

BRE Client Report

Loss of daylight and sunlight due to proposed extension
at 41 Meadow Prospect, Wolvercote

Prepared for: Dr Sarmila Bose
Date: 31 March 2022
Report Number: P122766-1000 Issue: 1

BRE
Bucknalls Lane
Watford, Herts
WD25 9XX

T + 44 (0) 333 321 8811
E enquiries@bregroup.com
www.bregroup.com

Prepared for:
Dr Sarmila Bose
41 Meadow Prospect
Wolvercote
Oxford
OX2 8PP



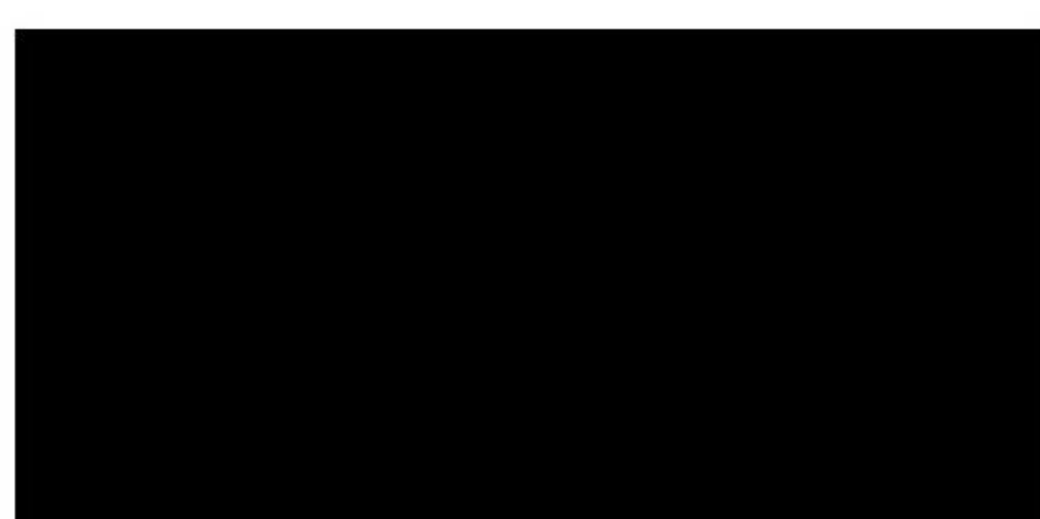
Prepared by

Name Dr Cosmin Ticleanu

Position Principal Consultant, Lighting

Date 31 March 2022

Signature



Authorised by

Name Dr Paul Littlefair

Position Associate Director, Lighting

Date 31 March 2022

Signature



This report is made on behalf of Building Research Establishment Ltd. (BRE) and may only be distributed in its entirety, without amendment, and with attribution to BRE to the extent permitted by the terms and conditions of the contract. BRE's liability in respect of this report and reliance thereupon shall be as per the terms and conditions of contract with the client and BRE shall have no liability to third parties to the extent permitted in law.



Table of contents

Introduction	3
Methodology	4
Loss of daylight – vertical sky component	4
Loss of daylight – daylight distribution	4
Loss of sunlight to existing dwellings	4
Findings	6
Loss of daylight – vertical sky component	9
Loss of daylight – daylight distribution	9
Loss of sunlight to existing dwellings	10
Conclusions	11



Introduction

It is proposed to develop 41 Meadow Prospect, Wolvercote, Oxford. The development includes a 2-storey extension at the rear and to the west of the existing property.

This report assesses loss of daylight and sunlight to the nearest neighbouring properties at no 39 and no 43 Meadow Prospect. The results are compared to the guidelines in the BRE Report 'Site layout planning for daylight and sunlight: a guide to good practice'.

The calculations are based on drawings of the development including topographical survey 4021 2A/1 dated November 2021, by Midland Survey Ltd, as well as proposed ground floor, first floor and roof plans, north and south elevations, and rear view of the proposed extension, all unnumbered and dated 28 March 2022, by Abhimanyu Dalal Architects.

A site visit was also undertaken by BRE on 14 March 2022.



