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1 ALPHA ROAD, HILLINGDON, UB10 0QA

Daylight/Sunlight Assessment Report – New Development

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Daylight/Sunlight Assessment Report
New Development

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REGISTRATION OF AMENDMENTS

Revision	Amendment Details	Revision Prepared By	Revision Approved By

EXECUTIVE SUMMARY

It is proposed to demolish the existing bungalow at 1 Alpha Road to develop a new two storey building which will accommodate four flats. This report assesses the daylight and sunlight levels, internally and externally, for the proposed new development at 1 Alpha Road, Hillingdon, UB10 0QA.

Results are compared with the guidelines contained within the BRE Report 'Site layout planning for daylight and sunlight: a guide to good practice'.

The calculations are based on CAD and pdf drawings of the proposed development received from Ravinder Singh Ghattora (the Client). These include floor plans and elevations.

1.0 INTRODUCTION

1.1 Create Consulting Engineers Ltd has been commissioned by the client, Ravinder Singh Ghattora to undertake a Daylight/Sunlight assessment to accompany the planning application for the proposed development at 1 Alpha Road, Hillingdon, UB10 0QA.

1.2 This report assesses the daylight and sunlight availability for the proposed new development at 1 Alpha Road, Hillingdon, UB10 0QA.

1.3 The provision of daylight and sunlight access has been assessed based upon the guidance and methodologies detailed in the 2011 Building Research Establishment's (BRE) Publication 'Site Layout Planning for Daylight and Sunlight'.

1.4 For the purpose of this report the above 2011 (BRE) publication 'Site Layout Planning for Daylight and Sunlight' will now be referred to as the BRE Guide.

Site Location and Description

1.5 The site is located on Alpha Road within the London Borough of Hillingdon. The existing bungalow is planned to be demolished and a two storey building erected in its place. To the north west, on the corner of Alpha Road and Pole Hill Road is located a two storey converted dwelling containing 2 x two bedroom flats. On the south east side of the site are found three terraced properties. Along the rear boundary lies a parking area for the flats belonging to 32A Pole Hill Road.



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Figure 1.1: Site Location

Proposed Development

1.6 The proposed building will accommodate four two bedroom flats with car parking at the front and amenity area at the rear.

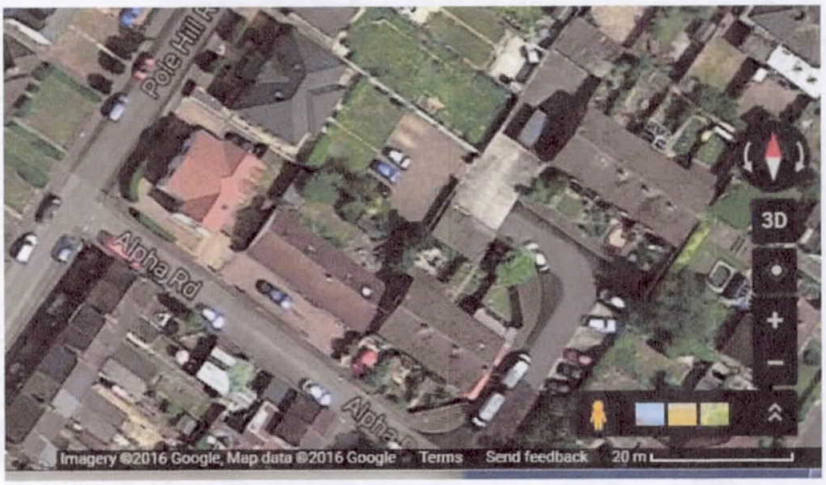

Image 1.1 Aerial photograph of existing bungalow at 1 Alpha Road.

Policy Context

1.7 Hillingdon Design and Accessibility Statement – Supplementary Planning Document – Design Guidance 4.0 states for Sunlight and daylight:

"All residential developments and amenity space should receive adequate daylight and sunlight, including habitable rooms and kitchens"

1.8 Recommendations on the amount of light, both daylight and sunlight to new development is given in the BRE Guide. This guide is widely used by authorities to help determine planning applications. This assessment has been carried out with reference to the second edition of the report, which was published in October 2011.

2.0 CALCULATION METHODOLOGY

2.1 The assessment and methods used to determine daylight access have been based upon geometric information supplied by the client.

Limitations and Assumptions

2.2 The following assumptions and limitations have been made within this assessment.

- In accordance with guidance provided by the BRE Guide, the effect of trees and plant life on daylight and sunlight access has not been included within this study.
- In accordance with guidance provided by the BRE Guide garden fences under 1.5m high are not included in the calculations.
- Window positions for surrounding properties have been based upon CAD and pdf drawings supplied by the client.

