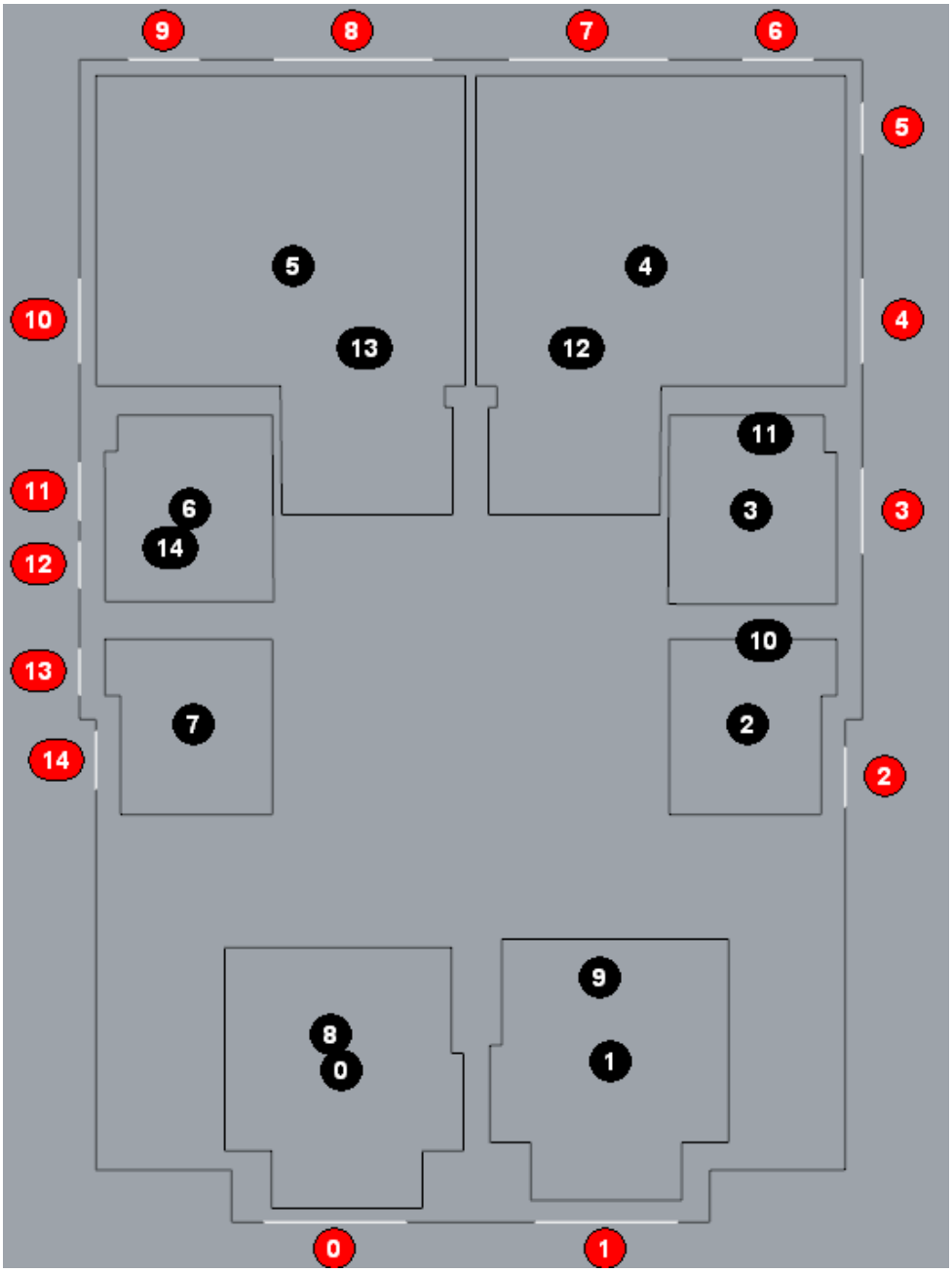


Figure B2 Ground Floor

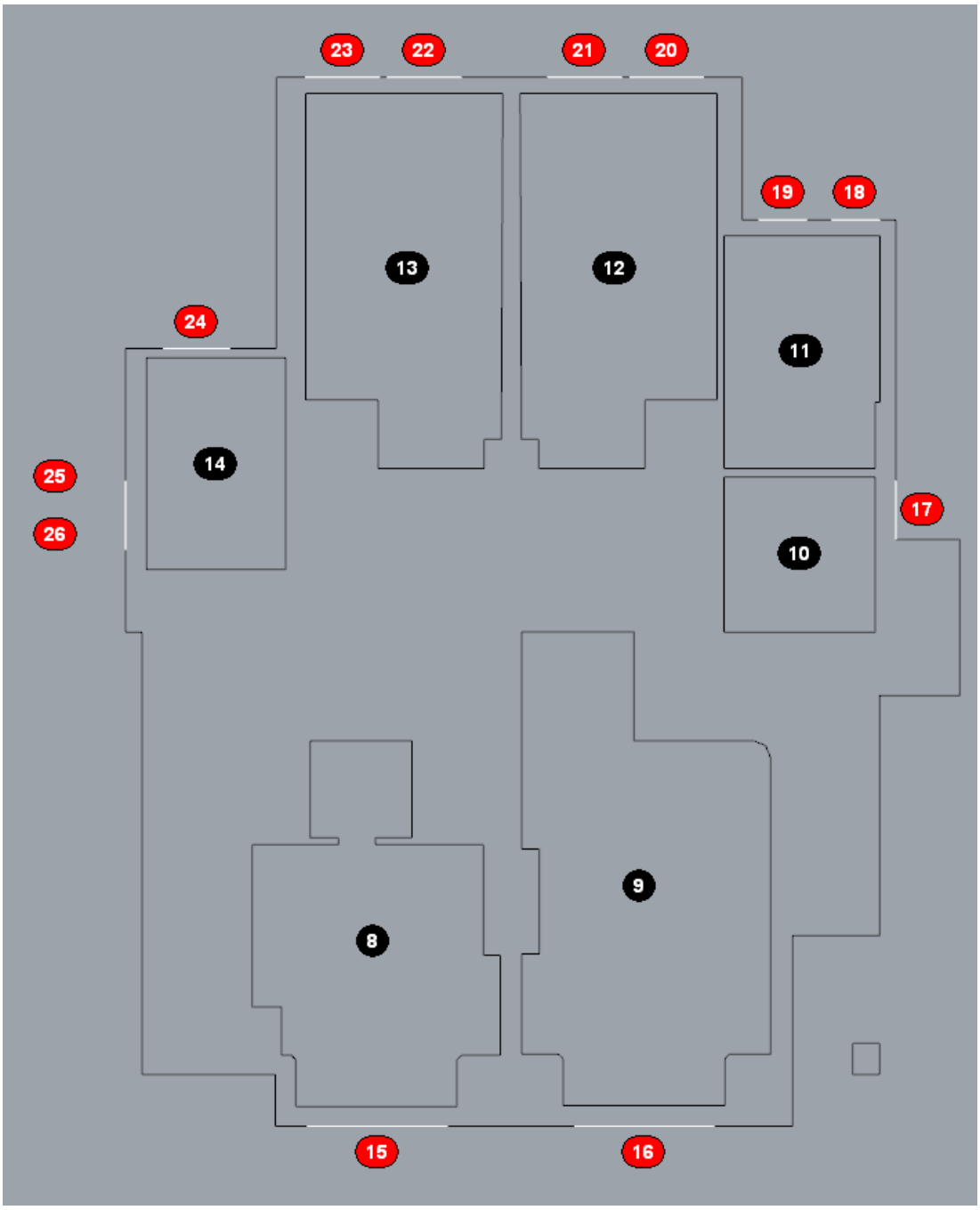


Table B1 Detailed Internal Daylight Results (ADF)

Floor	Room Number	Window Number	Vertical Sky Component	Window to Floor Ratio	Average Daylight Factor	ADF Target	BRE Compliance
Lower Ground Floor	0	0	29.7	0.28	2.8	1	Above
	1	1	30.1	0.28	2.9	1	Above
	2	2	10.6	0.2	0.9	1	Below
	3	3	13.6	0.2	1.1	1	Above
	4	4	20.9	0.29	2.7	2	Above
		5	15.1				
		6	29.3				
		7	29.9				
	5	8	29.6	0.24	2.4	2	Above
		9	29.8				
		10	21.5				
	6	11	8.7	0.27	1	1	Above
		12	5.2				
	7	13	2.9	0.45	0.8	1	Below
		14	2.7				
Ground Floor	8	15	32.3	0.26	2.2	2	Above
	9	16	32.8	0.18	1.8	2	Below
	10	17	14.7	0.26	1.2	1	Above
	11	18	28.5	0.3	1.9	1	Above
		19	22.5				
	12	20	32.6	0.32	2.8	2	Above
		21	32.6				
	13	22	32.4	0.32	2.8	2	Above
		23	32.4				
	14	24	25	0.31	2.5	1	Above
		25	6				
		26	7				