Methodology

Guidance on the loss of light to existing buildings following construction of new development nearby is given in the BRE Report 'Site layout planning for daylight and sunlight: a guide to good practice'. This report is widely used by local authorities to help determine planning applications. The assessment has been carried out with reference to the second edition of the report, which was published in October 2011.

The advice in the BRE Report is widely used throughout the country to help determine planning applications. The guidance in the BRE Report is advisory in nature and is intended to assist with good design. There is no formal requirement to comply with the advice it contains.

The guidelines in the BRE Report usually apply to primary windows in habitable rooms.

In the BRE Report loss of daylight (light from the sky, calculated on an overcast day) and sunlight (direct light from the sun) are assessed separately.

Loss of daylight – vertical sky component

The BRE Report recommends assessment of loss of daylight via the calculation of the vertical sky component. This is the 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 and the ratio is usually expressed as a percentage. The maximum value is almost 40% for a completely unobstructed vertical wall. The vertical sky component on a window is a good measure of the amount of daylight entering it.

A BRE computer program was used to calculate the vertical sky component, which has the same basis as the skylight indicators in the BRE Report.

The BRE Report sets out the following two guidelines for vertical sky component:

- a) Where the vertical sky component at the centre of the existing window exceeds 27% with the new development in place, then enough sky light should still be reaching the existing window.
- b) Where the vertical sky component with the new development is both less than 27% **and** less than 0.8 times its former value, then the area lit by the window is likely to appear more gloomy, and electric lighting will be needed for more of the time.

A modified version of the calculation is also used to assess daylight to the rooflights of the neighbouring property at 39 Meadow Prospect, based on the sloping sky component.

Loss of daylight – daylight distribution

The BRE report also gives guidance on the distribution of light in the existing buildings, based on the areas of the working plane which can and cannot receive direct skylight before and after development. If this area is reduced to less than 0.8 times its value before, then the distribution of light in the room is likely to be adversely affected, and more of the room will appear poorly lit.

This calculation requires knowledge of room geometry, and relevant measurements inside the neighbouring properties were taken during the site visit to allow for this calculation to be carried out.

Loss of sunlight to existing dwellings

The BRE Report recommends that loss of sunlight should be checked for main living rooms of dwellings, and conservatories, if they have a window facing within 90° of due south. 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 still receive enough sunlight. If the window already receives less than this, a reduction to less than 0.8 times its current value and a reduction of more than 4% of annual probable sunlight hours over the year may lead to the room it serves appearing colder and less cheerful and pleasant.

Findings

Figures 1 to 3 show views of the existing properties at nos 39 to 43 Meadow Prospect with the analysed windows and rooflights labelled. The nearest windows and rooflights which light habitable rooms at both neighbouring properties have been considered. There are two additional windows at no 39 facing the proposed extension at no 41, but these have not been included in the analysis since one of these lights a bathroom and the other lights a stairwell, neither of these spaces being a habitable room.