2.3 The BRE Guide suggests measures for determining the amount of natural light (both daylight and sunlight) that will penetrate into the interior of a new development and also the amount of sunlight available to the amenity areas of a new development. The following measures have been used in this report:

Vertical Sky Component

2.4 The Vertical Sky Component (VSC) is a measure of the amount of skylight incident on a vertical plane. It is most commonly applied to the light incident at the center of a window, and in this sense is a measure of the potential for good day light. The VSC is calculated by taking the ratio of the skylight incident at a point to the unobstructed skylight available at that same point on a horizontal plane. For a CIE (Commission on Illumination) overcast sky, the maximum value is nearly 40% for a completely unobstructed vertical wall. The VSC calculations have been undertaken using computer based simulation.

Annual Probable Sunlight Hours

2.5 The BRE Guide recommends that loss of sunlight should be checked for main living spaces of dwellings, and conservatories, if they have windows facing within 90° of due south.

2.6 According to the BRE Guide, if the centre of the window can receive more than one quarter of annual probable sunlight hours (APSH), including at least 5% of APSH in the winter months (between 21 September and 21 March), then the room should still receive enough sunlight. If the window already receives less than this, a reduction in lighting to both, less than 0.8 times

its current value, and, more than 4% of annual probable sunlight hours over the year, may lead the room it serves to "appear colder and less cheerful and pleasant."

Overshadowing Impact on Garden

2.7 The overshadowing impact has been determined using a 3D computer simulation of the proposed development. As a check, the BRE Guide recommends that at least half of the garden area should receive at least two hours of sunlight on the 21 March.

3.0 VERTICAL SKY COMPONENT

3.1 The VSC calculation has been assessed against the guidance given in the BRE guide. VSC calculations produce a value between 0% and 40%. A VSC greater than 27% is typically viewed as having enough skylight reaching the window.

3.2 The VSC check is used to assess the daylight access to a vertical surface such as a window. VSC checks have been undertaken for all windows of 1 Alpha Road which provide daylight to living spaces (living rooms, bed rooms and kitchens) on the ground and first floor.

