

238 KILBURN HIGH ROAD, LONDON

Internal Daylight Assessment Report for 240 Kilburn High Road

S2S Architects





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INTRODUCTION 1.0

MACH have carried out an internal daylight assessment to assess the potential impact upon natural light at the 1st, 2nd, and 3rd floor rooms at 240 Kilburn High Road, from the proposed development at 238 Kilburn High Road in London.

The current existing dwellings include windows that look out directly onto the site of 238 Kilburn High Road. The proposed development is to include a ground plus four-storey development that will join on to the existing external wall at 240 Kilburn High Road. It is proposed to redesign the layout of the flats adjacent to the party wall, which will effectively obstruct side windows and depend mainly on the front and rear windows.

This document details the methodology and results of the daylight assessment carried on the internal spaces of the proposed units. The assessment has been carried out using Sketchup 3D modelling software and IES. The report details the modelling carried out to determine the level of Daylight Factor in the assessed units.

The figure to the opposite shows a site view with the existing 238 Kilburn High Road highlighted in red and 240 Kilburn High Road highlighted in yellow.

The assessment has been based upon the architectural drawings provided by S2S Architects, along with existing planning drawings from Camden Borough Council Planning Applications along with views from Google Earth.

The results of the assessment can be summarised as follows:

- It is predicted that all of the assessed flats located at the front of 240 Kilburn High Road will achieve good daylight levels across the whole floor area.
- Additionally, the flats located to the rear of the property are predicted to achieve daylight levels lower than the BRE recommendation due to the fact that their windows are within close proximity to the adjacent 1-23 Grangeway development.

- It is important to note that, both 238 and 240 Kilburn High Road are owned by the same developer. The new layout of the flats has been designed with good co-ordination with the FF&E design, which ensures that bed and lounge areas are situated next to the glazed areas and will achieve good quality daylight, while other less sensitive spaces (such as kitchens and circulation) may fall below BRE targets as they can be more dependent on artificial lighting. The indicative flats layout is shown within the floor plans provided in the report.
- It is considered that, due to the constraints of the site, the proposed development has good daylight design, and that while the majority of spaces will comfortably meet BRE criteria, the rooms that fall below BRE guidelines will still achieve daylight levels that are typical (and expected) of urban environments, and are similar to that of the existing surrounding buildings.
- It's important to note that the BRE guidelines used in this assessment are applied to provide recommendations to insure a proper layout of the site. They are not mandatory, and they can be applied flexibly, especially within urban contexts in London. Where a reduction from the BRE criteria may be seen as acceptable and has been accepted on previous developments. As such, considering the complexity of the site and surroundings within such inner-city locations, and the limitations this could have on the design, the reduction in the internal daylight levels is understandable.



Figure 1.1: View of the Assessed Existing 238 Kilburn High Road with the assessed 240 Kilburn High Road and Adjacencies



2.0 PROPOSED DEVELOPMENT

The proposed development is to include the demolition of the existing 238 Kilburn High Road and the erection of a 4-story development with a class E unit on the ground floor and residential flats on the upper floors. It will also include the redesign of some units on the adjacent 240 Kilburn High Road which are directly attached to the proposed property. The assessment in this report focuses mainly on assessing the internal spaces in 240 Kilburn High Road to insure they still achieve good daylight levels. The figure to the opposite shows the proposed Ground Floor Plan with the proposed 238 Kilburn High Road highlighted in red.



Figure 2.1: Ground Floor Plan of the Proposed Development

238 Kilburn High Road, London



The figure to the opposite shows the proposed 1st, 2nd, and 3rd Floor Plan with the proposed 238 Kilburn High Road highlighted in red and the assessed spaces in 240 Kilburn High Road highlighted in yellow.



Figure 2.2: 1st, 2nd, and 3rd Floor Plan of the Proposed Development

238 Kilburn High Road, London





The figures to the opposite show the proposed Fourth and Roof Floor Plans with the proposed 238 Kilburn High Road highlighted in red.