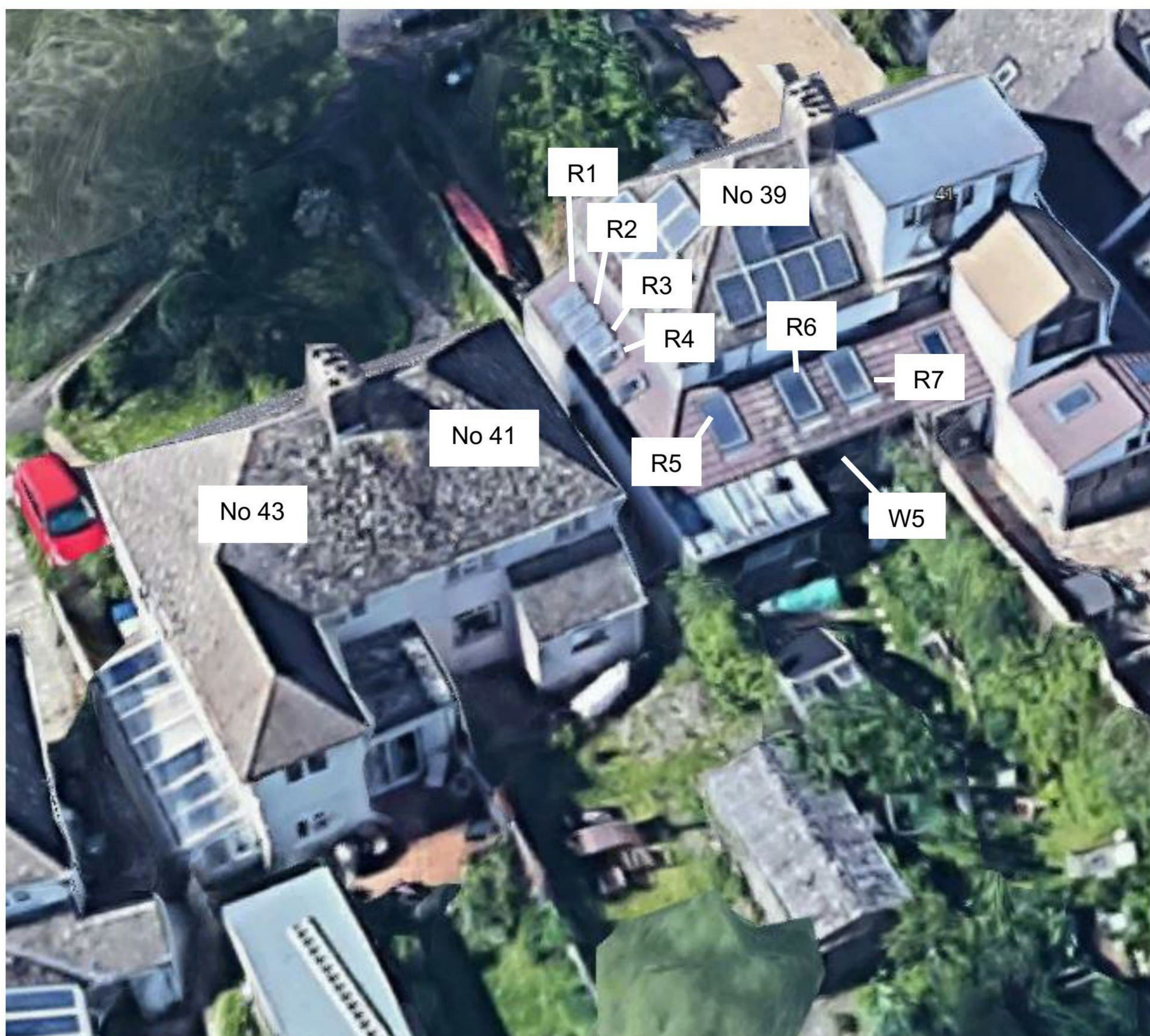


Figure 1 Screen capture (from Google Maps, 3D view, image dated 2022) showing the existing properties and analysed rooflights and living room window at 39 Meadow Prospect, labelled R1 to R7.



Figure 2 Photograph (taken during site visit) showing the analysed kitchen and bedroom windows at 39 Meadow Prospect, labelled W1 to W4 and W6, respectively.



Figure 3 Photograph (taken during site visit) showing the analysed windows at 43 Meadow Prospect, labelled W7 to W10.



Figures 4 to 5 show ground floor and first floor plans for the proposed extension.