3.3 Image 3.1 below shows the location of the windows at 1 Alpha Road.

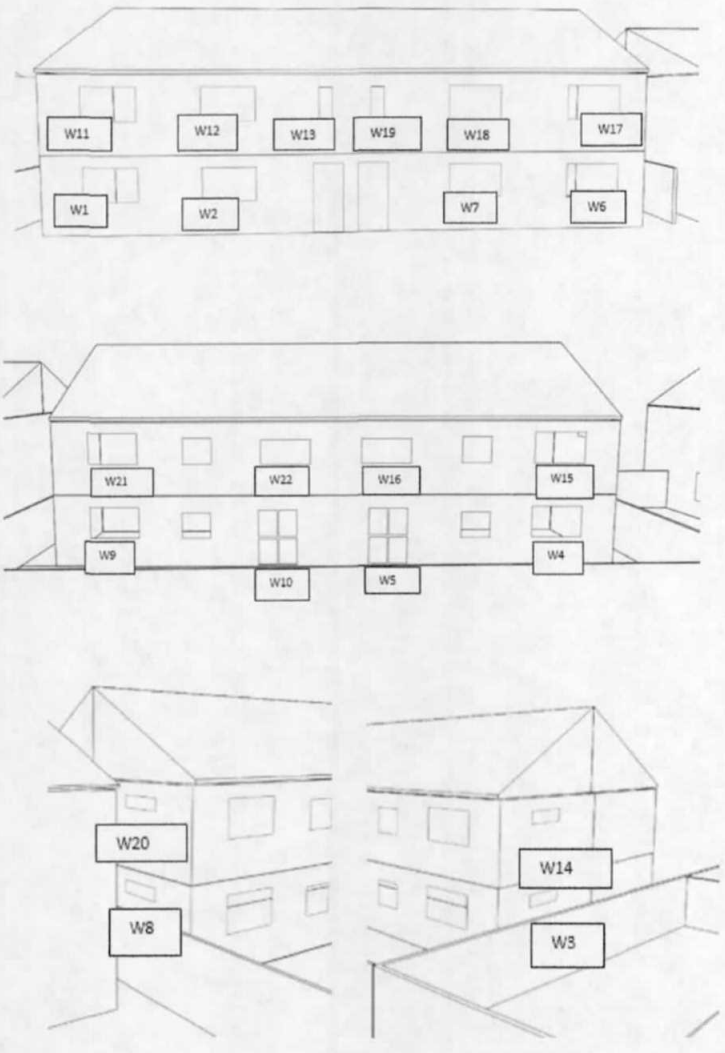

Image 3.1 Location of windows at the front, rear and sides of 1 Alpha Road

3.4 Table 3.1 shows the results of the VSC calculations for all windows to living spaces at 1 Alpha Road.

Alpha Road Proposed Development					
Flat no	Location	Room	Window ID	VSC	Comment
Flat 1	GF Front	Bed 1	W1	39.69	
	GF Front	Bed 2	W2	39.94	
	GF Side	Kitchen	W3	29.36	High level window
	GF Rear	Kitchen	W4	32.24	
	GF Rear	Living room	W5	33.42	
Flat 4	GF Front	Bed 1	W6	39.95	
	GF Front	Bed 2	W7	40.00	
	GF Side	Kitchen	W8	10.24	High level window
	GF Rear	Kitchen	W9	34.18	
	GF Rear	Living room	W10	32.77	
Flat 2	FF Front	Bed 1	Win 11	40.00	
	FF Front	Bed 2	Win 12	39.89	
	FF Front	Bed 2	Win 13	39.81	
	FF Side	Living room	Win 14	34.82	High level window
	FF Rear	Living room	Win 15	39.56	
	FF Rear	Kitchen	Win 16	39.61	
Flat 3	FF Front	Bed 1	Win 17	40.00	
	FF Front	Bed 2	Win 18	39.9	
	FF Front	Bed 2	Win 19	39.97	
	FF Side	Living room	Win 20	21.92	High level window
	FF Rear	Living room	Win 21	39.68	
	FF Rear	Kitchen	Win 22	39.66	

Table 3.1: Summary of VSC Values

3.5 Most windows have a vertical sky component well in excess of 27% which would make the rooms they serve feel bright and light during daylight hours. The two high level side windows which have values less than 27%, Win8 in Flat 4, and Win20 in Flat 3, have another window in the room which exceeds recommendations. All living spaces therefore meet the BRE guidance for VSC.

4.0 SUNLIGHT ANALYSIS

4.1 Sunlight is direct light from the sun as opposed to diffused light or daylight.

Window Sunlight

4.2 The BRE Guide states that if the centre of the window can receive more than one quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21 September and 21 March, then the room should receive enough sunlight.

4.3 Software has been used to calculate the annual probable sunlight hours (APSH) for all windows of living spaces at 1 Alpha Road.

4.4 Table 4.1 below shows the results from the sun path calculations for APSH values for all windows which serve living spaces (living rooms, bed rooms and kitchens).

Alpha Road Proposed Development						
Flat no	Location	Room	Window ID	Total annual (%)	Winter (%)	Comment
Flat 1	GF Front	Bed 1	W1	72.7	34.66	
	GF Front	Bed 2	W2	74.85	34.88	
	GF Side	Kitchen	W3	23.32	5.9	High level window
	GF Rear	Kitchen	W4	20.01	2.78	
	GF Rear	Living room	W5	20.28	2.78	
Flat 4	GF Front	Bed 1	W6	76.39	35.42	
	GF Front	Bed 2	W7	75.81	34.91	
	GF Side	Kitchen	W8	17.38	5.87	High level window
	GF Rear	Kitchen	W9	18.96	1.64	
	GF Rear	Living room	W10	20.24	2.53	
Flat 2	FF Front	Bed 1	Win 11	73.07	34.64	
	FF Front	Bed 2	Win 12	74.33	34.66	
	FF Front	Bed 2	Win 13	74.26	34.64	
	FF Side	Living room	Win 14	28.82	9.72	High level window
	FF Rear	Living room	Win 15	20.61	2.78	
	FF Rear	Kitchen	Win 16	21.13	2.78	
Flat 3	FF Front	Bed 1	Win 17	75.01	35.36	
	FF Front	Bed 2	Win 18	74.5	34.86	
	FF Front	Bed 2	Win 19	74.33	34.66	
	FF Side	Living room	Win 20	36.26	8.97	High level window
	FF Rear	Living room	Win 21	21.61	2.78	
	FF Rear	Kitchen	Win 22	21.3	2.78	

Table 4.1: Percentage of Probable Solar Hours on windows at 1 Alpha Road

4.5 The results show that all bedrooms at the front of the proposed development enjoy sunlight levels well in excess of the BRE Guide recommendations both annually and during the winter months.

4.6 The living rooms for all four flats are located at the rear of the development. This was designed so that access to the gardens would be possible from the living areas of the ground floor flats.

4.7 The results for the ground floor living rooms fall just short of total APSH at 20.28% for Flat 1 and 20.24% for Flat 4 and winter sun results of 2.78% and 2.53% respectively. As the first floor flats have two windows in each of the living rooms the BRE Guide advises that the highest level of APSHs may be used. Although the high level side windows in the first floor living rooms are not the main windows, they allow plenty of sunlight to penetrate the space they serve and have APSH and winter sunlight hour values above recommendations. The first floor living rooms therefore conform to BRE recommendations.