Figure 2.4: Roof Floor Plan of the Proposed Development

238 Kilburn High Road, London





The figures to the opposite represent the elevations of the proposed development, with the proposed 238 Kilburn High Road highlighted in red and the assessed spaces in 240 Kilburn High Road highlighted in yellow.





238 Kilburn High Road, London



The figures to the opposite show cross sections of the proposed development.



Figure 2.8: Proposed Sections

238 Kilburn High Road, London



ASSESSMENT METHODOLOGY 3.0

3.1 **Planning Requirements**

The BRE guidance sets out the calculation to assess the internal daylight criteria within a proposed building. This assessment is guidance only and is not planning legislation and is a method of calculation to assist the potential of daylight for possible Planners to help with Planning applications.

It is therefore required to carry out an assessment of the development to determine if sufficient daylight is achieved in each living space. Typical assessment methodology will be used, as outlined within the Building Research Establishment (BRE) document 'Site Layout Planning for Sunlight and Daylight: A Guide to Good Practice (2011)'.

3.1 **Planning Guidance**

BRE - Site Layout Planning for Sunlight and Daylight: A 3.2 Guide to Good Practice (2011)

The BRE document states that the daylight criteria should only apply to living and occupied areas within the development, which includes kitchens, living rooms and bedrooms. As such, assessment for the proposed development will be carried out for the Living Area/Kitchen and Bedroom.

Adoption of BRE Guidance

It is important to note that the guidance provided within BR209 is for recommendation only, and thus not a strict set of targets that needs to be adhered to all at all locations. It is acknowledged in the document that sites of high density or historical context may be particularly restricted by the guidance within the document, and as such alternative performance targets may be suitable.

Average Daylight Factor

The most effective way to assess quality and quantity of daylight within a living area is by calculating the Average Daylight Factor (ADF). The ADF, which measures the overall amount of daylight in a space, is the ratio of the average illuminance on the working plane in a room to the illuminance on an unobstructed horizontal surface outdoors, expressed as a percentage.

The ADF takes into account the VSC value, i.e. the amount of daylight received on windows, the size and number of windows, the diffuse visible transmittance of the glazing used, the maintenance factor and the reflectance of the room surfaces. Therefore, it is considered as a more detailed and representative measure of the daylight levels within a living area. In housing, BS 8206-2 recommends minimum values of ADF of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

As the development includes an open plan kitchen and living/dining space, each room is to be assessed to a minimum ADF value of between 1.5-2%.

Summary of Targets

For the purposes of this study, only the Average Daylight Factor has been considered. Contrary to the VSC, that measures daylight levels only on the windowpane, the ADF is a more complex and representative calculation as it takes into account the angle of visible sky reaching the windows as well as the room layout, use and surface reflectance.

below.

Measure of Interior Daylight	Benchmark	Daylight Criterion	
	2.0 %	Minimum value of ADF for kitchens	
Average Daylight Factor	1.5 %	Minimum value of ADF for living rooms	
	1.0 %	Minimum value of ADF for bedrooms	

A summary of the relevant performance targets is provided in the table

Table 3.1: Summary of BRE internal daylight criteria



ASSESSMENT MEASURES 4.0

The level of daylight in the proposed rooms is affected by the geometry and internal finishes of these rooms and their adjacencies, as such the daylight assessment within this report shall focus on modelling these rooms with the adjacent surfaces.

4.1 **Daylight Model**

A 3D model of the assessed flats and their adjacencies have been created within thermal modelling software IES, which has been used to carry out the daylight assessment within the chosen units. The model takes into account the geometry and internal finishes of assessed rooms, as well as the shading from adjacent shading surfaces.

Note: Geometry for the assessed rooms within has been modelled as per the architectural drawings provided by S2S Architects, along with the use of Google Earth pictures.