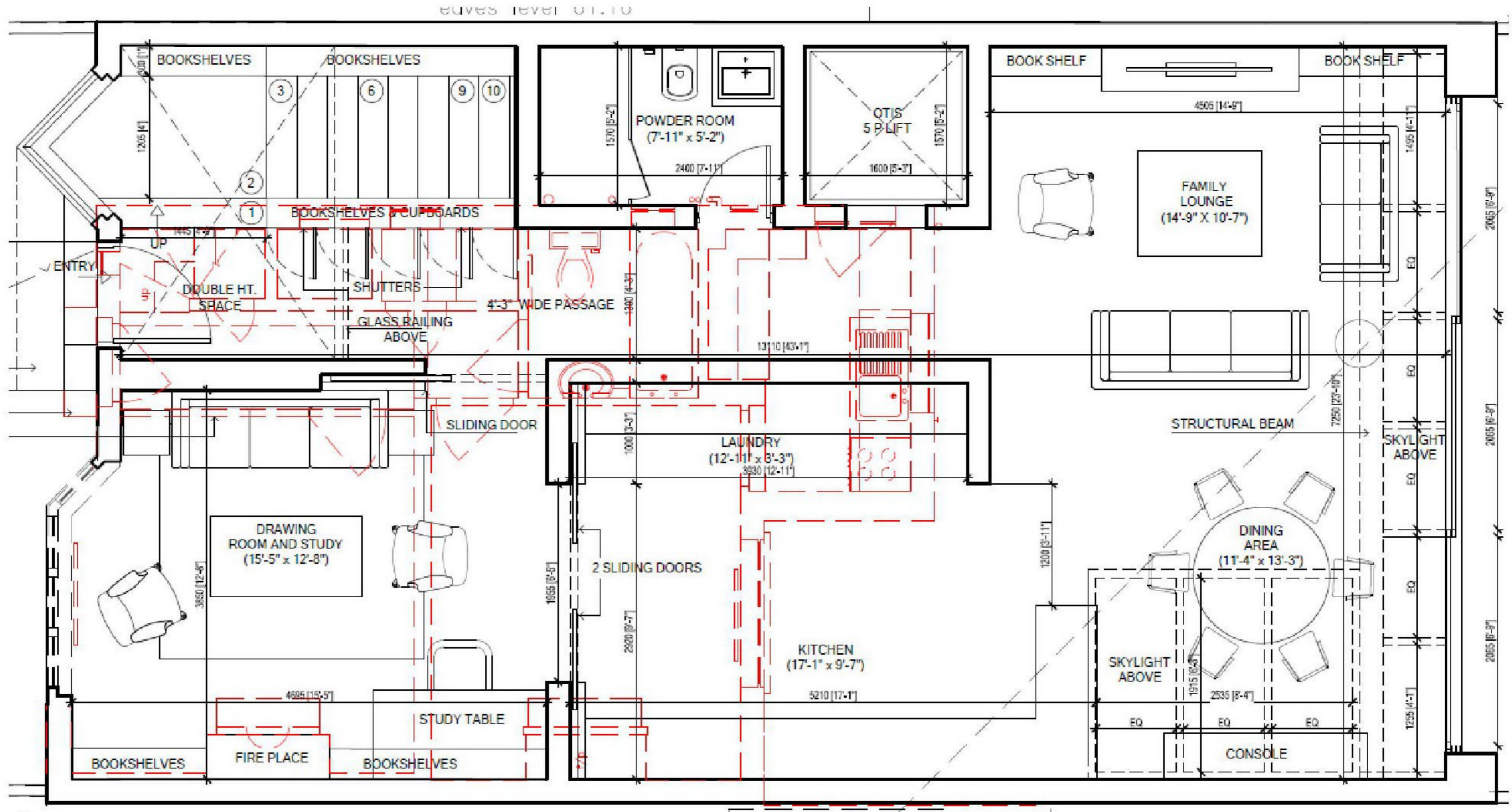


Figure 4 Ground floor plan for the proposed extension at 41 Meadow Prospect. The contour of the existing property is shown in red. Based on plan by Abhimanyu Dalal Architects.