4.8 The kitchens of all four flats are also located at the rear and although do not receive as much sunlight as recommended they do receive their sunlight in the morning. The BRE Guide states that sunlight is less important in kitchens, where people prefer it in the morning rather than the afternoon.

4.9 The overall sunlight amenity offered by the proposed scheme is very good considering its urban location and site constraints.

Overshadowing of Garden

4.10 The impact on sunlight availability to the outdoor areas has been assessed against the BRE Guide.

4.11 The recommended level of sunlight availability to exterior amenity spaces is that at least half of the area receives at least 2 hours of direct sunlight on the 21 March, the spring equinox. The 21 March is used as this represents the average case for direct solar exposure.

4.12 To allow the overshadowing impact of the proposed building to be evaluated, images using colour coding have been produced to highlight the number of hours of sunlight in the garden space on March 21.

4.13 Image 4.1 below shows the gardens of Flats 1-4 at 1 Alpha Road.

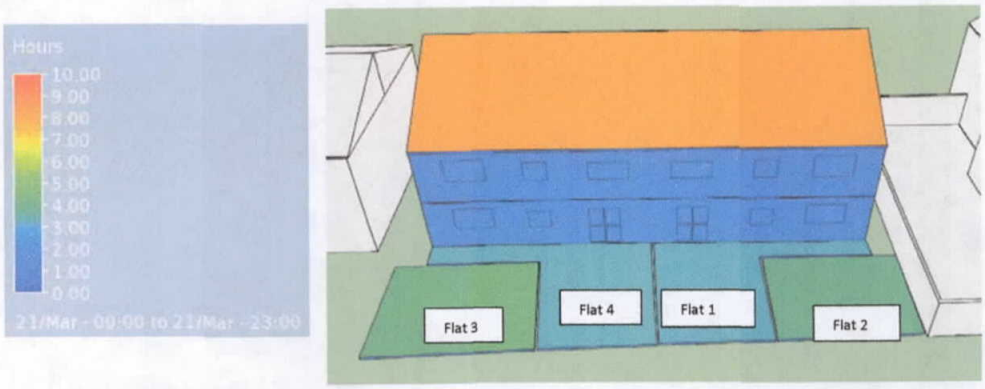

Image 4.1. The gardens of Flats 1 – 4, 1 Alpha Road show levels of sunlight in excess of two hours on 21 March

4.14 Image 4.1 above shows that all garden spaces at 1 Alpha Road have at least 2 hours of sunlight exposure on the 21 March and therefore conform to the requirements in the BRE Guide.

5.0 CONCLUSION

5.1 This assessment examines the daylight and sunlight levels, internally and externally, for the proposed flats at 1 Alpha Road.

5.2 The internal daylight and sunlight levels have been calculated for all windows which serve living spaces (living rooms, bedrooms and kitchens) belonging to 1 Alpha Road in accordance with the guidance stipulated in the BRE Guide.

5.3 A Vertical Sky Component calculation has been undertaken using IES software.

5.4 The report findings show that all windows analysed at 1 Alpha Road meet the BRE guidelines for Vertical Sky Component.

5.5 Direct sunlight access to the windows has been assessed. The results show that most windows analysed meet BRE guidelines for sunlight provision by having a value of annual probable sunlight hours of greater than 25%, including more than 5% in the winter months.

5.6 Of the windows which do not reach recommended levels four are kitchens which are located at the rear (north-east) and so receive sunlight in the mornings. The BRE Guide states that sunlight into kitchens is viewed as "less important" by people and is preferred in the mornings rather than in the afternoons.

5.7 The living rooms of the flats are all found at the rear of the property. This was a design decision to allow the occupants on the ground floor to enjoy access to their garden space from their living room.

5.8 Due to the orientation of the living rooms, Flats 1 and Flat 4 on the ground floor fall just short of recommended sunlight levels. W5 of Flat 1 receives 20.28% APSH and 2.78% winter sunlight and W10 of Flat 4 receives 20.24% APSH and 2.53% winter sunlight. These results, although slightly below recommended level, have to be balanced with the easy access to garden space which will be seen as favourable and enjoyed by the occupants.

5.9 The first floor living rooms both have two windows on adjacent walls. When this is the case the BRE Guide says that the highest level of APSH may be used. The high level windows, although not the main windows, receive adequate sunlight which penetrates into the living rooms and therefore conform to BRE recommendations.

5.10 The external garden areas for Flats 1-4, 1 Alpha Road have been analysed. The software shows that all gardens will receive at least two hours of sunlight exposure on 21 March which conforms to BRE recommendations.

5.11 The conclusion of this report is that the overall natural light amenity offered by the proposed scheme at 1 Alpha Road is very good for its location.

6.0 DISCLAIMER

6.1 Create Consulting Engineers Ltd disclaims any responsibility to the Client and others in respect of any matters outside the scope of this report.

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