Model Inputs 4.2

The internal finishes of each space have been assumed as the following;

- Floors Light Grey Carpet
- Walls Painted white
- Ceiling Painted white

In addition, a few assumptions have been made within the model;

- As per BRE guidance, a working plane has been set at 0.85m above the finished floor level.
- The proposed double glazing has an assumed diffuse visible transmittance of 0.85, and an internal and external reflectance of 0.10.
- External walls thickness is assumed to be 0.35m thick. •







Figure 4.2: IES model of the Proposed Development and Adjacencies

238 Kilburn High Road, London







DAYLIGHT RESULTS 5.0

A summary of the daylight results for the assessed spaces is tabulated to the opposite, while the figure to the opposite shows the predicted Daylight factors across each assessed space.

It is predicted that all of the assessed rooms in flats 01 which are located at the front of the property, are expected to comfortably pass the required BRE criteria with good daylight levels across the whole floor area. There is only one Living room in the 1st floor which is slightly below the BRE recommendation with an ADF of 1.4.

Regarding the flats located to the rear of the property, it is predicted that they will have an ADF lower than the BRE recommendation which is expected considering the complexity of the site and how compacted it is.

However, when reviewing the daylight plots for Flat 02 on the 3rd floor and Flat 01 on the 1st Floor provided in the following pages, it can be shown that the sitting area within these rooms will achieve high average daylight levels, with reduced daylight to the rear of each room. As such, this can be accounted for within the FF&E design, where rest area that would benefit from daylight would be located adjacent to the glazing in areas of high daylight, while kitchen and circulation areas (that would require artificial task lighting anyway) would be located towards the rear of the room.

It is important to note that, the location of the windows within the demolished wall - they are located in such a position that they sterilize the adjacent site in regard to limiting what can be built there. As such, considering the complexity of the site and surroundings within such inner-city locations, and the limitations this could have on the design, a reduction from the BRE criteria may be seen as acceptable.

Elear No	Flat No.	Room Name	Assessment Results			
FIOUT NO.			BRE Criteria	ADF Predicted	Pass/Fail	
	Flat 01	Bedroom	1.0	1.7	Pass	
1st Eleon		Living Room	(1.5-2.0)	1.4	**	
IS FIOUR	Flat 02	Bedroom	1.0	0.3	*	
		Living Room	(1.5-2.0)	0.4	*	
	Flat 01	Bedroom	1.0	1.9	Pass	
2nd Floor		Living Room	(1.5-2.0)	1.5	Pass	
2	Flat 02	Bedroom	1.0	0.5	*	
		Living Room	(1.5-2.0)	0.7	*	
	Flat 01	Bedroom	1.0	2.0	Pass	
Ord Floor		Living Room	(1.5-2.0)	1.6	Pass	
3.ª FI001	Flat 02	Bedroom	1.0	0.8	**	
		Living Room	(1.5-2.0)	1.1	**	
	*This room is affe	cted by the close proximity to	the adjacent 1-23 Gragev	vay development.		
**This room is slightly below the BRE recommendation, it has good daylight levels.						

Table 5.1: Daylight Results in the Assessed Rooms



238 Kilburn High Road, London





The figures to the opposite show Daylight Factor plot for some of the assessed rooms.



Figure 5.2: Daylight Factor Plot for the 3rd floor Living Room and Bedroom in Flat 01



Figure 5.3: Daylight Factor Plot for 2nd floor Bedroom in Flat 01

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Figure 5.4: Daylight Factor Plot for 3rd floor Living are in Flat 02



The figures to the opposite show Daylight Factor plots for the assessed 1^{st} floor living room in Flat 01 and 3^{rd} floor living room in flat 02. As mentioned before, it can be clearly seen that the sitting area of the room will achieve high average daylight levels, with reduced daylight to the rear of the room. As such, this can be accounted for within the FF&E design, where rest area that would benefit from daylight would be located adjacent to the glazing in areas of high daylight, while kitchen and circulation areas (that would require artificial task lighting anyway) would be located towards the rear of the room.



Figure 5.5: Daylight Factor Plot for the 1st floor Living Room in Flat 01



Figure 5.6: Daylight Factor Plot for the 3rd floor Living Room in Flat 02

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