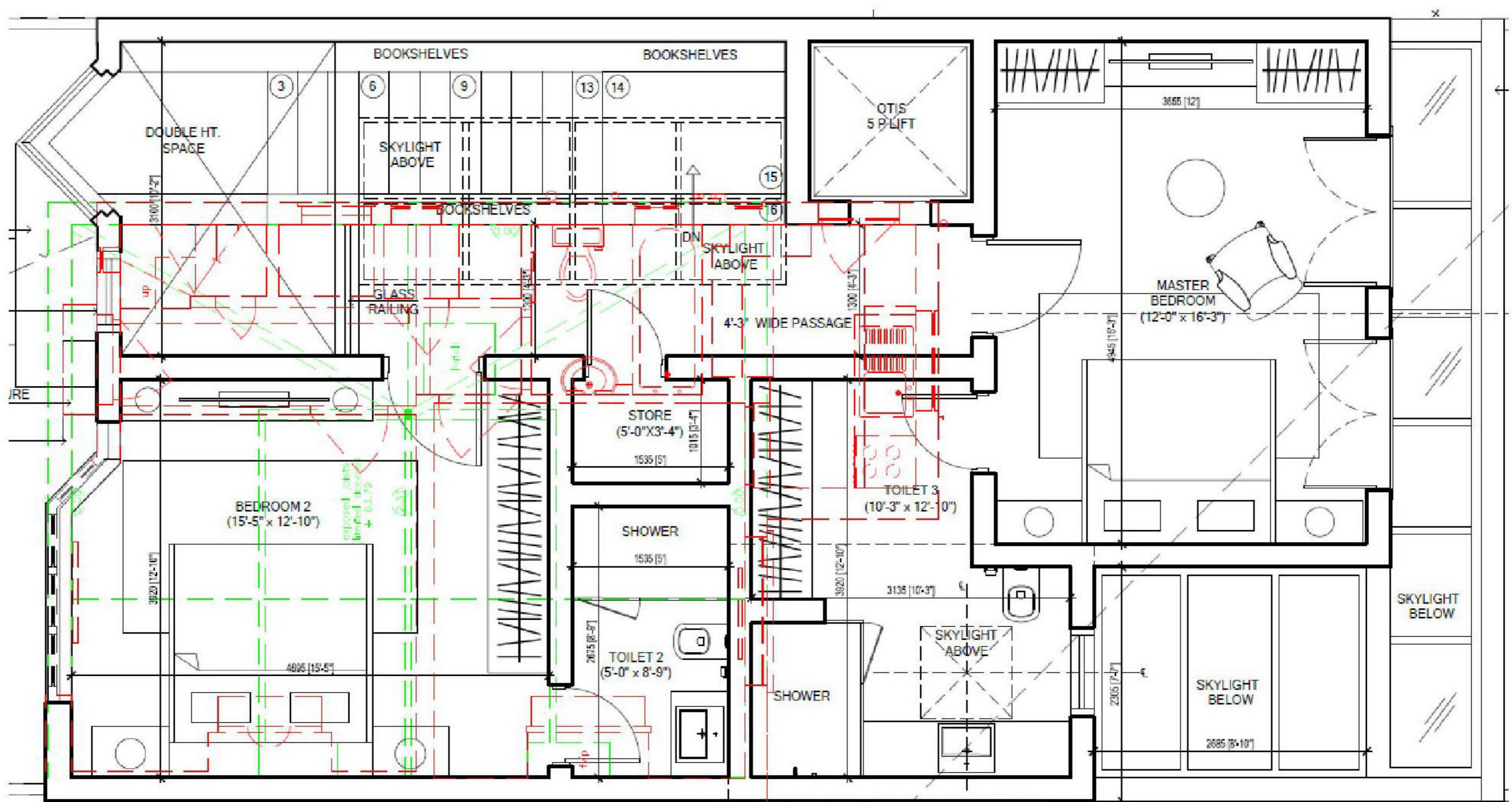


Figure 5 First floor plan for the proposed extension at 41 Meadow Prospect. The contour of the existing property is shown in red. Based on plan by Abhimanyu Dalal Architects.



Loss of daylight – vertical sky component

The results for loss of daylight as assessed through vertical sky component (and sloping sky component for rooflights) are shown in Table 1.

Table 1 Loss of daylight results for nearest neighbouring windows and rooflights.

Property	Floor	Room	Window / Rooflight	Vertical sky component (sloping sky component for rooflights)		
				Before (%)	After (%)	Ratio After/Before
39 Meadow Prospect	Ground	Studio	R1	76.1	72.6	0.95
			R2	74.1	66.8	0.90
			R3	72.4	59.5	0.82
			R4	70.7	52.7	0.75
		Kitchen	R5	76.5	70.1	0.92
			W1	38.0	25.1	0.66
			W2	38.2	30.1	0.79
			W3	38.4	33.2	0.86
		Living	W4	38.4	34.4	0.90
			R6	71.6	69.1	0.97
R7	69.8		68.1	0.98		
			W5	36.4	35.7	0.98
	First	Bedroom	W6	32.5	30.7	0.95
43 Meadow Prospect	Ground	Living	W7	32.0	25.8	0.81
		Kitchen	W8	36.2	35.4	0.98
	First	Bedroom 1	W9	27.8	23.9	0.86
		Bedroom 2	W10	32.9	32.8	1.00

Except for one kitchen window at 39 Meadow Prospect, all of the other neighbouring windows and rooflights would meet the BRE guidelines since they would either have values greater than 27% with the proposed extension in place or be more than 0.8 times those before.

Window W1 to the kitchen at 39 Meadow Prospect would have a vertical sky component with the proposed extension in place just below the value of 27% recommended by the BRE guidelines. This is the nearest window to the proposed extension, and the kitchen has two other windows W2 and W3 of equal size to window W1. In this case, the BRE guidelines allow for the mean vertical sky component to be considered. The resulting mean vertical sky component for windows W1 to W3 with the proposed extension in place would be 29.5%, which is above the recommended 27% and therefore meeting the BRE guidelines. The kitchen at 39 Meadow Prospect also has a rooflight and a glazed patio door that have a view of the proposed extension and would meet the BRE guidelines, as well as another window facing east and away from the proposed extension, and therefore overall loss of daylight to this room would be within the BRE guidelines.

Loss of daylight – daylight distribution

The results for loss of daylight as assessed through the distribution of daylight in the neighbouring habitable rooms are shown in Table 2.

Table 2 Daylight distribution results for nearest neighbouring habitable rooms.

Property	Floor	Room	Working plane area receiving direct skylight		
			Before	After	Ratio After/Before
39 Meadow Prospect	Ground	Studio	100%	100%	1.00
		Kitchen	100%	100%	1.00
		Living	100%	100%	1.00
	First	Bedroom	99%	98%	1.00



Property	Floor	Room	Working plane area receiving direct skylight		
			Before	After	Ratio After/Before
43 Meadow Prospect	Ground	Living	91%	75%	0.82
		Kitchen	94%	96%	1.02
	First	Bedroom 1	99%	97%	0.98
		Bedroom 2	83%	82%	0.99

All of the neighbouring habitable rooms would meet the BRE guidelines since the area of working plane receiving direct skylight with the proposed extension in place would be above 0.8 times its value before.

Loss of sunlight to existing dwellings

Although only some of the nearest neighbouring windows and rooflights light main living areas, all of these have been assessed for loss of sunlight for completeness. The results are shown in Table 3.

Table 3 Loss of sunlight results for nearest neighbouring windows and rooflights.

Property	Floor	Room	Window / Rooflight	Annual probable sunlight hours			Winter probable sunlight hours		
				Before (%)	After (%)	Ratio After/Before	Before (%)	After (%)	Ratio After/Before
39 Meadow Prospect	Ground	Studio	R1	70	62	0.89	18	11	0.61
			R2	68	54	0.79	16	9	0.56
			R3	64	37	0.58	14	6	0.43
			R4	60	28	0.47	13	6	0.46
		Kitchen	R5	80	66	0.83	22	14	0.64
			W1	77	41	0.54	27	8	0.31
			W2	77	53	0.69	27	11	0.43
			W3	77	61	0.80	27	14	0.53
		Living	W4	77	65	0.84	27	17	0.62
			R6	80	74	0.93	26	20	0.77
R7	79		74	0.94	27	23	0.85		
First	Bedroom	W5	70	68	0.97	21	19	0.93	
		W6	73	69	0.95	27	23	0.86	
43 Meadow Prospect	Ground	Living	W7	49	37	0.76	14	13	0.89
		Kitchen	W8	78	76	0.97	28	28	1.00
	First	Bedroom 1	W9	66	58	0.88	16	16	0.96
		Bedroom 2	W10	78	78	0.99	28	28	1.00

With the proposed extension in place, all of the nearest neighbouring windows and rooflights would meet the BRE guidelines since they would all 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.



Conclusions

Loss of daylight and sunlight to neighbouring properties following a proposed extension at 41 Meadow Prospect, Wolvercote, Oxford has been assessed. The results have been compared to the guidelines in the BRE Report 'Site layout planning for daylight and sunlight: a guide to good practice'.

Loss of daylight to habitable rooms facing the proposed extension would be within the BRE guidelines. All of these rooms would also meet the BRE guidelines for daylight distribution.

The neighbouring windows and rooflights to habitable rooms facing the proposed extension would also meet the BRE guidelines for loss of sunlight.